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Janta College, Bakewar (Etawah)

(छत्रपति शाहू जी महाराज विश्वविद्यालय, कानपुर से सम्बद्ध)

(Affiliated to C.S.J.M. University, Kanpur)

पत्रांक

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Date.....

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during the last five years

S. No.	Title of paper	Name of the author/s	Name of journal	Calendar Year of publication
1	Effect of calcium and potassium compounds on sugar (Reducing, Non-Reducing and Total Sugar) of Guvava (Psidium guajava) cv.L-49	Dr. Sanjeev Kumar, Dr. M.K. Yadav, Dr.S.K. Vishwakarma, Dr. M.P. Yadav	Int J. of Agri. Science	2018-19
2	Effect of leaf nutrient status of calcium and potassium compounds before and after spraying of Guvava (Psidium guajava) cv.L-49	Dr.Sanjeev Kumar, Dr. M.K. Yadav, Dr.S.K. Vishwakarma, Dr. M.P. Yadav	Int J. of Agri. Science	2018-19
3	Information seeking study of the respondents of electronic information resources and services in engineering college libraries in Uttar Pradesh	Mr. RamdasVerma	Research journey' multi-disciplinary international e-research Journal	2018-19
4	A Certain Fractional Integral operator for a Class of Analytics Starlike Functions	Dr. Nalini Shukla	National	2018-19
5	New Framework of Repulsive Strength & Hardness Parameter of Alkali Halides	Dr. PrakashDubey	Indian Research bulletin	2018-19
6	Phonon conductivity of InSb in the temperatures range 2-200K	Dr. PrakashDubey	Abhinav Gaveshna	2018-19
7	Decision Support Systems for Nutrient Management Strategies	Dr. Dharmendra Kumar	Progressive Research (an International Journal)	2018-19
8	Net mortality effect in Diacrisia obliqua caused by Bacillus Thuringiensis	Dr. Lalit Gupta	Res.J. of Social and Life Science	2018-19
9	Effect of Bactospiene on post embryonic development of Diacrisia obliqua	Dr. Lalit Gupta	Res.J. of Social and Life Science	2018-19

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Research Article

EFFECT OF CALCIUM AND POTASSIUM COMPOUNDS ON SUGAR (REDUCING, NON-REDUCING AND TOTAL SUGAR) OF GUAVA (*Psidium guajava* L.) cv. L-49

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Abstract: An experiment was conducted to find out the effect of calcium and potassium compounds on sugar (reducing, non-reducing and total sugar) of winter season guava. The experiment was laid out with fourteen treatment comprising six nutrients namely calcium chloride, calcium nitrate, calcium sulphate, potassium chloride, potassium nitrate, potassium along with water spray and two concentration (1 and 1.5%) of each nutrient, water sprayer with control. Significant improvement in different sugar content of fruits were recorded with higher concentration of potassium nitrate (1.5 %) followed by calcium nitrate (1.5 %) for reducing sugar content (4.50 and 4.43 %), non-reducing (4.59 and 4.5 %) and total sugar (9.09 and 9.24 %) in treatment T₁₃.

Keywords: Calcium, Potassium, *Psidium guajava* and Sugar

Citation: Vishwakarma S.K., et al. (2018) Effect of Calcium and Potassium Compounds on Sugar (Reducing, Non-Reducing and Total Sugar) of Guava (*Psidium guajava* L.) cv. L-49. International Journal of Agriculture Sciences, ISSN: 0975-3710 & E-ISSN: 0975-9107, Volume 10, Issue 17, pp.- 7035-7036.

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Introduction

Guava (*Psidium guajava* L.) belongs to family Myrtaceae with 150 species under genus *Psidium* [1]. Trees are cultivated in many tropical and subtropical countries for their nutritive fruits. Its original home of which is said to be the tropical parts of America. The guava is reported to have been rising in the West Indies since 1526 and was introduced by the Spaniards to the Philippines and by the Portuguese to India by the early 17th century [2]. It quickly spread to most of the tropical and subtropical world and became naturalized in several countries. Now it is one of the most important subtropical fruit of India. Because of its ease of growing, high nutritional value, and the popularity of the processed products, guava is important in international trade as well as for the domestic economy of India. Guava fruit contains 82.50 g water, 14.5 g carbohydrate, 1.5 g protein, 0.2g fat, 6.9 g fibre, 20 mg calcium, 8 mg phosphorus, 1.4 mg iron, 28 mg potassium, 4 mg sodium, 30 mg vitamin B₁, 0.2 mg niacin, 1.4 mg oxalic acid and 66 calories per 100 g of fruit [3,4]. The L-49 is selection from Allahabad Safeda cultivar from Ganesh Khind Garden, Pune. The calcium occurs mainly in the leaves as calcium pectate. It plays an important role in cell division, elongation, maintenance of membrane integrity, development and functioning of roots. The calcium comes under the group of macro-nutrient. [5] Worked on nutrient deficiency and postulated that calcium plays an important role in growth activities. The potassium is found in young leaves, root tips and meristematic tissues. It is involved in cell division, synthesis and translocation of carbohydrates and synthesis of proteins in meristematic tissues. It improves the colour, flavour and size of fruits [6].

Materials and Methods

The present investigation was carried out at the Horticulture Orchard, Institute of Agricultural Science, Banaras Hindu University during the year 2012 and 2013. It is situated in the eastern U.P. and lies in the centre of north alluvial plains with mighty Ganges on its right and enjoys a subtropical climate. The Horticulture Department is situated about 10 km away from Varanasi railway station in the Southern part of Varanasi city and geographically situated at 25°18' North latitude

and 60°33' East longitude. The altitude of the city is about 129.23 meters above Mean Sea Level. In this experiment there was six nutrients namely calcium chloride (T₁ and T₂), calcium nitrate (T₃ and T₄), calcium sulphate (T₅ and T₆), potassium chloride (T₇ and T₈), potassium nitrate (T₉ and T₁₀), potassium sulphate (T₁₁ and T₁₂), along with water spray (T₁₃) and two concentration (1 and 1.5 %) of each nutrient with control (T₁₄). The fresh solution of nutrients will be applied as foliar application at 15 days intervals viz. before flowering, flowering and after flowering stage. The different chemical treatments will be provided from the department horticulture. Experiment will be laid out in randomized block design with three replications. The spray solutions of various strengths were prepared in distilled water and with dehydrate lime solution water to maintained pH and each shoot was sprayed by compressed press sprayer. A total of three mature fruits were sampled from each tree and observations so recorded were averaged. Sugar was estimated by Fehling 'A' and 'B' solution method and ten grams fruit pulp was macerated with small amount of distilled water and filtered through cloth and volume was made up to 100ml. The reducing sugars were estimated by Shaffer Somogi method as described by [7] and expressed as per cent. To determine the reducing sugar, 10g fruit pulp was blended with distilled water, filtered in 100ml volumetric flask and volume was maintained with distilled water. 5ml sample was taken with 5ml Fehling Solution 'A' and 5 ml Fehling Solution 'B' in 100ml conical flask and titrated of solution against 1per cent glucose while boiling and checked by methylene blue indicator. The end point was marked by the appearance of brick red colour [8]. To determine the total invert sugar, 5 ml sample was taken and added 2-3 drops of HCl and left over night. Next day added two drops phenolphthalein indicator and neutralize with 30 per cent NaOH and added 5 ml Fehling solution 'A' and 5 ml Fehling solution 'B' titrated against 1per cent glucose till the end point (Brick red colour).The total reducing sugar was estimated by Fehling solution method and Non-reducing sugar was calculated by deducting the quality of reducing sugar from total invert sugar and multiplied by factor 0.95. Results were expressed in per cent of reducing sugar and non-reducing sugar.



Research Article

EFFECT OF LEAF NUTRIENT STATUS OF CALCIUM AND POTASSIUM COMPOUNDS BEFORE SPRAYING AND AFTER SPRAYING OF GUAVA (*Psidium guajava* L.) cv. L-49

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Abstract: An experiment was conducted to find out the effect of calcium and potassium compounds on leaf nutrient status of before spraying and after spraying of winter season guava. The experiment was laid out with fourteen treatment comprising six nutrients namely calcium chloride, calcium nitrate, calcium sulphate, potassium chloride, potassium nitrate, potassium sulphate along with water spray and two concentrations (1.0 and 1.5%) of each nutrient, with control. Treatment T₄ recorded significantly higher Ca content (1.74 and 1.76) in leaf as compared to most of the treatments, except T₃ (1.67 and 1.69) and T₆ (1.64 and 1.65), which were found statically at par in individual year as well as in pooled data of two years. The K content in leaf was observed maximum under T₁₀ (1.20 and 1.22) during 2012, 2013 and pooled data of two years. Treatment T₁₁ proved statically at par with T₈ (1.18) during first year and T₈ (1.18) during second year and was found significantly superior to rest of the treatments in either of the two years and pooled data also. Perusal of table indicated that T₁₄ (Control) recorded lowest values of Ca (1.36 and 1.42) and K (1.09 and 1.12) in leaf during both the years of experimentation.

Keywords: Calcium; leaf nutrient status; Potassium and *Psidium guajava*

Citation: Vishwakarma S.K., et al., (2018) Effect of Leaf Nutrient Status of Calcium and Potassium Compounds before Spraying and after Spraying of Guava (*Psidium guajava* L.) cv. L-49. International Journal of Agriculture Sciences, ISSN: 0975-3710 & E-ISSN: 0975-9107, Volume 10, Issue 19, pp.- 7270-7272.

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Introduction

Guava (*Psidium guajava* L.) belongs to family Myrtaceae with 150 species under genus *Psidium* [1]. Trees are cultivated in many tropical and subtropical countries for their nutritive fruits. Its original home of which is said to be the tropical parts of America. Guava is reported to have been rising in the West Indies since 1526 and was introduced by the Spaniards to the Philippines and by the Portuguese to India by the early 17th century [2]. It quickly spread to most of the tropical and subtropical world and became naturalized in several countries. Now it is one of the most important subtropical fruit of India. Because of its ease of growing, high nutritional value, and the popularity of the processed products, guava is important in international trade as well as for the domestic economy of India. Guava is often referred to as apple of tropics and the leading growing fruit crop in India. It occupies an area of 0.268 million ha with an annual production of 3.667 million tons (NHB, 2014-15). It is commercially cultivated in Uttar Pradesh, Madhya Pradesh, Bihar, Gujarat and Maharashtra. Maharashtra ranks first in Area under guava having about one fifth of the total area in the country. In Uttar Pradesh, district Allahabad has special reputation for producing the best quality guava fruits [3]. Among all these species of the genus, (*Psidium guajava* L.) is most common species grown in India. Other cultivated species of minor local importance are *P. littorale* or strawberry guava (Brazil), *P. guineense* (West Indies), *P. montanum* (Jamaica), *P. microphyllum* (Puerto Rico), and *P. bredichsthalianum* (Malaya) which are not commercially grown in India. The guava is a medium sized tree of about 3 - 10 meter in height. It is very hardy, long lived and needs very little attention. Guava fruit is best relished when properly ripe and freshly plucked from the tree. It emits sweet aroma, is pleasantly sweet and refreshingly acid in nature. Its whole fruit is edible and almost merged with the pulp. Guava takes nearly five months from time of flowering to mature. Fruits attaining maturity show signs of change in colour from dark green to yellowish green. This is the right stage of

harvesting of fruits. Among the fruits, guava is one of the most important protective fruit because of having highest vitamin C among table fruits i.e. 260mg/100g of edible part. Guava contains broad spectrum of phytochemicals including polysaccharides, vitamins, essential oils, minerals, enzymes, proteins [4], sesquiterpenoid alcohols and triterpenoid acids, alkaloids, glycosides, steroids, flavonoids, tannins and saponins [5]. *Psidium guajava* or guava is very rich in antioxidants and vitamins and is also high in lutein, zeaxanthine and lycopene. Guava fruit contains 82.50 g water, 14.5 g carbohydrate, 1.5 g protein, 0.2g fat, 6.9 g fibre, 20 mg calcium, 8 mg phosphorus, 1.4 mg iron, 28 mg potassium, 4 mg sodium, 30 mg vitamin B₁, 0.2 mg niacin, 1.4 mg oxalic acid and 66 calories per 100 g of fruit [6]. The L-49 is selection from Allahabad Safeda cultivar from Ganesh Khind Garden, Pune. The calcium occurs mainly in the leaves as calcium pedate. It plays an important role in cell division, elongation, maintenance of membrane integrity, development and functioning of roots. The calcium comes under the group of macro-nutrient [7]. Worked on nutrient deficiency and postulated that calcium plays an important role in growth activities. The potassium is found in young leaves, root tips and meristematic tissues. It is involved in cell division, synthesis and translocation of carbohydrates and synthesis of proteins in meristematic tissues. It improves the colour, flavour and size of fruits [8].

Materials and Methods

The present investigation was carried out at the Horticulture Orchard, Institute of Agricultural Science, Banaras Hindu University during the year 2012 and 2013. It is situated in the eastern U.P. and lies in the centre of north alluvial plains with mighty Ganges on its right and enjoys a subtropical climate. The Horticulture Department is situated about 10 km away from Varanasi railway station in the Southern part of Varanasi city and geographically situated at 25°18' North latitude and 80°33' East longitude.



Information Seeking Study of the Respondents of Electronic Information Resources and Services in Engineering College Libraries in Uttar Pradesh

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Abstract:

The study has also focused the attention of various stakeholders of management of electronic resources and services. In this age of competitive content management, modern engineering colleges are required to develop infrastructural facilities, train the manpower, cater to the information needs of the users and facilitate all round development of information professionals and information users. The engineering colleges are also called upon by the users of electronic information resources and services to develop infrastructure, improve ICT skills and cater to the developmental needs of the users. There is a need to ensure planned, deliberate and systematic use of electronic information resources and services in engineering college libraries in order to facilitate up gradation of services and optimum utilization of services in modern times.

Keywords: Demographic Details, Electronic Resource, Modern Engineering, Information Users, Libraries

Introduction:

Primary data were collected from 480 information users who are directly associated with Bangalore city based engineering colleges through survey research method. The primary data were gathered from interview, questionnaire and observation tools. The primary data was first organized and the raw data was transformed in such a way that inferences could be drawn and the corroborated data was put in the form of tables and graphic representations following the standardized statistical analysis procedures. Conclusions have been drawn on the basis of scientific evaluation of demographic features of the sample (users), access to electronic information resources and services, frequency of use of electronic information resources and services, purpose of use of electronic information resources and services and utility of use of electronic information resources and services.

Demographic Details of the Respondents:

Modern engineering colleges are called upon develop virtual corporate library in terms of state of the art resources, technologies and services. The library professionals are required to play a major role in fulfilling the requirements of the users of engineering college libraries in Bangalore city and elsewhere. These libraries are also responsible for providing multi-dimensional and multi-faceted services to the users. The professionals and non-professionals are required to make use of the state of the art services, facilities and technologies in order to satisfy the needs of the users. Prominent among the electronic information resources and services include – access to the full text document, cataloguing



A CERTAIN FRACTIONAL INTEGRAL OPERATOR FOR A CLASS OF ANALYTIC STARLIKE FUNCTIONS

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ABSTRACT

In this paper, we determine a new class S(A,B,f,p,delta) of analytic starlike functions, using fractional integral operator, over the class of T*(A,B,p) with negative coefficients. Also we obtain certain properties of the above-mentioned class.

1. Introduction

A function f in T(p) in T*(A,B,p) if

|(zf'(z)/pf(z) - 1) / (Bzf'(z)/pf(z) - A)| < 1, z in U

where -1 <= A <= B <= 1. This class T*(A,B,p) studied by Goel and Soini [3].

Now, we have investigated a new class S(A,B,f,p,delta) of analytic starlike functions, using fractional integral operator, over the class of T*(A,B,p) with negative coefficients.

Let function G in S(A,B,f,p,delta) if

G(z) = (Gamma(1+p+delta)/Gamma(1+p)) * z^{-delta} * D_z^{-delta} f(z), z in U (1.1)

for some f in T*(A,B,p).

Where D_z^{-delta} f(z) denotes the fractional integral of f(z) of order delta and is defined by

D_z^{-delta} f(z) = 1/Gamma(delta) * integral from 0 to z of f(xi) * (z-xi)^{delta-1} * dxi (delta > 0)

here f is an analytic function in the z-plane containing the origin.

If we put the specific values of delta and p, we find subclasses of various researchers in earlier works:

- 1. If p = 1 in (1.1), then S(A,B,f,p,delta) reduces to the class S(delta,k,p,f) for some f in T(p,k), studied by Kumar [4].
2. If delta = 1 in (1.1), then S(A,B,f,p,delta) gives the integral operator

G(z) = (1+p)/z * integral from 0 to z of f(xi) * dxi

- 3. If p = 1 and delta = 1 in (1.1), then S(A,B,f,p,delta) reduces to

G(z) = 2/z * integral from 0 to z of f(xi) * dxi

New Frame Work of Repulsive Strength & Hardness Parameter of Alkali Halides

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Abstract

It was shown 30 years ago that the hardness of alkali halides increases considerably when low concentrations of divalent cations are incorporated in the crystal lattice. Recently, dielectric measurements have provided information about the manner in which the divalent cations are incorporated in the lattice. The measurements reported in this paper on NaCl: Ca²⁺, NaCl: Mn²⁺, KCl: Sr²⁺, KCl: Ba²⁺ and LiF: Mg²⁺ were undertaken to observe the effect of the state of aggregation of the divalent impurities on the critical resolved shear stress. The principal results are: (1) the increases in critical shear stress is proportional to $c^{2/3}$, where c is the concentration of divalent ion-vacancy pairs, (2) there is no increase in hardness as these divalent ion-vacancy pairs aggregate into groups of three (trimers), (3) in NaCl: Mn²⁺, KCl: Sr²⁺ and KCl: Ba²⁺ there is no increase in hardness as these trimers grow into larger aggregates, (4) in LiF: Mg²⁺ there is a large increase in hardness as the trimers grow into larger aggregates and (5) in NaCl: Ca²⁺ the hardness increases as a second region of dielectric absorption appears. It is concluded that although the structure of the trimer is the same in all these crystals, the trimer can grow in two ways, one of which produces an increase in the resistance to movement of dislocations. It is suggested that the aggregates which contribute to the increase in hardness in NaCl: Ca²⁺ are different in structure and do not grow from the trimers.

Keywords: Alkali Halides; Crystal Lattice; Divalent Impurities; Movement of Dislocations

Study of Phonon Conductivity of InSb in Temperature Range 2-200⁰K



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The recent modification of Holland's model two-mode conduction, as proposed by us, has been applied to explain the phonon conductivity of InSb. This model, known as the Sharma - Dubey - Verma Model makes use of Guthrie's Classification of three-phonon scattering events. In this model, the exponent of the temperature i.e., $T^m(T)$ is the continuous function of temperature and approaches unity in the high temperature region for both the longitudinal phonons as well as transverse phonons. The dispersion of acoustic branches is taken into account in replacing Vg/Vp^2 in the conductivity integrals and this forms the basic of the division of the conductivity integrals for the different polarization branches. The present models gives excellent agreement between the theoretical and experimental values of phonon conductivity expect near the maximum where the scattering of phonon by point defects dominates over phonon-phonon scattering as well as boundary scattering of phonons.

Introduction :

Recently wee have proposed a modification of Holland's Model' of two-mode conduction in semiconductors. The most significant feature of the present model [hereafter called the Sharma-Dubey-Verma (SDV) model] is the use of Guthrie's classification of three-phonon scattering events. In class-I events the carrier phonon is annihilated by combination and in class-II the annihilation takes place by splitting. Thus λ^{-1}_{3ph} is expressed as

$$(\lambda^{-1}_{3ph}) = \lambda^{-1}_{3ph}(\text{class-I}) + \lambda^{-1}_{3ph}(\text{class-II})$$

For transverse phonons this leads to

$$(\lambda^{-1}_{3ph})_{\text{trans}} = B_T w T^{m_T, 1(T)} e^{-\theta_T/T}$$

Since only class-I events are possible. For longitudinal phonons one obtains.

$$[\lambda^{-1}_{3ph}]_{\text{Long}} = B_{LT} w^2 T^{m_{L, 1(T)}} e^{-\theta_{LT}/T} + B_{LT} w^2 T^{m_{L, 1(T)}} e^{-\theta_{LT}/T}$$

Another significant feature of our present approach is the use of the dispersion relation $q = (w/v) (1 + w^2)$ to replace vg/vp^2 in the conductivity integrals. This gives.

$$vg/v^2P = (1/v) [(1 + \gamma w^2)/(1 + 3\gamma w^2)]$$

Where γ is given by $\gamma = (1/w^2) [(qv/\dot{w}) - 1]$

The conductivity integrals in the present model are divided on the basis of the nature of dispersion curves for transverse phonons and longitudinal phonons.

Thus division of conductivity integrals both for transverse as well as longitudinal phonons into two integrals is based upon the different two



DECISION SUPPORT SYSTEMS FOR NUTRIENT MANAGEMENT STRATEGIES

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ABSTRACT

Depleting natural resources and environmental pollution has become the biggest problem of mankind. Land degradation together with pressure of ever growing demands for food, fuel and fiber has further aggravated the problem by increasing the need for intensive cultivation and use of inorganic, non-degradable inputs for production. Soil is one of the most important natural resource for agriculture, finite in nature and subject to deterioration. It requires effective and efficient utilization for maintenance and conservation for future generations. It has been estimated that out of 329 m ha total geographical area of the country, the area under degraded lands has been estimated to be about 120.72 m ha (Map et al. 2010). Crop harvests tend to exhaust soils of their native nutrient pool, resulting in nutrient mining which if not adequately replenished results in decline of agricultural productivity over a period of time. The long term sustainability of production in agricultural systems depends upon proper management of soil fertility. It is often reported that a wide range of variation is observed between the potential and actual yield of the crops under farmers field. There are several factors like soil factors, climatic factors, plant factors and biological factors. The resultant of interaction of those factors ultimately determines the final outcome in the form of economic yield. Among soil factors, physical, biological and chemical health of soil and their management holds the key in terms of maintenance soil fertility and sustainable productivity. Farmers and land users need immediate solutions for various soil related issues so that adverse soil properties can be managed properly and their impact on crop production may be minimized.

To bridge the information gap, Information and Communication Technology tools viz., computers, Mobile Phones, etc., can play a pivotal role. As of 31 July 2017, the number of telephone subscribers was 1210.71 million (1186.79 million wireless and 23.92 million fixed landline telephones) as estimated by the Telecom Regulatory Authority of India (TRAI, 2017). The teledensity has reached 93.88 percent as of July 2017. However, there is a huge gap between urban and rural teledensity, 173.21 and 57.45 respectively. Mobile subscriptions are expected to reach 1.4 billion by 2021, according to the Ericsson Mobility Report of June 2016 (CNBC 2016). With increasing mobile ownership, mobile technology has many more advantages such as personalized information sharing, instant delivery of the message, mobility of devices, and the cheaper cost for deployment than any other ICT devices such as computers, Internet etc.,. Through mobiles, people in rural areas can connect with the local, regional and national knowledge centers able to receive farm-based services, access markets and avail banking/financial services. Soil health assessment is a tough task and various physical, biological and chemical properties need to be properly addressed while assessing the soil health. As of now there is lack of readymade tool available which can not only help in assessment of the soil health status but also suggest the suitable remedial measures to the users for management of problematic soil properties. Fertilizers, soil amendments and manures are integral part of crop production system and the soil

chemical properties has a direct influence on their quantity to be applied to the soil to obtain desired yield levels. There is lack of user friendly soil information based decision support systems that can empower the users to draw accurate results for various soil situations, crops to be grown, yield targets to be achieved etc. In general, blanket nutrient recommendations are advised based on the crop which the farmer would like to grow. Under such type of blanket recommendations, the important factors like the target yield which farmer would like to obtain from the crop, the genetic potential of the crop variety selected, soil efficiency and the added fertilizer nutrient use efficiencies which play an important role in the uptake of nutrients absorbed by the crop plants to the total quantity of the nutrients applied in the soil, are not properly taken into consideration. These factors resulted in huge differences in the yield from field to field even at same level of inputs, non-judicious application of nutrients either insufficient or excessive, which resulted in either poor crop yields or toxic effects of excessive fertilization. These ultimately resulted in huge differences in the expected and actual yield, non judicious application of nutrients, no considerations for limiting factors, poor nutrient use efficiencies, degradation of soil fertility, environmental pollution and poor economics of cultivation. These ultimately resulted in deterioration of soil health, affects the long term sustainability of the production system and farmers suffer huge losses.

System is an interactive user friendly system which

प्राचिन
 जनता कातेज, कातेज
 इत्यादि



Net mortality effect in *Diacrisia obliqua* caused by *Bacillus thuringiensis*

* Lalit Gupta

Abstract- *Diacrisia obliqua* Walker (Lepidoptera: Arctiidae) is a well known pest of various economically important crops. It causes a huge loss to farmers. In order to control this pest, preparation of *Bacillus thuringiensis* was administered and tested by Leaf Dip Method (LDM) and Topical Method (TM). It was found that bacterial preparation increases the net mortality in tested lepidopteran pest from lowest concentration (0.05%) to highest concentration (1.0%). It was also noticed that bacterial preparation is more effective under LDM.

Key Words- *Diacrisia*, *Bacillus thuringiensis*, Leaf Dip Method, Topical Method, Pest

Introduction: *Diacrisia obliqua* is a harmful polyphagous pest causing remarkable damage to several crops. Farmers have been using chemical pesticides to control *Diacrisia*. But Chemical pesticides are injurious to human & pet animals. They also cause development of resistance. They cause environmental pollution. So microorganisms like bacteria, virus & fungi are being used as biopesticides & have been tested against various pests. (Gupta L¹, 2016)

Bacillus thuringiensis (*B.t.*) is a gram positive bacteria. It has been reported to be pathogenic to over 500 insect species. It secretes a number of toxins during spore formation. Endotoxin is one of the most important toxins. It is proteinaceous in nature. (Bulla et. al.² 1977). It works on the cells of midgut epithelium upon ingestion.

Material & Method:

Male & female moths were captured to carry out the experiment. They were kept carefully. These insects ensured the regular availability of insects by reproduction. Adults were kept in glass chimneys but the larva were kept in large petridishes. When the larvae were full grown, they were transferred to pneumatic trough. 10-15 cm thick soil was kept in troughs on their bottom. for larvae to pupate.

Dipel, a commercial preparation of *B.t.* was taken as bacterial preparation. It is a wettable powder. It contains 25×10^9 viable spores of *B.t.*

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Effect of Bactospiene on post embryonic development of *Diacrisia obliqua*

* Lalit Gupta

Abstract- *Diacrisia obliqua* Walker (Lepidoptera: Arctiidae) is a well known Pest of various economically important crops. It causes a huge loss to farmers. In order to control this pest, bactospiene (a bacterial preparation) was administered and tested by Leaf Dip Method (LDM) and Topical Method (TM). It was found that bactospiene increases the larval and pupal periods thus reduces pupation and emergence from lowest concentration (0.05%) to highest concentration (1.0%). It was also noticed that bactospiene gives better results under LDM.

Key words: *Diacrisia*, Bactospiene, Leaf Dip Method, Topical Method, Pupation, Pest

Introduction: *Diacrisia obliqua* is a harmful polyphagous pest causing remarkable damage to several crops. Farmers have been using chemical pesticides to control *Diacrisia*. But Chemical pesticides are injurious to human & pet animals. They also cause development of resistance. They cause environmental pollution. So microorganisms like bacteria, virus & fungi are being used as biopesticides & have been tested against various pests. (Gupta L¹, 2016)

Bacillus thuringiensis (B.t.) is a gram positive bacteria. It has been reported to be pathogenic to over 500 insect species. It secretes a number of toxins during spore formation. δ endotoxin is one of the most important toxins. It is proteinaceous in nature. (Bulla et. al.² 1977). It works on the cells of midgut epithelium upon ingestion.

Material & Method: Male & female moths were captured to carry out the experiment. They were kept carefully. These insects ensured the regular availability of insects by reproduction. Adults were kept in glass chimneys but the larva were kept in large petridishes. When the larvae were full grown, they were transferred to pneumatic trough. 10-15 cm thick soil was kept in troughs on their bottom, for larvae to pupate.

Larvae for the experiment were obtained from eggs of females already treated with bactospiene. The number of larvae pupated, their developmental duration and survival were recorded.

Bactospiene is a commercial preparation of B.t. It is a wettable powder. It



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पत्रांक

Ref No/2023-24

दिनांक

Date.....

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during the last five years

S. No.	Title of paper	Name of the author/s	Name of journal	Calendar Year of publication
1	Screening and Characterization of L-Asparaginase producing bacteria from soil sample	Dr. Manoj Yadav	Int J of Micro Rex	2019-20
2	Studies on genetic component of variance in okra (Abelmoschus esculentus (L.) Moench)	Dr. Manoj Yadav, Kumar S. Vishwakarma	International Journal of chemical studies	2019-20
3	Constraints regarding adoption of dairy cattle and farmers in Etawah district 12(20)	Dr. Aditya Kumar	Trends in Bio Sciences (an international Journal)	2019-20
4	Involvement of Farm women in Agriculture and livestock sector in the basarehar block of Etawah	Dr. Aditya Kumar	Trends in Bio Sciences (an international Journal) 12(20)	2019-20
5	Effect of herbal liver stimulants on growth and performance of Broiler chicks	Dr. Aditya Kumar	Indian journal of extension education	2019-20
6	Plant DNA amplification fingerprinting: a strategy for plant genomic analysis	Dr. Dharmendra Kumar	International journal of engineering science invention	2019-20
7	Studies on interaction of fadder trees species on soybean yield and biomass productivity in Northern transition zone of Karnataka	Dr. Dharmendra Kumar	Progressive Research (an International Journal)	2019-20
8	Impact of farmers LED integrated pest management in cauliflower cultivated in southwest Delhi	Dr. Dharmendra Kumar	Progressive Research (an International Journal)	2019-20
9	Follar fertilization of vegetable and fruit plants	Dr. Dharmendra Kumar	Progressive Research (an International Journal)	2019-20
10	Effect of moisture management in eroded soils on rainfed sorghum varieties of central U.P.	Dr. P.K. Rajput	Plant Archives	2019-20
11	Effect of Organic manure and Plant growth regulators and flowering in Gladiolus Cv. Nova Lux.	Dr. P.K. Rajput	International Journal of Applied Research	2019-20
12	A Convolution Approach to Certain Subclasses of Multivalent Functions Related to Complex	Dr. Nalini Shukla	TEST engineering and management	2019-20

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Ref No/2023-24

दिनांक

Date

13	Certain Class of Multivalent Functions in Terms of Fractional Derivative	Dr. Nalini Shukla	Kaav International Journal of Arts, Humanities & Social Sciences (A Refereed Blind Peer Review Journal)	2019-20
14	Soil health under maize- wheat cropping system influenced by tillage options and summer green manuring	Dr. Mahi Pal Singh	Pharma innovation journal	2019-20
15	Consortia and network	Mr. Mr. Ram Das Verma	Our heritage journal	2019-20
16	Sterility Effect of Thuricide in <i>Diacrisiaobliqua</i> Walker	Dr. Lalit Gupta	Res. J. of Social and Life Science	2019-20
17	Effect of Dipel on Fecundity and Fertility of <i>Diacrisiaobliqua</i>	Dr. Lalit Gupta	Res. J. of Social and Life Science	2019-20
18	Effect of different Basal doses of boron on growth and Yield of Urdbean (<i>Vignamungo</i> L.)	Dr. S. K. S. Chandel	International Journal of current microbiology and applied sciences	2019-20
19	Effect of in and N sources on wheat (<i>TriticumAestivum</i> L.)	Dr. S. K. S. Chandel	International Journal of Agriculture Sciences	2019-20
20	Convergence & Expansions: A Study of Private Vs Public Sector Emergence	Dr. YOGESH SHUKLA	JICR	2019-20
21	Study on heritability and genetics advance in okra (<i>Abelmoschia esculenta</i> (L.) Moench)	Dr. Sanjeev Kumar, Dr. M.K. Yadav, Dr. S.K. Vishwakarma	Int J of Genetics	2019-20
22	Studies on genetic component of variance in okra (<i>Abelmoschus esculenta</i> (L.) Moench)	Dr. Sanjeev Kumar, Dr. M.K. Yadav, Dr. S.K. Vishwakarma	Int J of Chemical Sciences	2019-20
23	Correlation Coefficient analysis in okra [<i>Abelmoschus esculentus</i> (L.) Moench]	Dr. Sanjeev Kumar, Dr. M.K. Yadav, Dr. S.K. Vishwakarma	Int J of Genetics	2019-20

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Research Article

SCREENING AND CHARACTERIZATION OF L-ASPARAGINASE PRODUCING BACTERIA FROM SOIL SAMPLE

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Abstract- Asparaginase isolated from muddy soil, collected from cancer hospital garden and some other places of Gwalior. L-Asparaginases have been used as an anti-tumor agent for the effective treatment of acute lymphoblastic leukemia and food processing and reduce the acrylamide formation during frying of starchy food at high temperature. In the present study, we isolate bacteria (producing asparaginase enzyme) strains from soil. The isolated bacteria were screened for L-Asparaginase producing using M-9 medium on the basis of pink zone formation. An enzyme isolated from the bacterium *Escherichia coli* or *Erwinia carotovora* with anti-leukemic activity. L-Asparaginase are hydrolyzed into L-aspartic acid and ammonia in leukemic cells, resulting in the depletion of asparagine, inhibition of protein synthesis, cell cycle arrest in the G1 phase, and apoptosis in susceptible leukemic cell populations. The *Erwinia carotovora*-derived form of asparaginase is typically reserved for case. At present, the principal source of L-asparaginase for clinical trials is the bacteria *E. coli*; several other alternative sources are screen for production of large quantities of L-asparaginase than *E. coli*.

Keywords- De-novo, *Erwinia carotovora*, L-Asparaginase, Lymphoblastic leukemia

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Academic Editor / Reviewer: Kiranjot Kaur

Introduction

L-Asparaginase is an effective anti-leukemic agent in mice and rats. Currents clinical studies indicate that this enzyme is also a promising agent in treating some forms of neoplastic cell disease in man. At present, the principal source of L-asparaginase for clinical trials is the bacteria *E. coli*; several other alternative sources are screen for production of large quantities of L-asparaginase than *E. coli*. L-asparaginase an enzyme isolated from the bacterium *Escherichia coli* or the *Erwinia carotovora* with anti-leukemic activity. Asparaginase are hydrolyzes in to L-aspartic acid and ammonia in leukemic cells, resulting in the depletion of asparagine, inhibition of protein synthesis, cell cycle arrest in the G1 phase, and apoptosis in susceptible leukemic cell populations. The *E. carotovora* derived form of asparaginase is typically reserved for case. Several micro-organisms including *Serratia marcescens* produce L-asparaginases with antitumor activity. L-Asparaginase catalyzes the hydrolysis of L-asparagine into L-aspartate and ammonia. The precise mechanism of its action is still unknown although hydrolysis proceeds in two steps via a beta-acyl-enzyme intermediate. Asparaginase enzyme is produced throughout the world by submerged fermentation in soil bacteria. Solid-state fermentation is a very effective technique as the yield of the product is many times higher. When compared to that in, and it also offers many other advantages. Microbial asparaginases have been particularly studied for their applications as therapeutic agents in the treatment of certain types of human cells. Asparagine can either be produced within a cell through an enzyme called 'asparagine synthetase' or it can absorb into the cell from the outside. Tumor cells more specifically lymphatic tumor cells, require huge amounts of asparagine to keep up with their rapid, malignant growth. This means they use both asparagine from the diet as well as what they can make themselves to satisfy their large asparagine demand. Broome in 1961 [1] discovered that the regression of lympho-sarcoma transplants in mice treated with guinea-pig serum was due to the nutritional dependence of the malignant cells on exogenous L-asparagine.

Curran et al [2] first reported deamidation of L-asparagine by extracts of *E. coli* in commercial production of L-asparaginase appeared desirable only after Mashburn and Wriston [3] showed that L-asparaginase from *E. coli* inhibits tumors in mice.

Materials and Methods

Sample Collection

The soil samples were collected from different places of Gwalior regions. To 3 cm sediment sample was taken out with the help of a sterile spatula and this sample was transferred to a sterile polythene bags and transport to laboratory. The samples were air dried at room temperature.

Isolation of bacteria from the soil sediments

1gm of soil was dissolved in 100 ml of distilled water and 1ml of serial dilution was spread plated on nutrient agar medium using dilution plate's technique. All the plates were incubating at 30°C in an incubator for 24 hours. After incubation colonies were selected and Streak it on modified M-9 medium.

Screening for L-Asparaginase Production

The bacterial strains were grown on M-9 media for 24 hours for identification of asparaginase producing bacteria. The modified M-9 mediums incorporate with phenol red as pH indicator will be used. L-asparaginase activity of bacteria was identified by formation of pink zone around colonies after overnight incubation of culture.

Characterization of bacteria isolate

Isolated colonies were identified, identification of isolated colonies was carried out by simple staining, gram's staining and motility testing by hanging drop method. Biochemical characterization was used for characterization of bacteria.

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**PROMOTING & REINVIGORATING AGRI-HORTI,
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[PRAGATI-2019]
(14-15 December, 2019)**

Studies on genetic component of variance in okra [*Abelmoschus esculentus* (L.) Moench]

S Kumar, SK Vishwakarma, MK Yadav and JR Yadav

Abstract

The experiment was conducted with 120 treatments (28 F₁s, 28 F₂s, 28 B₁s and 28 B₂s Populations) developed through diallel cross including reciprocals along with 8 parents viz., AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and JK in a randomized block design in three replication at the Research Farm of the Department of Vegetable Science, C. S. Azad University of Agriculture and Technology, Kalyanpur, Kanpur during kharif 2006. The observations were recorded for 10 quantitative traits namely days to flowering, height of plant (cm), number of branches per plant, number of first fruiting node, number of nodes per plant, length of internode (cm), length of fruit (cm), width of fruit (cm), number of fruits per plant and yield per plant (g). The study was revealed that the genetic component of variance showed both additive and dominance component of variance were significant for all the characters in both the generations except height of plant and width of fruit in F₁ generations and yield per plant in F₂ generation. In additive component and width of fruit in F₁ for dominance component. Overdominance component for all the characters in both the generations except number of fruits per plant and yield per plant.

Keywords: Diallel cross, genetic component variance, okra, quantitative traits

Introduction

Okra is one of the important vegetable of the tropical and sub-tropical regions of the world and is native to tropical Africa. It is grown for its green tender fruits during summer and rainy season through fresh, dried, or even fresh, canned or frozen. A good knowledge of the nature and mode of inheritance of quantitative characters of economic importance is helpful to formulate a more effective breeding programme. Diallel analysis is useful device for obtaining important information of gene action involved in the inheritance of different quantitative traits. Diallel analysis (Hall et al., 1975 and Kulkarni, et al., 1976) [1, 2] have studied the nature of gene action for number of biometric traits in okra. However, as the gene action differs from character to character, it is essential. Therefore, the present study was undertaken to elucidate the nature of gene action of gene action involved in the inheritance of fruit yield and its component.

Materials and Methods

A set of 8 parental genotypes (AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and JK) were crossed in diallel cross including reciprocals. All the 28F₁s, 28F₂s, 28B₁s and 28B₂s along with 8 parents were raised in randomized block design in three replications at the Research Farm of the Department of Vegetable Science, Chandra Shekhar Azad University of Agriculture and Technology, Kalyanpur, Kanpur during kharif 2006. Parents were sown in single row with 10 plants per row and F₁ and F₂ were sown in 20 plants per row.

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Constraints Regarding Adoption of Dairy Cattle by Farmers in Etawah District

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ABSTRACT

Many farmers in India depend on animal husbandry for their livelihood. In addition to supplying milk, meat, eggs, wool, their castings (dung) and hides, animals, mainly bullocks, are the major source of power for both farmers and drayers. Thus, animal husbandry plays an important role in the rural economy. The Department of Animal Husbandry and Dairying (DAHD) released a census report of livestock population for the year 2019 on October 16. The data revealed that the livestock population in India has grown by 4.6% from 512 million in 2012 to about 536 million in 2019. The total milch animals (In-milk and dry) in cows and buffaloes are 125.34 million, an increase of 6.0 % over the previous census. The total sheep in the country is 74.26 million in 2019, increased by 14.1% over previous. The study was purposively conducted in Bharathana of Etawah district (U.P.) on the ground of being major livestock areas. Four villages were randomly selected from the village list of the block for the study. Thus, there were 100 respondents in total for study undertaken through proportionate random sampling technique and the investigator himself collected data with the help of pre tested interview schedule. Most of the constraints regarding to dairy cattle in marketing (88.14%), followed by health (81.14), feeding (80.36%), cattle management (77.70%) and breeding (60.13%), respectively. It means, if selling of farmer's dairy products at best price then farmers may be able to keep the increase dairy cattle with handle the problem to achieve the higher production of milk.

Keywords Adoption, Dairy Cattle, Farmers, Etawah

Livestock sector is one of the most important sources of livelihood in rural domain and livestock farming is mainly under the control of rural women at household level. But unfortunately, they have least access to livestock extension services. There are many constraints which are being faced by women livestock farmers in availing the livestock extension services. Jyoti Yadav, et.al. (2017). Constraints to household level animal source food production in developing countries and suggests solutions to some of these constraints.

These constraints include land, labor, money, feed quality, water, disease, animal genetics, roles for animals beyond food production, grazing techniques and an understanding of the entire agricultural system at the household level. Better understanding of farming systems and the elements that comprise it which affect animal food production permits wise management of nutrient flows and enhanced sustainability. Dan L. Brown (2003). India possesses great potential in animal husbandry sector. The development of livestock sector is often considered as 'pro-poor'. The productivity enhancement can be made by adoption of animal husbandry practices and also by providing the systemic approach to generate empirical data on various socio-economic factors and constraints associated with the adoption of scientific animal husbandry techniques. Adoption of any animal husbandry technique involves a process in which awareness is created, attitude is changed and favorable conditions for adoption are provided. Sheikh Umair Minhaj et.al. (2019). Livestock is an essential part of the socio-economic structure of rural India as a source of livelihood and provider of draught power, manure and energy. The development of livestock sector is often considered as 'pro-poor'. The livestock products' demand is more income elastic, as income rises in relation to the cost of living, consumers generally tend to spend more on protein products of animal origin than before. It has been estimated that by the year 2020 the demand of milk will rise to 131-158 million tonnes (Paroda and Kumar, 2000). This would require an incremental addition of about 5 million tonnes of milk per year over next 15 years as compared to 2.5 million tonnes increment in the last 15 years (National Dairy Plan, 2021).

In this context, livestock dairy and animal husbandry department (Department of Animal Husbandry and Dairying -DAHD) play a vital role in livestock development, not only physically distributing increased production through incentives but also

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Involvement of Farm Women in Agriculture and Livestock Sector in the Basarehar Block of Etawah District

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ABSTRACT

Many farmers in India depend on animal husbandry for their livelihood. In addition to supplying milk, meat, eggs, wool, their castings (dung) and hides, animals, mainly bullocks, are the major source of power for both farmers and drayers. Thus, animal husbandry plays an important role in the rural economy. Rural women play a key role in agricultural sector production by working with full passion in production of crops right from the soil preparation till post harvest and food security activities (Habib, 1996; ESCAP, 1996; Ahmed & Hussain, 1986). The caste system in India separated into economic and social strata by birth. The rigid hierarchy remained largely in place for many countries, despite periodic challenges from social and religious reform movements. The study was purposively conducted in Basarehar block of Etawah district (U.P.) on the ground of being a major rice growing area and livestock areas. Four villages were randomly selected from the village list of the block for the study. In Agriculture activities related that as compare to women, women average contribution was more but almost same (50.06 %) out of 16 agricultural activities and man contribution was (49.94%). Out of 16 agricultural activities, in three activities major contribution of man were found with agriculture as (1) Ploughing (100%) (2) Preparation of field (96%) and (3) Marketing (92%), similarly women contribution was (1) Preparation food for family (100%) (2) Preparation of food for labour (100%) and (3) Cleaning of seed (98%), respectively. But in 12 livestock activities as compare to man, women average contribution was more (58.17 %) and man contribution was (41.83%). Livestock production is largely in the hands of women. Similar finding have been reported by S.J. Patel et.al. (2016).

Keywords Farm Women, Agriculture and Livestock Sector, Basarehar Block, Etawah

Gender refers to the socially determined differences between women and men, such as roles, attitudes, behaviours, and varies across gender roles are learned and vary across cultures and overtime. They are, thus amenable to change. Gender is a

relational term that includes both women and men. Gender equality focuses on changes for both women and men.

India is an agriculture based country and livestock sector is an integral component of it where, livestock production is largely in the hands of women. Most of the animal farming activities such as fodder collection, feeding, watering, and health care, management, milking and household-level processing, value addition and marketing are performed by women. S.J. Patel et.al. (2016). Swaminathan, the famous agricultural scientist describes that it was woman who first domesticated crop plants and thereby initiated the art and science of farming. While men went out hunting in search of food, women started gathering seeds from the native flora and began cultivating those of interest from the point of view of food, feed, fodder, fibre and fuel. Women have played and continue to play a key role in the conservation of basic life support systems such as land, water, flora and fauna. They have protected the health of the soil through organic recycling and promoted crop security through the maintenance of varietal diversity and genetic resistance.

That women play a significant and crucial role in agricultural development and allied fields including in the main crop production, livestock production, horticulture, post harvest operations, agro/ social forestry, fisheries, etc. The nature and extent of women's involvement in agriculture, no doubt, varies greatly from region to region. Even within a region, their involvement varies widely among different ecological sub-zones, farming systems, castes, classes and stages in the family cycle. But regardless of these variations, there is hardly any activity in agricultural production, except ploughing in which women are not actively involved. Studies on women in agriculture conducted in India and other developing and under developed countries all point to the conclusion that

Effect of Herbal Liver Stimulants on Growth and Performance of Broiler Chicks

S.P.S. Somvanshi^{1*}, Ramjee Gupta², Navneet Kaur³, Aditya Kumar⁴ and Nitin Pandey⁵

ABSTRACT

The study was carried out on effect of herbal liver stimulants on growth and performance of broiler chicks. Hundred, one day old commercial broiler chicks were randomly selected. These were divided into four groups (G1, G2, G3, and G4) of 25 each. Treatment groups G2, G3, and G4 were provided 3ml, 6ml and 9 ml herbal liquid liver stimulant in drinking water per 25 chicks per day for 0-3 weeks on starter ration and 6ml, 9ml and 12ml herbal liquid liver stimulant per 25 chicks per day on finisher ration respectively. In the control group G1 no addition feed supplement given for 0-3 and 3-5 weeks. It was observed that growth rate, feed conversion efficiency, livability and dressing percentage were significantly higher in herbal liver stimulant feed supplemented groups compared to control. This indicates incorporation of herbal liver stimulant feed supplement in broiler ration level @ 9 ml/100 broiler chicks/day upto 0-3 weeks of age and @12 ml/100 broiler chicks/day 3-5 weeks of age is profitable in broiler production.

Keywords: Body weight gain, Broilers, Feed efficiency, Growth performance, Herbal liver stimulants, Herbs

INTRODUCTION

In India broiler production is 3.8 million tons fourth largest in the world after US, Brazil and China. The global poultry sector has been primarily characterized by a continuous growth in demand over the years. It is expected that the broiler enterprises will have an annual growth of 20 per cent and layers production about 10 per cent. Poultry species are efficient converters of feed into animal protein of high biological value as compared to other livestock species. The continuous increasing demand in the country creates a great scope for poultry enterprises like broiler and layer farming. Constraint lies with the feed resources as it has been observed that feed cost alone constitute about 60-75 per cent of the total cost of the poultry production. Any effort to improve feed

efficiency through the knowledge of poultry nutrition and feeding will go a long way to improve the profit margins of the poultry farmers. It is essential to further enhance the feeding value of available feed resources. Hence, it is necessary to improve the efficiency of feed utilization and minimize the cost of feed per kilogram live weight gain. Studies of several researches had indicated that the feed supplement, containing important vitamins, minerals and other feed constituent might be useful. These supplements improve performance by enhancing growth rate, feed efficiency and confer immunity against various, disease and disorders. It will not only reduce the cost of production but also will in enhance the overall productivity of the birds. Seasonal changes manifest a risk of disease and liver is the major organ affected. Thousands of herbal and traditional compounds are being screened worldwide

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प्राचार्य

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STUDIES ON INTERACTION OF FODDER TREES SPECIES ON SOYBEAN YIELD AND BIOMASS PRODUCTIVITY IN NORTHERN TRANSITION ZONE OF KARNATAKA

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ABSTRACT

Agroforestry systems have been highlighted in the agricultural environment as an alternative form of sustainable production to meet the growing demand for food and energy with less environmental impact. In order to reach the aim of this study, the ideal fodder trees species and the productive performance of soybean were evaluated. Maximum DBH was exhibited in the *Moringa* spp. followed by *Leucaena leucocephala* and *Glyricidia sepium*. Number of branches per tree were significantly higher in *L. leucocephala* followed by *G. sepium*. Productivity of green biomass yield registered maximum in *M. olifera* and *G. sepium* species. Among fodder species, *A. lebbeck* and *L. leucocephala* were found superior as they present the potential to compose the agroforestry systems due to their canopy structure and leaf architecture provide greater availability of light, moisture and soil nutrient in system. Field crop yield decreased up to 40% as the advances in age of fodder trees as compared to monocropping in system. Chlorophyll content was significantly higher in sole soybean followed by soybean grown with *L. leucocephala* and soybean with *A. lebbeck* as compared to soybean with other fodder tree species. Single Photoelectric Analyzing Diode (SPAD) values and Leaf Area Index were higher in Soybean crop when grown solely followed by soybean + *L. leucocephala*. Soil moisture was higher in soybean with *Bauhinia purpurascens* among the other fodder trees species.

Key words : crop systems, sustainable production, tree pruning, green biomass, yield traits.

Agroforestry systems consisted integrated land use for forestry and agricultural purposes, exploring plant resources in a rational way through activities with lower environmental impact in relation to systems, where only one culture is conducted (1). Agroforestry systems have been considered as an effective practice to alleviate the conflicts between the rapidly growing population and the limited arable land resources. The rapid changes occurring in the agricultural environment associated with increasing population demand for energy and food has increased the need for the development of more sustainable agriculture. Agroforestry is an age old practice of country, which meets fodder, fuel wood, timber and also act as insurance against aberrant weather conditions.

Soybean (*Glycine max*) stands out in the world agricultural scenario for being one of the main sources of protein and vegetable oil, widely used in food and feed. Growing of soybean in the interspaces of fodder trees species is reported to be more economical and assure regular income from agroforestry system (2). The effects of trees on crop are not consistent. These effects may be complementary or competitive depending upon the level of competition for growth resources between woody component crops and also site conditions. Therefore, the use of culture in intercropping systems, as in the case of agroforestry systems, emerges as an alternative for more sustainable production through the intensification of land use, insertion of marginalized areas into the production

system and reduction in the exploitation of new areas, thus contributing to the maintenance of biomes. Simultaneous growth and development of different fodder species in the same production area occurs in consortium systems, thus promoting changes in plants' community interactions.

Therefore, Silvicultural practices such as canopy driving and tree pruning/topping are indispensable when the aim is to increase the transmissivity of solar radiation by the understory and achieve balance between agricultural and forestry farming in order to meet high-yield, high-efficiency and stabilization. It will well recognized that the effects of trees when grown in close proximity to field crops may be complementary or competitive which result in increase or reduction of yield of agricultural crops. Soybean is a valuable crop now gaining importance due its industrial value. Considering the importance of alternative production systems and the scarcity of information about them, the present study had as an objective to evaluate the effect of different fodder trees species and crop combinations with trees planted individually at random, as a common practices seen in farmers' field under rain fed conditions in Northern transition zone of Karnataka.

MATERIALS AND METHODS

A field experiment was initiated to know the effect of fodder tree species on soybean in black clayey soils under rainfed conditions at Dharwad during 2013. Field crops viz



IMPACT OF FARMERS-LED INTEGRATED PEST MANAGEMENT IN CAULIFLOWER CULTIVATED IN SOUTH-WEST DELHI

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ABSTRACT

Implementation of Integrated Pest Management programme in irrigated cauliflower crop led to reduction in number of conventional pesticide sprays by 50-60 %. Krishi Vigyan Kendra, Delhi had conducted Front Line Demonstration (FLD) on Integrated Pest Management (IPM) at the farmers field in the villages of South-West district of Delhi during 2010-11, 2012-13 and 2013-14. 15 farmers during 2010-11 and 10 each during 2012-13 and 2013-14 respectively were selected randomly from the villages. The farming situation of demonstration fields were irrigated, low in nitrogen, medium in phosphorus and potash and the soil was sandy loam.

Integrated Pest Management (IPM) is a sustainable approach to managing insect pests by using biological, cultural and chemical methods. The aim is to ensure high-quality agricultural production and at the same time the reduction of environmental, economic and health risks through pesticides. Strategies can include monitoring of pests and therefore an optimal timing of pesticide application, use of selective insecticides, trap crops, use of pheromone traps, resistant plant varieties and favouring natural enemies.

Cauliflower is an important vegetable crop for growers of India. Its total acreage in India is 0.35 million hectare with a production of 6.5 million tons, which makes it fifth important vegetable crop after potato, onion, tomato, egg plant and okra. The intensive cultivation of cauliflower in peri urban areas of NCT Delhi is very common due to continuous demand and marketing opportunity in well established national vegetable Markets. During past several years, the tobacco caterpillar (*Spodoptera litura* F.) has been the most difficult insect pest to control with cabbage head borer (*Heliothis undalis*), Alternaria leaf spot (Kohl et al., 2010) and damping off (Bhagat & Pan, 2005) also complicating Integrated Pest Management (IPM) decision-making in cauliflower. Most growers continue to apply 10-12 pesticide applications for kharif season crop which last for a period of 4 months from June to mid October (Weinberger & Srinivasan, 2009). High frequency of pesticides application results in residues above maximum limit value.

There are many tracking technologies that have shown promising results for management of different pest problems as stated above. But these have neither featured prominently by practicing together to evolve comprehensive management strategy such as IPM nor provide proportionate economic returns. Attempts to integrate the promising technologies into operational IPM

programme have been made in the present demonstration for management of cauliflower pests in farmer's participatory mode. The major focus of this approach was on replacement of such insecticides to which the pest had developed resistance with newly introduced effective insecticides integrating them with other proven methods of pest control against the cauliflower pests.

MATERIALS AND METHODS

The Villages of Najafgarh block of South-West district in NCT Delhi were selected for the demonstration of IPM module on cauliflower crop. Generally locations in India where vegetables are grown extensively and intensively are near to the major towns which facilitate the grower to sell their produce at a competitive price as well as outlets of buyers having big brand names are available who purchase the harvested produce with convenience from a farmer that provides them with regular cash inflow. Before commencement of implementation of IPM FLDs, farmers were selected at random on the basis of their experience in vegetable growing, cropping system, cauliflower cultivation practices, extension contacts and exposure in area.

IPM approach : Various components of IPM technology selected for demonstration field are presented in table 1. Testing of various components of IPM approach was based on the previous results that confirmed the effectiveness of application of bio pesticides. The use of reduced risk pesticides was limited to late stage of the crop growth based on timely monitoring and threshold based on the percentage of plants infected with different pests.

IPM intervention applied in nursery : For sowing of seeds, raised beds of 10 cm height were prepared in a well drained area so that excess water could be drained in case of heavy rains. 5 kg of *Trichoderma harzianum*


जानती कालेज, बरे इ



FOLIAR FERTILIZATION OF VEGETABLE AND FRUIT PLANTS

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ABSTRACT

It is a tough challenge for developing countries to produce sufficient food for growing population, proper growth and protection of plants, animal and human health, and simultaneously conserving the environment. Green revolution technologies have doubled the yield of rice and wheat. Green revolution has been made a success only with the help of agrochemicals such as manures, chemical fertilizers, organic fertilizers and pesticides. Still quantities of food products are limited due to the shortage of rains (drought), climatic changes and growing pests. As a part of green revolution technologies, a recently developed technique, Foliar feeding is a way of feeding plants by applying liquefied fertilizers directly onto the plants leaves and stems. The absorption takes place through their stomata and also through their epidermis. Transport is usually faster through the stomata. It has been investigated that the plant absorbs fertilizers faster through the stomata on their leaves and it makes the leaves an ideal point of entry for the micronutrients that may be difficult to percolate to the soil. Therefore, plants can be grown healthier in turn the yield of vegetables and fruits will increase with the minimum quantity of fertilizer. In this paper various features such different procedures, advantages and disadvantages of this technique have been discussed.

Key words: Foliar Fertilizer, Vegetables, Fruit Plants, Pesticides, Transport, Agrochemicals

The manures and fertilizers are the source of nutrients. The essential elements are divided into two groups, the macronutrients including carbon (450,000 ppm, 45%), hydrogen (60,000 ppm, 6%), oxygen (450,000 ppm, 45%), nitrogen (15,000 ppm, 1.5%), phosphorus (2,000 ppm, 0.2%), potassium (10,000 ppm, 1.0%), calcium (5,000 ppm, 0.5%), magnesium (2,000 ppm, 0.2%) and Sulphur (1,000 ppm, 0.1%) and the micronutrients including iron (100 ppm, 0.01%), chlorine (100 ppm, 0.001%), manganese (50 ppm, 0.005%), boron (20 ppm, 0.002%), zinc (20 ppm, 0.002%), copper (5 ppm, 0.0005%) and molybdenum (0.1 ppm, 0.0001%). Other essential nutrients, hormones, are produced in one part of a plant and transported to other parts and they are effective in very small quantity. A particular hormone may have different effects because effect depends on the target tissues. Auxin, one of the most important plant hormones is produced by growing stem tips and transported to other parts where it may either promote growth or inhibit. It also retards the abscission (dropping off) of flowers, fruits and leaves. Synthetic auxins are used to induce adventitious roots from plant cuttings generally in nurseries. Weed control by another synthetic auxin (2, 4-dichlorophenoxyacetic acid (2-4 D)) is wide spread as a selective herbicide against broadleaf weeds. Foliar feeding is a particularly useful technique for hormones feed. Foliar sprays (1) are useful for delivering fertilizers, fungicides, pesticides and PGR's to plants. Foliar sprays are broadly categorized as either

"non-systemic" or "systemic". Non-systemic sprays are useful to treat the problems, present on the surface of the leaf. Most pesticides and fungicides are non-systemic. Some fertilizers, many fungicides PGR's are the common examples of systemic sprays which are absorbed into the plant via stomata and then transported via the vascular system to the parts where they are needed. In the spray solution a wetting agent is also mixed to break the spray in small droplets, to increase the coverage and effectiveness of the feed. Wetting agent lowers the surface tension of the droplets so they collapse and cover a large area in turn easy access to more stomata so that the leaf can absorb more solute. The application of foliar sprays is an important crop management strategy, which may help maximizing crop yield and quality. Foliar pest-icide spray is used since long for protecting plants and providing good quality of foodstuffs. Now foliar fertilization is also used as a means of supplying supplemental doses of macro and micro nutrients, plant hormones, stimulants and other beneficial substances. Foliar fertilization has increased the yield, provided resistance to diseases and pests, improved drought tolerance, and enhanced crop quality in turn quality of grains, vegetables, fruits etc.

2. ADVANTAGES OF FOLIAR FEEDING

(a) Plants take in nutrients more efficiently through their stomata and epidermis (plant pores) on their leaves and stems than they do through root uptake.

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EFFECT OF MOISTURE MANAGEMENT IN ERODED SOILS ON RAINFED SORGHUM VARIETIES OF CENTRAL U.P.

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Abstract

A field experiment was conducted on light textured soil at Kanpur during *kharif* 2015 and 2016 to study the effect of moisture conservation practices (farmer's practice, ridging and furrowing and mulching) on splash loss, canopy development, water use, water use efficiency, root development, growth behaviour and yield of sorghum varieties (Sara-400, Hi-tech-3201 and Rama-40) under rainfed condition. Results revealed that variety 'Rama-40' performed better with a yield level of 26.20 q ha⁻¹, total water use of 386.0 mm and also had a higher net return (Rs 32067 ha⁻¹) as well as B:C ratio (2.09). Organic residue mulching in between the crop rows at 25 DAS gave significantly higher grain yield (26.70 q ha⁻¹) and stover yield (86.20 q ha⁻¹) over ridging and furrowing as well as farmer's practice treatments. The higher WUE (7.51 kg grain ha⁻¹ mm⁻¹ of water) and net return (Rs 27970 ha⁻¹) were also recorded when mulching practice was adopted. Maximum splash loss was observed under farmer's practice followed by ridging and furrowing and minimum under mulching plot.

Keywords: Moisture management, varieties, splash loss, canopy development, yield attributes, yield, net return and B:C ratio

Introduction

Indian agriculture is dominated by rainfed farming. Rainfed agriculture contributes to 42% of the national food grain production mainly through sorghum, millets and pulses, therefore dryland areas are important for the economy of the country and will continue to be so in future. Crop grown in rainfed condition are prone to water stress, owing to rapid loss of soil water from profile resulting in low water availability for root growth. Moisture conservation practices changes its structure, controls the weeds and improve the water holding capacity of soil (Rao *et al.*, 2010). The cultivation of sorghum hybrids was found more economical than traditional varieties. It seems to be desirable that local or improved varieties of sorghum may be replaced by sorghum hybrids for higher crop yield and profit even under rainfed condition (Mishra *et al.*, 2015). Therefore, the present investigation was undertaken to study the moisture conservation practice effects on growth, WUE, root development and yield of rainfed sorghum varieties in light textured eroded soil of Central Uttar Pradesh.

Materials and Methods

A field experiment on rainfed sorghum was conducted during *kharif* seasons of 2015 and 2016 at Soil Conservation and Water Management Farm of Chandra Shekhar Azad University of Agriculture & Technology, Kanpur on eroded alluvial sandy loam and calcareous soil. The experimental site had a slope of 1.8% with the top soil washed out by water

erosion. However, the area was made cultivable by bunding. Initial soil properties of the experimental field (0-25 cm depth) are given below.

- (A) Mechanical composition
 Coarse sand = 55.1%
 Fine sand = 10.0%
 Silt = 17.4%
 Clay = 16.4%
- (B) Physical properties
 Bulk density = 1.38 Mg m⁻³
 Particle density = 2.60 Mg m⁻³
 Total porosity = 46.9%
 Field capacity = 18.3%
 Wilting point = 6.0%
 Water holding capacity = 28.3%
- (C) Physico-chemical properties
 pH = 7.8
 EC = 0.26 dSm⁻¹
- (D) Chemical properties
 Organic carbon = 0.31%
 Total-N = 0.029%
 Available-N = 168.8 Kg ha⁻¹
 Available P.O. = 15.8 kg/ha
 Available K₂O = 193.0 kg/ha

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Effect of organic manure and plant growth regulators on vegetative growth and flowering in gladiolus Cv. Nova Lux

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Abstract

The experiment was conducted in Randomized Block Design (RBD) with three treatments. A first experiment was carried out to assess the effect of vermicompost (20t/ha, 15t/ha), FYM (20t/ha, 15t/ha) and Poultry Manure (20t/ha, 15t/ha), Vermicompost + GA3 (20t+100ppm, FYM + GA3 20t + 100ppm) and Poultry Manure + GA3 (20t+100ppm) on growth and flowering in Gladiolus Cv. Nova Lux. Application of Vermicompost + GA3 20t+100 ppm shows increasing growth character like Height of plants, Number of sprouts per corn, Length of largest leaf, Width of longest leaf, Number of leaves per plant and flowering characteristics such as Number of days for emergence of spike, Length of spike, Number of Florets per spike, Diameter and Length of Florets. Showed the maximum value followed by Poultry Manure+GA3 20t+100ppm.

Keywords: Vermicompost, FYM, poultry manure and GA3

Introduction

An important role of flower in human's life that it is used to convey emotions and thoughts. Flowers are associated with mankind since the dawn of the civilization. They are symbol of love, beauty and tranquility. In India, we have been growing and using flowers for time immemorial. Flowers have become integral part of our day to day life. Gladiolus occupied about 0.05 percent of the total cut flowers produced which is much lesser. In Maharashtra, gladiolus is cultivated in large scale in Pune, Nashik, Solapur, Kolhapur, Aurangabad, Nalgonda districts. In India gladiolus is cultivated in an area about 11660 ha. The total area under floriculture was 305000 ha during 2019-2020 with a production of 2301 thousand tone of loose flower and 762 million cut flower (<http://agribusiness.com>). It has bright, beautiful and different coloured flowers which are used as cut flowers, herbaceous border, bedding, rockers pot it is also used in bouquet and flower arrangement having to excellent keeping quality. Gladiolus is a valuable an economic flowering bulbous plant used as a landscape plant in the home gardens and in decoration as long use life. The genus Gladiolus comprises about 180 species having more than 10,000 cultivars out of which about 20 cultivars are grown marketable for cut flowers purpose and numerous others are used as seasonal flowering plants in garden and in exhibitions (Kumar *et al.* 2019)^[1].

Materials and Methods

The present investigation was carried out at Horticulture Garden of Janta College Bakewar, Etawah (U.P.) during year 2020- 2021, to find out the effect of Organic manure and plant Growth Regulators on growth and flowering parameters of Cv. Nova lux. Organic manures, vermicompost (VC), FYM and Poultry Manure (PM) were used with combination of GA3 @ 100ppm. The data were recorded for height of plants, number of sprouts, sprouts per corn, length of largest leaf, width of longest leaf, number of leaves per plant, Number of days for emergence of spike, length of spike, number of florets per spike, diameter of florets, length of florets. The experiment was laid out in a randomized block design (RBD) with 10 treatments and three replications. Statistical analysis were done as per the procedure given by Panse and Sukhatme (1989)^[2].


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A Convolution Approach to Certain Subclasses of Multivalent Functions Related to Complex Order

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ABSTRACT

Let $V_{\lambda, p, \mu}^b[A, B]$ denote the class of functions $f(z) = z^p + \sum_{n=1}^{\infty} a_{p+n} z^{p+n}$

analytic in $u = \{z: |z| < 1\}$, such that $p + \frac{1}{b} \left\{ \frac{(D^{\lambda+p-1} f(z))^t}{z^{p-1}} - p \right\} =$

$p(1 - \mu) + p\mu \frac{1+Az}{1+Bz}, z \in u,$

where $-1 \leq B < A \leq 1, 0 < \mu \leq 1, \lambda > -p$ and b is any non-zero complex number. In this paper, we investigate certain properties of the above-mentioned class.

1. INTRODUCTION

Let \mathcal{A}_p denote the class of functions $f(z) = z^p + \sum_{n=1}^{\infty} a_{p+n} z^{p+n}$, p is a positive integer, which are analytic in the unit disc $u = \{z: |z| < 1\}$. If f and g are any two functions in the class \mathcal{A}_p such that $f(z) = z^p + \sum_{n=1}^{\infty} a_{p+n} z^{p+n}$ and $g(z) = z^p + \sum_{n=1}^{\infty} b_{p+n} z^{p+n}$, then the convolution or Hadamard product of f and g , denoted by $f * g$, is defined by the power series

$$(f * g)(z) = z^p + \sum_{n=1}^{\infty} a_{p+n} b_{p+n} z^{p+n}$$

Let

$$D^{\lambda+p-1} f(z) = \frac{z^p (z^{\lambda-1} f(z))^{\lambda+p-1}}{(\lambda+p-1)!}, \lambda > -p$$

Then, following Al-Amiri [1], we shall refer to $D^{\lambda+p-1} f(z)$ as the $(\lambda + p - 1)^{th}$ order Rughcheweyh derivative of the function f . It is easy to observe that

$$D^{\lambda+p-1} f(z) = \frac{z^p}{(1-z)^{\lambda+p}} * f(z).$$

Goel and Sohi [5] studied the class $\mathcal{S}_{\lambda, p}(\beta)$ of those functions of \mathcal{A}_p which satisfy



Certain Class of Multivalent Functions in Terms of Fractional Derivative

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Abstract

Let $T_p^\lambda(A, B)$ denote the class of functions $f(z) = z^p - \sum_{n=1}^{\infty} |a_{p+n}| z^{p+n}$, are analytic in the disc $u = \{z: |z| < 1\}$ and satisfy

$$\left| \frac{\Omega_2^{(\lambda, p)} f(z) - 1}{B \Omega_2^{(\lambda, p)} f(z) - A} \right| < 1, z \in u,$$

where $-1 < A < B \leq 1$, $0 < \lambda \leq 1$ and

$$\Omega_2^{(\lambda, p)} f(z) = \frac{\Gamma(p - \lambda + 1)}{\Gamma(p + 1)} z^{\lambda - p} D_2^\lambda f(z).$$

Here D_2^λ is the fractional derivative operator of order λ .

In the present paper, we determine certain properties of the above mentioned class.

1. Introduction

Let S_p denote the class of functions, which are analytic and p -valent in the disc

$u = \{z: |z| < 1\}$ of the form

$$f(z) = z^p + \sum_{n=1}^{\infty} a_{p+n} z^{p+n}, (p \in \mathbb{N}).$$

Let T_p denote the subclass of S_p be in the form

$$f(z) = z^p - \sum_{n=1}^{\infty} |a_{p+n}| z^{p+n}, (p \in \mathbb{N}) \quad (1.1)$$

and

$$g(z) = z^p - \sum_{n=1}^{\infty} |b_{p+n}| z^{p+n}, (p \in \mathbb{N}) \quad (1.2)$$

$$\text{then } (f * g)(z) = z^p - \sum_{n=1}^{\infty} |a_{p+n}| |b_{p+n}| z^{p+n}. \quad (1.3)$$

Now, we have introduced the class $T_p^\lambda(A, B)$ of multivalent functions in terms of fractional Derivative operator.

A function f of $T_p \in T_p^\lambda(A, B)$ iff $\exists w(z)$ analytic in u and satisfying

$w(0) = 0, |w(z)| < 1$, s.t.

$$\left| \frac{\Omega_2^{(\lambda, p)} f(z) - 1}{B \Omega_2^{(\lambda, p)} f(z) - A} \right| < 1, z \in u \quad (1.4)$$

where $-1 \leq A < B \leq 1, 0 < \lambda \leq 1$ and

$$\Omega_2^{(\lambda, p)} f(z) = \frac{\Gamma(p - \lambda + 1)}{\Gamma(p + 1)} z^{\lambda - p} D_2^\lambda f(z). \quad (1.5)$$

Here $D_2^\lambda f(z) = \frac{1}{\Gamma(1-\lambda)} \int_0^z \frac{f(t) dt}{(z-t)^\lambda}$ with $D_2^0 f(z) = f(z)$ and $D_2^1 f(z) = f'(z)$.

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Soil health under maize-wheat cropping system influenced by tillage options and summer green manuring

Sunil Kumar, RN Meena and MP Singh

Abstract

A field experiment was conducted in 2016-17 and 2017-18 during *Kharif* and *Rabi* season at agricultural research farm of BHU, Varanasi to study the effect of different tillage options and green manuring on soil health under maize-wheat based cropping system. The experiment was laid out in split plot design consisting of 20 treatments. The four different tillage options were assigned to main plot and five summer green manuring treatments were kept in sub plots: ZTM – ZTW and CTM – CTW remained statistically at par with each other and showed higher uptake than the other tillage practices. The treatment *dhancha* followed by sunhemp recorded significantly higher N, P and K uptake by grain and stover over the other green manuring practices. Tillage options and summer green manuring slightly improve the soil bulk density, pH and EC but it was not up to the level of significance under maize-wheat based cropping system. The treatment ZTM – ZTW registered significantly higher value of organic carbon content during second year, after harvest of each crop. The significantly highest primary nutrient availability was recorded in treatment ZTM – ZTW after harvest of maize crop but it was not significant in case of P and K during first year of experimentation. Whereas, ZTM – ZTW resulted significantly highest available nutrient status of soil after harvest of the experimental wheat crop as compared to other tillage options. Among summer green manuring, *dhancha* followed by sunhemp recorded significantly higher organic carbon during second year after harvest of each maize and wheat crop over other green manuring practices. The highest N, P and K availability was recorded significant in *dhancha* after harvest of maize crop but it was not significant in case of P and K in case of maize crop during first year of investigation. Whereas *dhancha* and sunhemp resulted significantly the highest available N, P and K of soil after harvest of wheat crop as compared to other green manuring practices. It is recommended that ZT maize and summer green manure *dhancha* residue mulching should be followed to improve soil physio-chemical properties of soil.

Keywords: clusterbean, conservation tillage, cowpea, *Dhancha*, Sunhemp green manures, maize-wheat system

Introduction

Maize and wheat are two important cereals contributing to food and nutritional security at global level. Maize-wheat cropping system is followed in upland irrigated ecologies in the Indo-Gangetic Plains (IGP) of India. Tillage and nutrients are the most crucial monetary inputs for crop production. Intensive tillage, continuous over mining of nutrients from soil and imbalanced use of fertilizers lead to deterioration of soil health and decrease in productivity of maize-wheat system in long run (Ghosh *et al.*, 2015) [1]. Conservation agriculture is a concept for resource-saving agricultural crop production that strives to achieve acceptable profits together with sustained production, while concurrently conserving the environment. Conservation agriculture is characterized by three interlinked principles, namely continuous minimum mechanical soil disturbance, permanent organic soil cover and diversification of crop species grown in sequence or associations (FAO, 2010) [2]. The advantages of minimum or no tillage, retention of crop residues in field and diversifying rotation to improve soil health and productivity are fast popularizing.

In the present day agriculture, emphasis is being laid on the maximization of agricultural productivity per unit area per unit time through multiple cropping systems. But this approach of continuous cropping exhausts the nutrients from the soil. Good yield on a sustainable basis can be obtained, provided soil quality and health is maintained with adequate supply of macro and micronutrients. Green manuring being a low cost practice is an alternate way to improve soil fertility status.

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प्राचार्य
अमता कालेज
बक्केवर (इटावा)

CONSORTIA AND NETWORK

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Abstract:

The concept of library consortia and library networking to aid information resource sharing and support activities in libraries has become a real necessity in India. The present study briefly highlights some of the major library consortia and networks in India. The objectives, functions, services, future prospects and stages of completeness of these library resource-sharing networks are also discussed. The Indian information professionals, education specialists and scientists have realized that the time has come to share the information resources and to coordinate mechanisms. This has resulted in discernible change in the information scenario in India. A large number of library resource sharing networks like the Metropolitan Area Networks such as DELNET in Delhi, MALIBNET in Madras, BONET in Bombay, PUNENET in Pune, CALIBNET in Calcutta HYLIBNET in Hyderabad, ADNET in Ahmedabad, and countrywide ones like INFLIBNET (Universities and Research Institutions), ERNET (Educational and Research Institutions), and DESINET (Defence Laboratories), and sectoral ones like BTISNET (Biotechnology Networks) etc. are under various stages of conceptualization, design, development and implementation. The article draws its conclusion by briefly mentioning the obstacles to the development of these networks and library consortium.

Keywords: Library Consortia, Consortia management, Networking, E-resources.

Introduction

Library Consortia is the sharing of resources among the participant's libraries. A consortium may be a formal or in have enabled library consortia to expand both in formal agreement between two or more libraries based on a number and functions over their respected areas. Library-common principle. For example, a consortium library consortium development is rooted in the may be based on library type academic, Special, public etc. A history of library cooperative efforts for doing work. A regional and local consortium may be based also driven by the need to provide remote users on a geographical area. A consortium is "an agreement, common platform other goal, aiming to reduce costs per unit through or group (as of companies) formed to undertake formation of purchasing consortia. These national regional and an enterprise consortia will be the focus of member"

Definition of Consortia

A **consortia** is an association of two or more individuals, companies, organizations or governments (or any combination of these entities) with the objective of participating in a common activity or pooling their resources for achieving a common goal. Consortium is a Latin word, meaning 'partnership, association or society' and derives from consors 'partner', itself from con- 'together' and sors 'fate', meaning owner of means or comrade.

What is Library Consortia?

Library consortia means to co-operation, co-ordination and collaboration between, and among, libraries for the purpose of sharing information resources. Libraries in developing countries have been working on consortia at national, regional and international level. However, some barriers such as poor technological and communication infrastructure, inadequate finances, culture and context, attitudes toward consortia and multiple efforts are reported to be limitations of consortia activities in developing in India.

Sterility Effect of Thuricide in *Diacrisia obliqua* Walker

* Lalit Gupta

Abstract- *Diacrisia obliqua* Walker is a well known lepidopteran pest of various economically important crops. It causes a great damage to crops resulting loss to farmers. In order to control this pest, thuricide (a bacterial preparation) was administered and tested by Leaf Dip Method (LDM). It was found that thuricide induces sterility in the insect from lowest concentration (0.05%) to highest concentration (1.0%).

Key Words- *Diacrisia*, Thuricide, Leaf Dip Method, Pupation, Pest

Introduction: *Diacrisia obliqua* is a harmful polyphagous pest causing remarkable damage to several crops. Farmers have been using chemical pesticides to control *Diacrisia*. But Chemical pesticides are injurious to human & pet animals. They also cause development of resistance. They cause environmental pollution. So microorganisms like bacteria, virus & fungi are being used as biopesticides & have been tested against various pests. (Gupta L¹, 2016)

Bacillus thuringiensis (*B.t.*) is a gram positive bacteria. It has been reported to be pathogenic to over 500 insect species. It secretes a number of toxins during spore formation. δ endotoxin is one of the most important toxins. It is proteinaceous in nature. (Bulla et. al.² 1977). It works on the cells of midgut epithelium upon ingestion.

Material & Method:

Male & female moths were captured to carry out the experiment. They were kept carefully. These insects ensured the regular availability of insects by reproduction. Adults were kept in glass chimneys but the larva were kept in large petridishes. When the larvae were full grown, they were transferred to pneumatic trough. 10-15 cm thick soil was kept in troughs on their bottom, for larvae to pupate.

Thuricide is a commercial preparation of *B.t.* It is a wettable powder. It contains 30×10^6 viable spores of *B.t.* per gram of final product.

To increase the stickyness of thuricide, we added 2% skimmed milk powder to it and we used LDM method to test the effect of thuricide on insects.

Leaf Dip method (LDM) - In this method, leaves that were to be given to

Effect of Dipel on Fecundity and Fertility of *Diacrisia obliqua*

* Lalit Gupta

Abstract- *Diacrisia obliqua* Walker (Lepidoptera: Arctiidae) is a known Pest of various economic crops. It causes a huge loss to farmers. In order to control this pest, dipel (a bacterial preparation) was administered and tested by Leaf Dip Method (LDM) and Topical Method (TM). It was found that dipel causes a drastic reduction in fecundity and fertility from lowest concentration (0.05%) to highest concentration (1.0%). It was also noticed that dipel gives better results under LDM.

Key Words- *Diacrisia*, Dipel, Leaf Dip Method, Topical Method, Pest

Diacrisia obliqua is a harmful polyphagous pest causing remarkable damage to several crops. Farmers have been using chemical pesticides to control *Diacrisia*. But Chemical pesticides are injurious to human & pet animals. They also cause development of resistance. They cause environmental pollution. So microorganisms like bacteria, virus & fungi are being used as biopesticides & have been tested against various pests. (Gupta L¹, 2016). *Bacillus thuringiensis* (B.t.) is a gram positive bacteria. It has been reported to be pathogenic to over 500 insect species. It secretes a number of toxins during spore formation. Endotoxin is one of the most important toxins. It is proteinaceous in nature. (Bulla et. al.² 1977). It works on the cells of midgut epithelium upon ingestion.

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Larvae for the experiment were obtained from eggs of females already treated with dipel. The number of eggs laid, hatching and incubation period were recorded.

Dipel is a commercial preparation of B.t. It is a wettable powder. It contains 25×10^9 viable spores of B.t. per gram of final product.

To increase the stickyness of dipel, we added 2% skimmed milk powder

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Original Research Article

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Effect of Different Basal Doses of Boron on Growth and Yield of Urdbean (*Vigna mungo* L.)

18

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ABSTRACT

A field experiment was conducted to study the effect of different basal doses of boron on growth & urdbean during Zaid season 2015 at farm of department Soil Science & Agricultural Chemistry, Udai Pratap Autonomous College Varanasi. The experiment consisted of six treatments replicated thrice in RBD. The treatment include of T₀ = Control (No input), T₁ = RDF (NPK @20:20:30 kg ha⁻¹), T₂ = (RDF + B @ 0.5 kg ha⁻¹), T₃ = (RDF + B @ 1.0 kg ha⁻¹), T₄ = (RDF + B @ 2.0 kg ha⁻¹), T₅ = (RDF + B @ 2.5 kg ha⁻¹). Observation related to the effect of treatments on urdbean, were recorded on growth attributes (plant height, no of leaves, no of nodules number of branches). The result revealed that with the application of boron (T₄: RDF + B @ 2.0 kg ha⁻¹) the maximum plant height (28.16 cm), no of leaves (48.50), no of branches (15.42) & no of nodules (15.33) was obtained which was significantly higher from treatment T₀, T₁ & T₂. The yield of grain (11.90 qha⁻¹) and stover (16.81 qha⁻¹) was also higher with the treatment T₄ on yield attributes (pods per plant, test weight, grain and stover yield). On the basis of above results be concluded that application of boron is essential for better growth and yield of urdbean as compared to without boron application.

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Introduction

Urdbean [*Vigna mungo* (L.) Hépper] is one of the important pulse crop grown throughout the country during rainy season although in some instances it is also grown during zaid season. It is a self-pollinated leguminous crop which contain 24 % protein, 60 % carbohydrate, 1.3 % fat, 3.2 % mineral, 0.9 % fiber, calcium, phosphorus, iron and small

amount of vitamin B complex. Being a short duration crop it fits well in various multiple and intercropping systems. After removing pods, its plant may be used as good quality green or dry fodder for animal. Being a leguminous crop, its dual role in providing protein rich seeds and improving soil fertility by adding nitrogen in the soil is well known. Urdbean share 13 percent of total area under pulses and 10per cent of their total production in our country. This crop is extensively grown

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Research Article

EFFECT OF NI AND N SOURCES ON WHEAT (*TRITICUM AESTIVUM* L.)

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Abstract: Out of seven essential micronutrients, Ni is one of the recently added essential plant nutrient. Ni is an important metal for plants which fulfills a variety of vital roles in plant functions. It is a micronutrient involved in nitrogen metabolism and a constituent of the urease molecule. Ni a component of urease and hydrogenase plays variety of vital roles in plant functions. Thoroughly, planned a field experiment was conducted in rabi season of 2017-18 at the Research Plot of Department of Agricultural Chemistry and Soil Science, Udaipur Pratap (Autonomous) College, Varanasi. The experiment was carried out in Factorial Randomized Block Design (FRBD) with three replications. Treatments includes four nickel levels with two nitrogen levels and three nitrogen sources viz, N₀ (no nitrogen), N_{2x}UR (Urea), N_{2x}AS (ammonium sulphate), N_{2x}CAN (calcium ammonium nitrate) and four nickel levels 0, 1, 2 and 4 kg ha⁻¹ (Ni₀, Ni₁, Ni₂ and Ni₄). Nitrogen was applied @ 120 kg ha⁻¹ with different nitrogen sources used. Ni was applied in the form of NiCl₂ · 6H₂O as per the requirement of treatment as basal dose. Important growth parameters (plant height and number of tillers) at different growth stages and dry matter yield (grain and straw) were determined. Results revealed that nitrogen and nickel supply significantly affected all the parameters under study when compared with no supply of nitrogen and nickel. The nitrogen application through urea registered the highest growth parameters and dry matter yield as compared to ammonium sulphate and calcium ammonium nitrate. The nickel application @ 2 kg ha⁻¹ recorded significantly maximum increase in all growth attributes as well as yield attributes. The interaction of Ni was found significant. Due to interactive effect maximum plant height, number of tillers, test weight, grain and straw yield were recorded when 2 kg ha⁻¹ Ni was applied in combination of urea (N_{2x}UR) followed by ammonium sulphate (N_{2x}AS) and calcium ammonium nitrate (N_{2x}CAN) with the treatment N_{2x}UR Ni₂ followed by N_{2x}AS N₂ and N_{2x}CAN Ni.

Keywords: Nickel, Nitrogen, Urea, Ammonium sulphate, Calcium ammonium nitrate, Wheat

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Introduction

Plants are able to use several forms of nitrogen, the most important of which are nitrate and ammonium. Urea is most important nitrogenous fertilizer used as nitrogen source for different crops due to its high tolerance of plants to the ionic form of nitrogen. Urea is most popular than the other nitrogenous fertilizers like ammonium sulphate, calcium ammonium nitrate etc. However, urea N requires conversion of nitrogen into inorganic form and it is hydrolyzed by urease enzyme before its utilization by plant roots. Essentially of nickel (Ni) for higher plants was first reported [1]. It is involved in activation of urease enzyme; hence most of Ni essentially studied were focused on legumes due to higher urease activity in seeds of legumes and transportation of absorbed nitrogen as ureides compounds within plant body which requires urease [2] and [3]. Wheat is heavy feeder of nutrients in significant amount of NPK and different secondary and micro-nutrients [4]. The removal of nutrients per unit area in the rice-wheat cropping system at an average productivity level is much higher than the average fertilizer application. Unless the system is provided with adequate amount of required plant nutrient there will more greatly drain of the native soil fertility and the soil will not be able to sustain the high productivity on long term basis [5]. Therefore, the significance of nitrogen source and nickel supply for wheat crop was investigated with special attention to combined effect of nitrogen and nickel in wheat crop.

Materials and methods

A field experiment was conducted in rabi season of 2017-18 at the research plot of

Department of Agricultural Chemistry and Soil Science, Udaipur Pratap (Autonomous) College, Varanasi. The experiment was carried out in Factorial Randomized Block Design (FRBD) with three replications. Treatments includes four nitrogen levels with three nitrogen sources viz, N₀ (no nitrogen), N_{2x}UR (Urea), N_{2x}AS (ammonium sulphate), N_{2x}CAN (calcium ammonium nitrate) and four nickel levels 0, 1, 2 and 4 kg ha⁻¹ (Ni₀, Ni₁, Ni₂ and Ni₄). Nitrogen was applied @ 120 kg ha⁻¹ with different nitrogen sources used. Ni was applied in the form of NiCl₂ · 6H₂O as per the requirement of treatment as per basal dose. Recommended doses of P and K (60:60 kg ha⁻¹) were applied as basal dose. The wheat variety HUW-234 used a test crop. The crop was irrigated thrice in different interval. Interculture operations were done as recommended practice or as when required. Response of wheat to applied treatments were evaluated. The organic carbon of the soil samples was estimated by wet chromic acid digestion method [6]. The pH and EC of soil were determined in a soil water suspension (1:2.5) with the help of glass electrode pH and TDS meter. The plant available N, P and K were determined by alkaline potassium permanganate method [7], Olsen's method [8] and 1N ammonium acetate extract with the help of flame photometer [9], respectively. Total nitrogen was determined by calorimetric method as described by Tandon (1993) [10]. P and K from grain and straw samples of wheat were analyzed using 2.5 percentum acid nitric acid extract. Total phosphorus was determined by vanadomolybdophosphoric acid yellow colour method [10]. Total potassium was determined flame-photometrically [9]. Nickel was determined by using EDTA extract by AAS method.

Boobandi

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Convergence & Expansions: A Study Of Private Vs Public sector Emergence

20

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ABSTRACT:

The well known story of planning in the country, over the last six decades, there has been a definite shift in the dominant role of public enterprises in the country through various Five Year Plans from attaining the commanding heights in the national economy and easing out private sector to the opening up the public sector in the Indian economy and it would continue to be so.

The organization and management of the public sector enterprises has been on trial and error ever since independence in the country. Initially, the enterprises were organized as departmental undertakings owing to the simplicity of operations and management. Then came a time when the government company form became prevalent. Following the developments in the international field, particularly in England corporate form was adopted in India too. And a host of corporation was created, both sectoral and multi-purpose as well as development corporations.

Joint ventures came on the scene again taking a cue from the development in the world. The country has all along been a problem to tackle. In the first place, there has been a consistent dearth of skills in the country, both at the rural stages as well in recent past.

The book aims at:

1. It deals with the problems associated with the Public Sector Enterprises.

2. It deals with the understanding of the causes of the expansion of the Public Sector.

3. Makes an understanding of the limitations attached with the private-sector due to which the Public sector has emerged.

Key Words: Public Sector, Private Enterprises

INTRODUCTION:

The founding fathers of our republic used the public sector as an essential and vibrant element in the functioning of India's economy. One of the basic objectives of starting the public sector in India was to bring infrastructure for economic development and rapid economic growth. Since their inception, public enterprises have played an important role in achieving the objective of economic growth with social justice. At the time of independence, India was backward and underdeveloped, basically an agrarian economy with weak industrial base, high rate of unemployment, low level of savings and investment and absence of infrastructural facilities. Indian economy needed a big push. This push could not come from the private sector because of the lack of funds and their inability to take risk with large long term investments. As such, government intervention through public sector was necessary for self-reliance, economic growth to diversify the economy and to overcome economic and social backwardness.


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Research Article

STUDY ON HERITABILITY AND GENETIC ADVANCE IN OKRA [*ABELMOSCHUS ESCULENTUS* (L.) MOENCH]

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Abstract: The experiment was conducted with 120 treatments (28 F₁s, 28 F₂s, 28 B₁s and 28 B₂s populations) developed through diallel technique excluding reciprocals along with 8 parents viz., AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and PK in a randomized block design with three replications at the Research Farm of the Department of Vegetable Science, C.S. Azad University of Agriculture and Technology, Kalyanpur, Kanpur during Kharif 2006. The observations were recorded on 20 randomly selected plants for 10 quantitative traits viz., days to flowering, height of plant (cm), number of branches per plant, number of first fruiting node, number of nodes per plant, length of internode (cm), length of fruit (cm), width of fruit (cm), number of fruits per plant and yield per plant (g). Heritability estimate in narrow sense was high for number of branches per plant and moderate for other characters were found in both the generations. The studies based on genetic advance showed that an advancement of 8.9 g in fruit yield per plant was observed from single cycle of selection at K = 2.06. The probable genetic gain was high for number of branches per plant, length of inter node and number of first fruiting node.

Keywords: Okra, Heritability, Genetic advance

Citation: Kumar S., et al., (2019) Study on Heritability and Genetic Advance in Okra [*Abelmoschus esculentus* (L.) Moench]. International Journal of Genetics, ISSN: 0975-2862 & E-ISSN: 0975-9158, Volume 11, Issue 8, pp- 632-633.

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Academic Editor / Reviewer:

Introduction

Okra [*Abelmoschus esculentus* (L.) Moench] is an important vegetable crop of Malvaceae family with having chromosome number of 2n=130 and grown in Kharif and Zaid season. Green edible fruits are consumed for table purpose. Okra is said to be very useful in curing diabetes, chronic dysentery and genitor urinary disorder. Ripe seeds are roasted grinded and used as substitute for coffee in turkey. The estimates of heritable and non-heritable variance are given an insight on the possible important for the characters under study [1]. To meet the ever-increasing demand for high production of fruit emphasis should be given the genetic improvement of the varieties.

Materials and Methods

The experiment was conducted with 120 treatments (28 F₁s, 28 F₂s, 28 B₁s and 28 B₂s) developed through diallel technique excluding reciprocals along with 8 parents viz., AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and PK in a randomized block design with three replications at the Research Farm of the Department of Vegetable Science, C.S. Azad University of Agriculture and Technology, Kalyanpur, Kanpur during Kharif-2006. Parents were sown in single row with ten plants and F₁s, F₂s, B₁s, B₂s grown in double with ten plants in each row. The plant to plant and row to row spacing were maintained at 45 cm apart. The observations were recorded for days to flowering, height of plant (cm), number of branches per plant, number of first fruiting node, number of nodes per plant, length of internode (cm), length of fruit (cm), width of fruit (cm), number of fruits per plant and yield per plant (g). The data obtained on all the parameters were subjected to the statistical analysis were worked out according to heritability and genetic advance in percent of mean.

Results and Discussion

Result of different parameters depicted in (Table-1). The data were subjected to statistical and biometrical analysis. Any improvement of population depends on the magnitude and nature of variation present in particular population. The total variance is known as heritability. It is generally expressed in the percent. Thus, the heritability is a good index of spring. High heritability were observed for number of branches per plant in both the generations and length of internode only in F₁ generation, which might be due to more contribution of additive genetic component responsible for the inheritance of these traits and these traits can be improved through mass selection or any other selection scheme aimed at exploiting fixable (additive) genetic variance resulting a widely adopted genotype / strains could be developed which might be passes good quality and productivity [2]. Other characters showed moderate heritability which involve both additive and non-additive genetic components, it is obvious to note here that most of the characters showed higher estimates of heritability numerically in F₂ in comparison of F₁s except number of branches per plant, number of nodes per plant and length of internodes [3,4]. These higher estimates could be due to presence of additive x additive gene interaction in segregating, generation. Under such condition's intensive selection pressure during selection breeding programme might be given in early segregating generations and might be carried out in advancement of generations for direct effective selection. Heritability estimates alone could not be given the real picture of improvement which could be realized during selection. It is only steadfast when achievement of genetic advance under selection. In present study the genetic advance based on F₁ and F₂ generation presented in (Table-1) was estimated at K = 2.06 means 5% selection intensity. High genetic advance in the tune of 8.9 g for yield per plant and height of plant (5.26 cm) based on F₁ and 8.88 g and 6.66 cm for F₂ generation was observed for single cycle of selection at K = 2.06 [5,6].

Research Article

CORRELATION COEFFICIENT ANALYSIS IN OKRA [*Abelmoschus esculentus* (L.) Moench]

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Abstract: The experiment was conducted with 120 treatments (28 F_{1s}, 28 F_{2s}, 28 B_{1s} and 28 B_{2s} populations) developed through diallel technique excluding reciprocals along with 8 parents viz., AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and PK in a randomized block design with three replications at the Research Farm of the Department of Vegetable Science, C.S. Azad University of Agriculture and Technology, Kalyanpur, Kanpur during Kharif 2006. The observations were recorded on 20 randomly selected plants for 10 quantitative traits namely, days to flowering, height of plant (cm), number of branches per plant, number of first fruiting node, number of nodes per plant, length of fruit (cm), width of fruit (cm), number of fruits per plant and yield per plant (g). The phenotypic and genotypic correlation coefficients were worked out to measure the association among the quantitative traits. Correlation coefficient for fruit yield per plant had positive and significant association with number of nodes per plant, length of fruit and number of fruits per plant at both genotypic and phenotypic level in all the generations.

Keywords: Okra, Genotypic correlation coefficient, Phenotypic correlation coefficient

Citation: Kumar S., et al., (2019) Correlation Coefficient Analysis in Okra [*Abelmoschus esculentus* (L.) Moench]. International Journal of Genetics, ISSN: 0975-2862 & E-ISSN: 0975-9158, Volume 11, Issue 8, pp- 622-625.

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Academic Editor / Reviewer:

Introduction

Okra [*Abelmoschus esculentus* (L.) Moench] is an important vegetable crop of Malvaceae family with having chromosome number $2n = 130$ and grown in Kharif and Zaid season. Green edible fruits are consumed for vegetable purpose. Okra said to be very useful in curing diabetes, chronic dysentery and genitor urinary disorder. Ripe seeds roasted grinded and used as substitute of coffee in turkey [1]. The estimates of heritable variation give an insight on the possible improvement for the characters under study. The correlation reflects special importance as it tells us about the genetic association manures do not employ any cause and effects inter-relationship. The present investigation was undertaken to study the correlation coefficient analysis in 8 parents along with 28 F_{1s}, 28 F_{2s}, 28 B_{1s} and 28 B_{2s} of the crop keeping the view of selection superior genotypes in order to make substantial improvement of the crop [2]. The information on inter relationship may be useful in prediction of correlated response to direct selection indices and detection some characters, which may have no value in themselves but may be useful as indicator of other important characters [3] there, knowledge of correlation coefficients between yield and its components may be a valuable indication regarding the components.

Materials and Methods

A set of 8 varieties/strains of okra namely, AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and PK were crossed in diallel technique excluding reciprocals. All the 28 F_{1s}, 28 F_{2s}, 28 B_{1s} and 28 B_{2s} along with 8 parents were sown in a randomized block design (RBD) with three replications at the Department of Vegetable Science of C.S. Azad University of Agriculture and Technology Kalyanpur, Kanpur, 208024, during Kharif 2006. Parents were sown in single row with 10 plants and F_{1s}, F_{2s}, B_{1s} and B_{2s} grown in double with ten plants in each row. The plant to plant and row to row spacing were maintained at 45 cm apart.

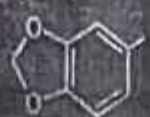
The competitive plants of parents of F_{1s}, F_{2s}, B_{1s} and B_{2s} were randomly selected and observations were recorded for days to flowering, height of plant (cm), number of branches per plant, number of first fruiting node, number of nodes per plant, length of internode (cm), length of fruit (cm), width of fruit (cm), number of fruits per plant and yield per plant (g).

Results and Discussion

The phenotypic and genotypic correlation coefficient among the characters studies were marked out in parents [Table-1], F_{1s} [Table-2], F_{2s} [Table-3], B_{1s} [Table-4] and B_{2s} [Table-5] in general, the magnitude of correlation coefficient for genotypic was higher than their phenotypic correlation coefficients. The genotypic correlation coefficients were observed higher comparatively in F_{1s}, F_{2s}, B_{1s} and B_{2s} than the parents. Among the parents yield per plant showed positive and significant correlation with height of plant, number of nodes per plant, length of fruit and number of fruits per plant at both genotypic and phenotypic level [4]. Its association with number of branches per plant and width of fruit were negative and significant. Among characters themselves days to flowering had positively significant correlation with number of branches per plant, number of first fruiting node and width of fruit both at genotypic and phenotypic levels, respectively. Height of plant showed positive and significant association with number of nodes per plant, length of fruit and number of fruits per plant both at genotypic and phenotypic levels. The association of number of branches per plant was positive and significant with number of first fruiting node and width of fruit. Its association with number of nodes per plant and number of fruits per plant were negative both at genotypic and phenotypic levels but up to non significant numerically number of first fruiting node had positive and significant correlation with width of fruit at genotypic level only. Other characters except number of fruits per plant also showed positive inter relationship with it but statistically non significant.

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On PROMOTING & REINVIGORATING AGRI-HORTI- TECHNOLOGICAL INNOVATIONS [PRAGATI-2019] (14-15 December, 2019)

Studies on genetic component of variance in okra [*Abelmoschus esculentus* (L.) Moench]

S Kumar, SK Vishwakarma, MK Yadav and JR Yadav

Abstract

The experiment was conducted with 120 treatments (28 F₁s, 28 F₂s, 28 B₁s and 28 B₂s Populations) of 8 varieties/strains of okra (AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and PK) in a randomized block design in three replication at the Research Farm of the Department of Vegetable Science, C. S. Azad University of Agriculture and Technology, Kalyanpur, Kanpur during kharif 2006. The observations were recorded for 10 quantitative traits namely days to flowering, height of plant (cm), number of branches per plant, number of first fruiting node, number of nodes per plant, length of internode (cm), length of fruit (cm), width of fruit (cm), number of fruits per plant and yield per plant (g). The study was revealed that the genetic component of variance showed both additive and dominance component of variance were significant for all the characters in both the generations except height of plant and width of fruit in F₂ generations and yield per plant in F₂ generations. For additive component and width of fruit in F₂ generation, the additive component was significant in F₂ generation. The additive component was significant for height of plant in F₂ generation.

Keywords: Diallel technique, genetic component variance, okra, quantitative traits

Introduction

Okra is one of the important vegetable of the tropical and sub-tropical regions of the world and is native to tropical Africa. It is grown for its green tender fruits during summer and rainy season throughout India. They are eaten fresh, canned or frozen. A good knowledge of the nature and mode of inheritance of quantitative characters of economic importance is helpful to formulate a more pragmatic breeding programme. Diallel analysis is useful device for obtaining rapid overall picture of gene action involved in the inheritance of different quantitative traits. Different workers (Lal *et al.*, 1975 and Kulkarni, *et al.*, 1976) [7, 9] have studies the nature of gene action for number of biometric traits in okra. However, as the gene action differs from genetic material to material. Therefore, the present study was undertaken to elucidate the nature and magnitude of gene action involved in the inheritance of fruit yield and its components.

Materials and Methods

A set of 8 varieties/ strains of okra namely, AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and PK were crossed in a diallel technique excluding reciprocals. All the 28F₁s, 28F₂s, 28B₁s and 28B₂s along with parents in randomized block design in three replications at the Research Farm of the Department of Vegetable Science, Chandra Shekhar Azad University of Agriculture and Technology, Kalyanpur, Kanpur during kharif 2006. Parents were sown in single row with ten plants and F₁s, F₂s, B₁s and B₂s were sown in double row with ten plants in

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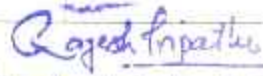
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दिनांक

Date.....

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during the last five years

S. No.	Title of paper	Name of the author/s	Name of journal	Calendar Year of publication
1	Evaluation of bael (Aegle marmelos Correa) germplasm for processing	Dr. A.K. Pandey	Progressive Horticulture	2020-21
2	STUDIES ON THE EFFECT OF PLANT GROWTH REGULATORS ON FRUIT DROP, DEVELOPMENT, QUALITY, AND YIELD OF BER (ZIZYPHUS MAURITIANA LAMK.) CV. BANARASI KARAKA	Dr. A K Pandey	Progressive Research-An International Journal	2020-21
3	Effect of bio-fertilizer on foliage and floral traits of chrysanthemum cv Little pink	Dr. A K Pandey	International journal of Agriculture Science	2020-21
4	Heterosis and Inbreeding Depression in okra, Abelmoschus esculentus (L) Moench	Dr. Aditya Kumar, Dr. Sanjeev Kumar, Dr. M.K. Yadav, Dr. S.K. Vishwakarma	Plant Archives	2020-21
5	Evaluation of Suitability of PH on Mycelial Growth of Calocybe indica strains	Dr. M.K. Yadav	Plant Archives	2020-21
6	Cultural, Morphological and pathogenic variability in isolates of Colletotrichum Capsici causing anthracnose of chilli in eastern U.P.	Dr. M.K. Yadav	Plant Archives	2020-21
7	Effect of different culture media and temperature on radial growth impact of law and justice subject reading on higher education libraries in India". of milky mushroom (Calocybe 5210 Indica) P&C. strains	Dr. M.K. Yadav	Plant Archives	2020-21
8	Impact of law and justice subject reading on higher education libraries in India	Mr. Mr. Ram Das Verma	Research journey' multi-disciplinary international e-research Journal	2020-21
9	Use of ICT in higher education system in India with special reference library science	Mr. Mr. Ram Das Verma	Research journey' multi-disciplinary international e-research Journal	2020-21
10	The impact of sustainable farming in improving household security of marginal farmers in the eastern Indo-Gangetic plains of India	Dr. M. P. Singh	The Pharma innovation journal	2020-21


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पत्रांक


Ref No/2023-24

दिनांक

Date.....

11	Diagnostic traits of okra (<i>Abelmoschus esculentus</i> L. Moench): global significance in vegetable world	Dr. M. P. Singh	Hortflora Research Spectrum	2020-21
12	Generalization of Quasi-Hadamard products of functions with Negative Coefficients	Dr. Nalini Shukla	National Journal of Arts, Commerce & Scientific Research Review	2020-21
13	Fractional Derivatives with Two Fixed Points on a Class of Analytic and Univalent Functions	Dr. Nalini Shukla	National Journal of Arts, Commerce & Scientific Research Review	2020-21
14	Agronomic fortification in wheat (<i>Triticum aestivum</i> L.) with Zinc	Dr. S K S Chandel	Journal of pharmacognosy and photochemistry	2020-21
15	Phosphorus fraction and their relationship with physicochemical properties of surface soil of Varanasi region U.P.	Dr. S K S Chandel	International Journal of creative research thoughts	2020-21
16	Effect of moisture conservation practices on growth, yield, root development, water use and economics of sorghum varieties under rainfed condition	Dr. P.K. Rajput	Int. Journal of Current Microbiology and Applied Science	2020-21
17	Biomass Productivity, crop Yield and socio economics status of Madhoganj block watershed of the district Hardoi as influenced under various soil and water conservation measures	Dr. P.K. Rajput	Young Scientist-Tomorrow's Science Begins Today	2020-21
18	On a New Subclass of Harmonic Univalent Functions with Missing Coefficients	Dr. Indu Bala Mishra	Acta Universitatis Apulensis	2020-21
19	Scanning electron microscopy indicates <i>Pseudomonad</i> strains facilitate AMF mycorrhization in litchi (<i>Litchi chinensis</i> Sonn.) Air layers and improving survivability, growth and leaf nutrient status	Dr. Anand Singh	Current Research in Microbial Sciences	2020-21

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[Research Article]

Evaluation of bael (*Aegle marmelos* Correa) germplasm for processing

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ABSTRACT

Bael is an important fruit crop of the Indian sub continent and diverse variability in the genotypes and quality traits are found through out the country, particularly central parts of Uttar Pradesh. Marmelosin the panacea of stomach ailments is an active principal constituent of bael fruit. Product like candey, RTS, squash and preserve are prepared from its pulp and can also be preserved by canning. Preserved pulp can be blended well with ice cream and confectionary preparation. To explore the processing potential of this important fruit an experiment was conducted on seven genotypes ($G_1, G_2, G_3, G_4, G_5, G_6, G_7$) collected from different locations of Etawah, Auraiya and Fatehpur districts of U.P. Physico-chemical analysis of fruits revealed considerable variability in fruit weight ranging from 184.66 to 1553.33 g; fruit length and width from 12.33 to 19.40 cm and 6.66 to 12.43 cm, respectively, volume of fruit from 105.00 to 903.33 cc, specific gravity from 1.14 to 1.75, shell thickness from 1.13 to 3.33 mm and pulp weight from 142.66 to 898.00 g. The number of seeds/ fruit in the genotypes varied between 25.33 to 126.66, seed weight per fruit from 7.33 to 24.00 g, pulp recovery percentage in the genotypes ranged from 85.22 to 92.66 while the pulp seed ratio 11.33 to 81.98 and fibers weight 1.23 to 2.43 g. Total soluble solids ranged from 30.00 to 41.33 Brix, acidity from 1.52 to 1.77 %, ascorbic acid from 4.76 to 7.13 mg (per 100g), TSS acid ratio from 18:41:1 to 26:57:1 reducing sugar from 3.76 to 5.16 % non reducing sugar from 6.73 to 11.26 % and total sugar from 10.56 to 16.43 %.

KEY WORDS : Bael, *Aegle marmelos*, marmelosin, germplasm, physico-chemical analysis

Bael (*Aegle marmelos* Correa) is one of the most ancient and common fruit indigenous to India. It belong to family rutaceae. It grows throughout subtropical and arid region and is a popular crop involving lower input with higher economic return even in the most fragile ecosystems. Processed product such as sharbat made from bael pulp is taken as mild laxative tonic because of the presence of marmelosin. The leaf juice mixed with honey and black pepper relieves joundice and constipation accompanied by oedema. The product such as candy, RTS and squash are prepared from pulp of bael fruit. Therefore, the present investigation was undertaken to study the physical and chemical composition of bael fruit for utilization in processing industries.

METERETIALS AND METHODS

The experiment was carried out in the laboratory of Department of Horticulture, Janta Post Graduate College, Bakewar (Etawah) to evaluate the physico-chemical attributes of bael germplasm collected from differ-

ent locations of Etawah (G_1, G_2, G_3), Auraiya (G_4, G_5) and Fatehpur (G_6, G_7) districts of U.P. The experiments was laid out in the completely randomized design (CRD) with five replication and observation pertaining to various parameters viz., morphological character of fruits including the chemical attributes such as TSS (Borix), acidity (%), ascorbic acid (mg/100 g) Tss: Acid ratio reducing sugar (%), non-reducing sugar (%) and total sugar (%). The mean data on various physiological and chemical parameters recorded during the period of the study were subjected to statistical analysis as per the procedure given by Panse and Sukhatme (1989).

RESULTS AND DISCUSSION

The data on physical parameters such as average fruit weight (g), length of fruit (cm), width of fruit (cm), volume of fruit (cc) specific gravity shell thickness (mm), pulp weight (g), number of seeds per fruit, seed weight per fruit (g), pulp weight (%), pulp : Seed ratio, fiber weight (g) are presented in Table 1. The genotype G_1 re-



STUDIES ON THE EFFECT OF PLANT GROWTH REGULATORS ON FRUIT DROP, DEVELOPMENT, QUALITY, AND YIELD OF BER (*ZIZYPHUS MAURITIANA* LAMK.) CV. BANARASI KARAKA

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ABSTRACT

Ber is an indigenous and common fruit of India. It can be cultivated under a wide range of agro-climatic conditions and is widely utilized as fresh, dried, and preserved. An experiment was conducted in the orchard of the Department of Horticulture, Janta College, Bakewar, Etawah during the years 2017-18. The experiment was laid out in an RBD with ten treatments, including control with the replications. Three levels of each plant growth regulator (PGRs) viz., NAA (15, 20, and 25 ppm), 2, 4, 5-T (15, 20, and 25 ppm), and GA₃ (20, 30, and 40 ppm) was evaluated. Two sprays were applied, i.e., first on 20th October and second on 20th November 2018. Among the treatments GA₃ (40 ppm) decreased the fruit drop (74.25 %) it increased fruit length (5.31 cm) and width (2.98 cm) as compared to control. This treatment significantly increased the weight of fruit (20.42 g) and pulp weight (19.39 g) as compared to the control. The maximum fruit yield (509.15 g per branch) was also recorded in this treatment. The treatment GA₃ (30 ppm) reduced the stone weight (0.90 g), the stone weight percentage (4.57), and acidity (0.234 %) as compared to the control (1.22 g, 8.86 %, and 0.288 %, respectively), whereas this treatment increase the maximum pulp weight percentage (95.43 %). None of the treatments could affect the specific gravity of fruits. Maximum Brix-Acid ratio (70.39), vitamin 'C' (109.33 mg/100 g), and reducing sugar (4.53 %) were recorded in 2, 4, 5-T (25 ppm) treated fruits as compared to control. The treatment GA₃ (20 ppm) showed the highest TSS (16.89° Brix) and total sugar (12.51%) as compared to the control.

Key words : PGRs, banarasi karaka, *Zizyphus mauritiana* L, banarasi karaka, and fruit quality.

Indian ber (*Zizyphus mauritiana* Lamk.) has been cultivated in India since the Vedic age. It is a common fruit of India and it belongs to the family Rhamnaceae and genus *Zizyphus*. The family has about 50 genera and more than 600 species spread all over the tropical and sub-tropical regions of the northern hemisphere. Ber is tetraploid in nature (2n=48). Being a hardy fruit crop and wider adaptability, it can be grown even on inferior and marginal lands. Ber is also known as 'poor man's fruit' and 'king of arid fruit'. In fact, it is an ideal tree fruit for growing in the arid and semi-arid zone. Generally, its fruits are widely utilized as fresh, dried, and preserved. The spraying of plant growth regulators, not only helps in getting a better fruit set and yield, growth, and development but also improves fruit quality. Therefore, the present investigation was undertaken to study the influence of plant growth regulators on the fruit drop, growth, development, yield, and quality of ber fruit.

MATERIALS AND METHODS

An experiment was carried out in the orchard of the Department of Horticulture, Janta College, Bakewar, Etawah during the *rabi* season in the years 2017-18 to study the effect of NAA, 2, 4, 5-T, and GA₃ on fruit drop, development, quality and yield of ber cv. Banarasi Karaka. The experiment was laid out in Randomized Block Design (RBD) having ten treatments including control (distilled water) with three replications. The treatment is considered

as three levels of each plant growth regulator viz., NAA (15, 20, and 25 ppm), 2, 4, 5-T (15, 20, and 25 ppm), and GA₃ (20, 30, and 40 ppm) were evaluated. Two sprays were applied, i.e., first on 20th October and second on 20th November 2018. The data were recorded on various parameters viz; fruit drop (%), fruit size (cm), average fruit weight (g), stone weight (g), stone weight (%), specific gravity, pulp weight (g), pulp weight (%), TSS (°Brix), acidity (%), Brix-Acid ratio, vitamin 'C' (mg/100 g), reducing sugar (%), total sugar (%) and yield (g/branch). The mean data on various physiological and chemical parameters recorded during the period of the study were subjected to statistical analysis as per the procedure given by Panse and Sukhatme (1969).

RESULTS AND DISCUSSION

A perusal of the data given in Table-1 reveals that treatment T₉ decreased the fruit drop (74.25 %) significantly as compared to control (83.79 %) and at the same time other treatments T₁, T₃, T₄, T₅, and T₇ also reduced the fruit drop significantly as compared to the control. The beneficial effects of GA₃ in controlling the fruit drop have also been reported in the ber by many workers (Singh *et al.*, 1982; Yadav and Bhatl, 2004; Pandey, 1999). Plant growth regulators also affected the fruit size. Fruit length was increased in T₉ as compared to control. However, a general increase in fruit length was observed in almost all the treatments. It also increases fruit width

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RESEARCH PAPER

Effect of bio-fertilizers on foliage and floral traits of chrysanthemum cv Little Pink

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Abstract : Chrysanthemum (*Dendranthema grandiflora*) is a leading commercial flower crop from asteraceae family grown for cut and loose flowers and also as a pot plant. It is preferred practically due to vast range of shapes and size of flowers, brilliance of colour tones, long lasting floret life, diversity of height and growth habit of the plant, especially hardy nature, relative ease to grow all the year round and versatility of use. Biofertilizers are the multiplied live cells of beneficial strains of micro-organism, are used as biological nitrogen fixers, Phosphate solubilizing, and also used for mineralization of nitrogen and transformation of several elements like sulphur and iron etc. into available forms. The present investigation was conducted at the Horticulture experimental field of Janta College, Bakewar in Complete Randomize Design with 4 treatments and 4 replications. Observations were recorded for vegetative and floral traits upon various biofertilizers treatments viz., T₁: Control, T₂: (FYM 50% + Soil 50% + 2gm PSB @Per pot), T₃: (FYM 50% + Soil 50% + 2gm Azotobacter @Per pot) and T₄: (FYM 50% + Soil 50% + 1gm PSB + 1g Azotobacter@Per pot).

Key Words : Chrysanthemum, Little pink, Biofertilizers, Growth, Floral traits

View Point Article : Dixit, Shashank, Panday, A.K. and Bajpay, Anurag (2021). Effect of bio-fertilizers on foliage and floral traits of chrysanthemum cv Little Pink. *Internat. J. agric. Sci.*, 17 (2) : 162-166 DOI:10.15740/HAS/IJAS/17.2/162-166. Copyright©2021: Hind Agri-Horticultural Society.

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INTRODUCTION

Chrysanthemum (*Dendranthema grandiflora*) is a leading commercial crop grown for cut and loose flowers and also as a pot plant (Bajpay and Dwivedi, 2017). It is highly attractive and charming short day flowering plant which is very popular for floral bouquets and flower arrangements. It behaves both as an annual as well as perennial flowering herb, belongs to the family Asteraceae, and native of northern hemisphere, chiefly from China (Bajpay and Dwivedi, 2017 and 2019).

Cultivar *Little Pink* is released from NBRI, Lucknow in 2009. It is a Mid season flowering cultivar (50 cm height) producing purple colour flowers. Used for Cut flower, pot culture and landscaping (Bajpay, 2019).

The group of beneficial, root associative bacteria that stimulate the growth of plant is known as plant growth promoting bacteria, these bacteria are of paramount importance in horticultural crop production which includes nitrogen fixers, phosphorus solubilizers, growth enhancers

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HETEROSIS AND INBREEDING DEPRESSION IN OKRA *ABELMOSCHUS ESCULENTUS* (L.) MOENCH

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Abstract

The experiment was conducted with 120 treatments (28 F₁s, 28 F₂s, 28 B₁s and 28 B₂s populations) developed through diallel technique excluding reciprocals along with 8 parents viz., AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and PK in a randomized block design with three replications at the Research Farm of the Department of Vegetable Science, C.S. Azad University of Agriculture and Technology, Kalyanpur, Kanpur during Kharif 2006. The observation were recorded on 20 randomly selected plants for 10 quantitative traits namely, days to flowering, height of plant (cm), number of branches per plant, number of first fruiting node, number of nodes per plant, length of internode (cm), length of fruit (cm), width of fruit (cm), number of fruits per plant and yield per plant (g). The study was revealed that the high magnitude of heterosis over better parent and economic parent were observed in crosses AB-2 x AB-1, VRO-3 x PK and AB-1 x PK found desirable for yield per plant. These crosses also showed reasonable amount of inbreeding depression in F₂ population.

Key words: Okra, heterosis, inbreeding depression, diallel cross, dominance, epistasis.

Introduction

Okra [*Abelmoschus esculentus* (L.) Moench] is an important vegetable crop of India. It belongs to the family Malvaceae and having chromosome number $2n = 130$. It behave as often cross pollinated crop although it is potential self pollinated crop. 8.75 to 9.61 per cent out crossing (Purewal and Randhawa, 1947). Okra is an important fruit vegetable crop of the tropical and subtropical regions of the world. It is grown successfully in plains and hills. It is a crop of warm wet season in the northern India, but it is also taken as winter crop in the frost free areas of Central and South India, particularly Gujarat, Maharashtra. It is a good source of Vitamin A, B and C, protein and mineral elements. In recent years heterosis breeding has been extensively exploited and utilized for boosting up yield. The estimation of the extent of heterosis over standard parent/check variety under commercial cultivation (Economic heterosis) would be most desirable for heteris breeding. Hence in the heterosis over standard parent for yield and ten related attributes.

Materials and Methods

The experiment was conducted with 120 treatments (28 F₁s, 28 F₂s, 28 B₁s and 28 B₂s populations) developed through diallel technique excluding reciprocals along with 8 parents viz., AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and PK

in a randomized block design with three replications at the Research Farm of the Department of Vegetable Science, C.S. Azad University of Agriculture and Technology, Kalyanpur, Kanpur during Kharif 2006. The observation were recorded on 20 randomly selected plants for 10 quantitative traits namely, days to flowering, height of plant (cm), number of branches per plant, number of first fruiting node, number of nodes per plant, length of inter node (cm), length of fruit (cm), width of fruit (cm), number of fruits per plant and yield per plant (g). Parents were sown in single row with ten plants and F₁s, F₂s, B₁s and B₂s grown in double rows with ten plants in each row. The plant to plant and row to row spacing were maintained at 45 cm apart. Heterobeltiosis and inbreeding depression from F₁ and F₂ were calculated as suggested by Lal *et al.* (1975).

Results and Discussion

The pre-requisites for the exploitation of heterosis on commercial scale the extent of heterosis (F₁ over the better economic parents). Heterosis and inbreeding are important aspects for studying the nature of gene action in F₁ and F₂ generation. It is of considerable interest to get the cause of heterosis for hybrid seed production. There can not be any gene system for yield *per se* as the yield is the end product of the multiplicative interaction between yield components (Grafius, 1959). This automatically follows that

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EVALUATION OF SUITABILITY OF PH ON MYCELIAL GROWTH OF *CALOCYBE INDICA* STRAINS 5

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Abstract

India has produced more than 291.95 million tons of food grain during 2019-20 and achieved its food security but struggle to achieve nutritional security. So mushrooms production may be a good alternative as a tool to alleviate poverty and bring diversification to agricultural production. Mushrooms are low in calories but rich in protein, carbohydrate, vitamins, minerals, fibers and the mushrooms were nutritionally placed between vegetables and meat. Different strains of milky mushroom having diversified level of pH range for maximize their mycelial growth and production. In present experiment we evaluated five strains of *Calocybe indica* like CIP-18, CIP-19, CIP-20, CI(wild-1) and CI(wild-2) for seven different pH levels (pH 5, 5.5, 6, 6.5, 7, 7.5 and 8). Results shown that the maximum mycelial growth observed for strain CIP-20 at 5 pH (8.6±0.4 cm) than at 7 pH (8.43±0.35) while minimum growth observed at 6 pH (4.53±0.11 cm). The strain CIP-18 and CIP-19 also showed maximum mycelial growth at 5 pH that was 8.27±0.49 cm and 7.37±0.20 cm, respectively. But strain CIP-18 and CIP-19 shown minimum growth at 6 pH that was 4.87±0.28 cm and 4.37±0.20 cm, respectively. The wild strain of *Calocybe indica* CI(wild-1) and CI(wild-2) shown maximum growth at 7.5 pH that was 5.6±0.36 cm and 5.6±0.3 cm, respectively while minimum growth at 6 pH that was 4.23±0.25 cm and 4.17±0.15 cm.

Introduction

India is an agriculture based country and Indian agriculture will continue to be a main strength of Indian economy. India has produced more than 291.95 million tons of food grain during 2019-20 and achieved its food security but struggle to achieve nutritional security. Mushrooms as a crop of economic importance and a tool to alleviate poverty and bring diversification to agricultural production. Mushrooms were considered as healthy, nutritious and luxury food among the rich community because of their unique taste and flavour but now it has also grown as a common man's food. Mushrooms are low in Cholesterol but rich in protein, essential amino acids, carbohydrate, minerals, vitamins, fibers and mushrooms were nutritionally placed between vegetables and meat, so mushrooms are aptly called as slimming foods or vegetable meat.

Milky mushroom (*Calocybe indica*) is a one of the important cultivated mushroom which was introduced and commercialized to the edible mushrooms world from India. Milky Mushroom also known as "DudhChhatta/Dudhiya Mushroom" because it has milky white appearance and large sized sporophores or also known as "white summer

mushroom" because of its tropical nature. *Calocybe indica* is more attractive having excellent shelf-life. It was grown on several agricultural wastes and on wide range of temperatures and pH. Different strains of *Calocybe indica* show diversity in adaptation of their suitable wide range of the temperature and pH levels for maximum radial growth of mycelium on PDA medium. Thus, it is essential to evaluate most favourable pH and temperature range for efficient mycelial growth of milky mushroom strains. Singh *et al.* (2015) observe the range of temperature and pH for proper mycelial growth of different strains of *Calocybe indica* on PDA media. Experiment revealed that the *Calocybe indica* strains (CI-6, CI-8, CI-9, CI-10 and APK-2) showed maximum mycelial growth at pH 8.0 followed by 7.5 and 8.5. Experiment also showed maximum mycelial growth at 30°C and minimum at 21°C. In present study, seven different pH ranges were evaluated on PDA medium to determine their effects on mycelial growth of five strains of milky mushroom, viz. CIP-18, CIP-19, CIP-20, CI(wild-1) and CI(wild-2).

Material and Methods

Collection of Mushroom Culture

Pure culture of three strains, CIP-18, CIP-19 and CIP-20 of

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CULTURAL, MORPHOLOGICAL AND PATHOGENIC VARIABILITY IN ISOLATES OF COLLETOTRICHUM CAPSICI CAUSING ANTHRACNOSE OF CHILLI IN EASTERN U.P.

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Abstract

Anthraco-nose of chilli (*Capsicum* spp.) due to causes *Colletotrichum capsici* major losses throughout India, where chilli plants are grown. Therefore, the present experiment was carried out to understand the behaviour and biology of the pathogen so as to incorporate proper management strategies to reduce the economic loss and get maximum yield. A total of twenty one *Colletotrichum capsici* isolates, associated with necrotic lesions of chilli leaves and fruit were collected from chilli producing areas in Eastern U.P. Isolated pathogen of *Colletotrichum* spp. was readily identified by its falcate shaped conidia and abundant setae in the necrotic lesions. Pathogenic behaviour of 21 isolates derived from chilli fruit was established following Koch's Postulates. Variability in cultural, morphological and pathogenic characteristics was observed in all the isolates of *Colletotrichum capsici* derived from both ripe and unripe chilli fruits.

Keywords: Chilli, *Colletotrichum capsici*, morphological, cultural and pathogenic variability.

Introduction

Chilli is an important cash crop of India and it is the largest producer, consumer and exporter of dry chilli and other products around the world. Chilli plays a very important role in commercial sector. There are many medicinal, nutritional and economically benefits of its production. Chilli is not only important ingredient in foods but it is also used for culinary and remedies applications. Specially, it is used in pharmaceutical industries, preparation of oleoresin, cosmetics, and other industrial resources. This crop suffers heavy losses in yield due to many diseases especially dieback and fruit rot diseases occurs on leaves, stems and fruit of host plants (Sutton, 1992.) Anthracnose caused by *Colletotrichum capsici* (Syd.) is widespread throughout the chilli growing areas of India (Jeyalakshmi, 1996). Anthracnose affects the yield directly and indirectly by infecting stems, leaves and fruits causing flower drop. Anthracnose caused by *Colletotrichum* spp. is a major problem of ripened fruit called as ripe fruit rot occurs worldwide wherever chilli plants are cultivated. *Colletotrichum capsici* is capable of causing disease on virtually all plant parts of the chilli during growth of pathogens. *Colletotrichum capsici* is one of the most important genera of plant pathogenic fungi with many species known to cause disease in plant crops worldwide. Chilli anthracnose usually develops under high humid conditions when rain or irrigation occurs after the fruit formation and ripening of yield losses up to 84% (Thind and Jhoo, 1985). Latent infections during immature green fruits that express at the fruit ripening stage, reduce the quality and quantity of

chilli fruits and causes crop loss up to 50% world-wide (Pakdevaraporn *et al.*, 2005). Small anthracnose lesions on chilli fruits reduce their marketable value due to black spot appear on fruits (Manandhar *et al.*, 1995). Proper identification of these pathogens is important for mitigating the risk of incursion of new pathogens which if happens, may have devastating consequences for the local industries. In addition, exact identification of the species is important for resistance breeding programs and in identifying the host-range of species.

Materials and Methods

The survey was conducted during Rabi season from 2014-15 in five districts of eastern Uttar Pradesh i.e. Varanasi, Chandauli, Mirzapur, Bhadohi, and Jaunpur (Table 1). The diseased leaves and fruits of chilli samples showing typical and unpredictable anthracnose or fruit rot symptoms were collected from the farmer fields.

Identification of isolated pathogen of *Colletotrichum capsici*

A total of twenty one isolates associated with anthracnose symptoms on chilli fruit and leaves were collected during the harvest season of chilli from different districts of Eastern U.P. in India collected and isolated of fungal pathogens. Infected portion of fruits and leaves were cut into small pieces of 5 to 6 mm and 1.5-2.5 mm width were cut at the juncture of diseased and healthy portion with the help of disinfected blade after surface sterilizing. These bits were surface sterilized in 0.2% mercuric chloride (HgCl₂) solution for about 15 seconds

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EFFECT OF DIFFERENT CULTURE MEDIA AND TEMPERATURE ON RADIAL GROWTH OF MILKY MUSHROOM (*CALOCYBE INDICA*) P & C. STRAINS

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Abstract

Milky mushroom also known as "white summer mushroom" because it is suitable to grow in tropical regions. It is 4th largest cultivated mushrooms in India after button and Oyster and paddy straw mushrooms. Milky mushrooms are edible and are rich in essential nutrients such as proteins, carbohydrates, vitamins, mineral, fat, fibres and various amino acids. Variations in mycelial growth of milky mushroom strains were observed in diversified range of media and temperature. In present study we have evaluated the three strains of *Calocybe indica* (CIP-18, CIP-19 and CIP-20) for seven different culture media and temperature ranges. The results shown that strain CIP-18 shown maximum growth on PDA and WEA media was 8.83 cm followed by MEA (8.70 cm), BAF (8.13 cm), CMA (7.77 cm) and YEPDA (7.73 cm) while minimum growth observed from CEA media (7.20 cm). The strain CIP-19 shown maximum growth on MEA media (8.93 cm) followed by PDA (8.73 cm), WEA (8.33 cm), CMA (8.27 cm), YEPDA (7.43cm) and BAF (7.17 cm) while minimum CEA media (7.03 cm). The best performance of strain CIP-20 observed on PDA medium (9.00 cm) than on MEA (8.83 cm), WEA (8.77 cm), CEA (8.50 cm), BAF (8.47 cm) and YEPDA (8.03 cm) while minimum on CMA medium (7.90 cm). The maximum mycelial growth in the effect of different temperature ranges for strain CIP-18 observed at 30°C (8.10 cm) than at 34°C (7.63 cm), 28°C (7.60 cm), 26°C (7.36 cm), 32°C (7.30 cm) and at 36°C (2.30 cm) while temperature 38°C shown minimum growth (2.3 cm). The strain CIP-19 shown maximum mycelial growth at 30°C (9.00 cm), than at 32°C (8.90 cm), 34°C (8.63 cm), 26°C (8.00 cm), 28°C (7.93 cm) and at 36°C (5.83 cm) but minimum at 38°C (2.3 cm). The strain CIP-20 strain shown best performance on different temperature effect with full petri-plate mycelial growth 9.00 cm at temperature 30°C and 32°C followed by 26°C and 28°C shown 8.93 cm than at 34°C (8.13 cm) and 36°C (3.66 cm) while minimum mycelial growth was observed at 38°C (2.23 cm).

Introduction

Agriculture is backbone of our country. Green revolution provided the required food security as produced sufficient amount of food grain by every year but struggling to achieve nutritional sufficiency. The Mushrooms cultivation technology has always catch the attention due to its multidimensional usage such as eliminating malnutrition, recycling of residue and providing chances of employment for youth. The mushroom cultivation can also be done by land less labour and it is an eco-friendly alternative for agro-waste recycling and provide better nutrition for the vegetarian population. In some societies, the consumption of mushroom was considered a royal food due to of its pleasant flavor and texture (Chang and Miles, 1990). The large size fruiting body which can be considered as mushroom was found in approximately 14000 described species from the millions of fungi existing in the world (Kirk *et al.*, 2008). Out of them about 7000 macro-fungi having varying degree of edibility and 200 species were successfully cultivated in laboratory but now a day's hardly 10 species were cultivated at industrial

label by farming communities of different countries (Ferreira *et al.*, 2016). In 2019 total mushroom production of India accounted 20 million tonnes, in which Button mushroom and oyster mushroom production was contributed about 73% and 16% of total mushroom production respectively while milky mushroom contributed only 3% of total mushroom production in India. (ICAR, DMR, 2019).

Milky mushroom (*Calocybe indica*) strains are robust, fleshy and milky white in colour even after flattening. The milky mushroom strains were suitable for cultivation even in hot humid climate, tropical regions with temperature ranges 25°C to 35°C and 70 to 90 percent humidity hence this mushroom is highly suitable for production in most of the plains of India almost throughout the year. Milky mushroom strains were grown on several agricultural wastes and on wide range of temperatures and pH. The *Calocybe indica* strains can grow on wide range of culture media and temperature. Thus, it is essential to evaluate most favorable culture media and temperature range for efficient mycelial growth of milky

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Impact of Law and Justice Subject Reading on Higher Educational Libraries in India

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Abstract

Legal texts and legal terminologies are unique in both their form and structure and they are of their own special genre. Legal reading is a skill that all law students need to master in order to become successful students and future lawyers. Legal reading is very important to a law student's academic career. Reading of statutory provisions and judicial opinions is central to both law students and the law practitioners. Legal reading is a challenging task for many people including the law students. In order to understand legal text, a reader needs knowledge of legal terminology and an understanding of case structure and legal theory. Since, reading is essentially a constructive process, but interpretation is built from the knowledge of reader.

Introduction:

Legal texts and legal terminologies are unique in both their form and structure and they are of their own special genre. Legal reading is a skill that all law students need to master in order to become successful students and future lawyers. Legal reading is very important to a law student's academic career. Reading of statutory provisions and judicial opinions is central to both law students and the law practitioners. Legal reading is a challenging task for many people including the law students. In order to understand legal text, a reader needs knowledge of legal terminology and an understanding of case structure and legal theory. Since, reading is essentially a constructive process, but interpretation is built from the knowledge of reader. If a reader lacks knowledge, then he/she will be unable to gate effective interpretation. Reading legal opinions to maximize time efficiency and comprehension is one of the most critical skills for any law readers.

➤ **Nature of Legal Reading:** There is far more to legal reading than simply reading a judicial opinion quickly or re-reading the text frequently. But the real issue became one of reading effectively, not just reading quickly. Effective legal readers should know what to pay attention to and what to let go of; in other words, readers should know what details are relevant to the decision and what details are irrelevant. At the same time effective legal readers should use reading strategies that allow them to go beyond the mere words in any opinion into the analysis and reasoning of the court. To maximize the effectiveness of legal reading various different reading strategies needs to be adopted. Poor readers make more oral reading errors that can affect the meaning of text. This may happen due to misreading or skipping words while reading, the reader is at risk of miscomprehending whatever is being read.

➤ **An Expert legal readers vs. novice/learner reader:** A successful law advocate/student must also be efficient readers so that one can devote their mental energies toward comprehending what they are reading. Good readers store words and word parts in their memories as visual

Use of ICT in Higher Education System in India with Special Reference Library Science

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Abstract:

The paper is covered to all parameters on the highlight the impact of information and communication technology (ICT) in the higher education for the 21st century. Education is much more important for the social heritage importance will continue to grow and develop in the 21st century. Information and communication technologies (ICT) have become common place entities in all aspects of life. Across the last twenty years the use of (ICT) has fundamentally changed the practices and procedures of all forms of efforts business and governance. Education is a very socially oriented activity and quality education traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in higher education lends it self to more student -centered learning settings and often this creates some tensions for some teachers and students. The paper argues the role of ICT in transforming teaching and learning and seeks to explore how this will impact on the specific program will be offered and delivered in the universities and colleges of future.

Keywords: ICT, Higher education, Social development

Introduction:

Information and communication technology is a force that has changed many aspects of the way we live. If we can compare such different types of fields as medicine, tourism, travels, banking, law, business, engineering and architecture, the impact of ICT across the last two or decades has been tremendous. The way these fields operating today is much more vastly different from the ways they operated in the past. But when one looks at education, there seems to have been an unique lack of influence and less changed. There have been a number of factors impeding the wholesale lift of ICT in education across all sectors. These have included such factors as a lack of funding to support the purchase of the technology, a lack of training among established teaching practitioners, a lack of motivation and need among teachers to adopt ICT as teaching tools (Starr, 2001). But in recent times, factors have emerged which have strengthened and encouraged moves to adopt ICTs into classrooms and learning settings. These have included a growing need to explore efficiencies in terms. Computers can be used briefly for academic administration. The following are some areas where computers can be used for effective academic administration eg.

1. General Administration
2. Financial Accounting
3. Administration of Enrollments
4. Shelving and Furniture management
5. Maintenance of Personal Record
6. Library Management System

The Indian higher education system is one of the largest in the world. With only 20 universities and 500 colleges with 0.1 million students at the time of independence, but we now

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The impact of sustainable farming in improving household food security of marginal farmers in the eastern indo-gangetic plains of India

MP Singh and Ram Narayan Meena

Abstract

The basic challenge for sustainable agriculture is to make best use of available biophysical and human resources. But growth being at the centre-stage of the policy agenda of almost all countries in the world has led to fast depletion of natural resources. Land and water constitute two important renewable resources extensively used in agricultural sector. The sustainable farming and diversification of agriculture is an alternate way for the regeneration and conservation of land and water. The present paper attempts to study if diversification can ensure sustainability in agriculture. For this purpose, secondary data at two points of time 2014-15 and 2015-16 are used. It is observed that crop under coarse cereals has declined from 2.10 to 1.76 per cent. For rest of crops it has increased and in case of sugarcane it is constant. The index values for the country as a whole reveals the fact that there is crop concentration in favour of fruits and vegetables. At the state level, sustainable farming and crop diversification is found to be highest in Andhra Pradesh followed by West Bengal, Bihar, Maharashtra and Karnataka. Rest of the states has concentration of crops with highest in Odisha followed by Madhya Pradesh. These evidences suggest that the use of organic manures like farmyard manure, vermicompost and poultry manure along with biofertilizers could be a key factor for achieving and maintaining high level of production in high value crops and crop sequences as sustainable farming and crop diversification. Therefore, an investigation entitled "The Impact of Sustainable Farming in Improving Household Food Security of Marginal Farmers in the Eastern Indo-Gangetic Plains of India" was carried out at Varanasi at *Urethra* soil between 2014-15 and 2015-16 to compare organic and chemical fertilizer nutrient inputs packages in rice and maize-based cropping sequence. Fielded data analysis revealed that the application of 100% RDN through organic manures as 1/3 farmyard manure (YM) + 1/3 *Trichoderma* compost + 1/3 Vermicompost (VC) + *Azotobacter/Rhizobium* + PSB (B1) had the highest rice equivalent grain yield (system productivity), production efficiency, as well as net secondary return and profitability in different rice and maize-based cropping sequence. Among the different cropping sequences maize-chickpea sequence has higher value with respect to system productivity, production efficiency and economic efficiency. However, rice-mustard sequence proved superior with respect to land use efficiency. The different cropping sequences differ with respect to nutrient uptake (e.g., maize-frenchbean had the highest removal of N, P and K than the rest of cropping sequence) which was significantly superior to the rest of the sequences. The organic nutrition (with organic manures along with biofertilizers (B1)) proved superior due to its visible favorable effect on soil health with respect to nutrient status and microbial count and this indicates the utilization of this low-cost but long-term beneficial practice under high-intensity cropping for sustainable crop production.

Keywords: Organic nutrient management, Cropping systems, *Trichoderma* compost, Biofertilizers, System productivity, Soil health

Introduction

Sustainable farming and crop diversification provides the farmers with a wider choice in the production of a variety of crops in a given area so as to expand production related activities on various crops and also to bring down the possible risk. Sustainable farming and crop diversification in India is generally viewed as a shift from traditionally grown less remunerative crops to more remunerative crops. The sustainable farming and crop diversification is also taking place due to governmental policies, thrust on some crops, market reforms, infrastructure development, government subsidies, certain other price related support mechanisms, higher profitability and stability in production also induces crop diversification. Sustainable farming and crop diversification and growing of large number of crops are practiced in dry land areas to reduce the risk factor of crop failures due to recurring droughts. Crop substitution and crop shift are also taking place in the areas suffering with some specific soil related problems. The country has made considerable progress in the farm sector during the last 50 years. From 'hand to mouth' conditions in the early sixties, the country has not only become self-reliant in food grains but have acquired sufficient resilience to tide over the

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DIAGNOSTIC TRAITS OF OKRA (ABELMOSCHUS ESCULENTUS L. MOENCH): GLOBAL SIGNIFICANCE IN VEGETABLE WORLD

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ABSTRACT : Okra is a substantial vegetable crop of the tropical nations. Okra has a place with the family Malvaceae. It probably originated in Ethiopia and is broadly spread all over tropical, subtropical, and warm calm districts of the world. However, it is practically not developed in Europe and North America, yet, a lot of individuals in these nations have begun preferring this vegetable on account of a good measure of nutrients such as vitamin A and folic acid, other than carbohydrates, phosphorus, magnesium, and potassium. Also, its adhesive is reasonable for certain clinical and mechanical applications. Accordingly, young products of okra have stirred valuable interest for bringing this yield into business creation. The ideal yield of okra is 20,20,526 ha and 98,72,824 tonnes (FAO STATE data, 2020). Okra requires warm temperatures. Okra needs a rather high amount of water regardless of having impressive drought resistance. The plant forms a profoundly entering tap root with thick shallow feeder establishes connecting every which way in the upper 45 cm of soil. Soil moisture is fundamental during the continuation of the developing period.

Keywords : Okra, vitamin-A, carbohydrates, phosphorus, magnesium, potassium.

Okra (*Abelmoschus esculentus* L. Moench) belong in the Malvaceae family, is a significant summer vegetable grown in Iraq, Central Africa, Ethiopia, Eritrea, Sudan, and Egypt, and it is also viewed that okra moved to the Mediterranean area, Arab and India (Jaafar *et al.*, 2020). Several names such as *Abelmoschus esculentus* and *Hibiscus esculentus* (Kumar *et al.*, 2010), and it is usually known as bhindi in India, krajiab kheaw in Thailand, ochro, okoro, quingombo, quingumbo, gombo, kopi Middle Easterner, kacang bendi and bhindi in South East Asia. In many cases, in the Middle East it is known as bamia, bamya or bamieh and gumbo in Southern USA, and lady's finger in England (Gaikwad *et al.*, 2020). Then again, quiabo in Portuguese and Angola, and as quimbombo in Cuba, gumbo in France, mbamia and mbinda in Sweden, okura in Japan (Chauhan, 1972; Lamont, 1999), and qiu kui in Taiwan (Siemonsma and Kouame, 2000). Okra is a well-known nutritious vegetable as it contains vitamin A, and flavonoid anti-oxidants, for example, beta-carotene, xanthin, and lutein (Shawon *et al.*, 2020).

Chemical composition

Okra contains several vitamins such as vitamin C (21.1 mg), vitamin A (375 IU), vitamin E (0.36 mg), vitamin K (53 ug), thiamine (0.200 g) of fresh-raw pods value per 100 g (USDA, 2018). The young okra pod is significant as fresh fruits, and it tends to be devoured in various forms (Ndunguru and Rajabu, 2004). Organic products can be boiled, seared, or cooked (Akintoye, *et al.*, 2011). The creation of okra units per 100 g consumable bit (81% of the product as bought, closes managed) is moisture 89.6 g, minerals (0.7 g) energy 144.00 kJ (35 kcal), protein 1.9 g, sugar 8.20 g, fat 0.20 g, fiber 1.70 g, Ca 66 mg, K 103 mg, Mg 53 mg, Na 6.9 mg, P 56.00 mg, Fe 1.20 mg, α -carotene 185 ig, riboflavin 0.08 mg, thiamin 0.04 mg, niacin 0.60 mg, ascorbic acid 47 mg. Okra leaves per 100 g palatable part is water 81.50 g, energy 235 kJ (56.00 kcal), protein 4.40 g, fat 0.60 g, sugar 11.30 g, fiber 2.10 g, Ca 532 mg, P 70 mg, Fe 0.70 mg, ascorbic acid 59 mg, α -carotene 385 ig, thiamin 0.25 mg, riboflavin 2.80 mg, niacin 0.20 mg (Varmudy, 2011; Ofori *et al.*, 2020). Carbohydrates 6.4 g is fundamentally present as an adhesive (Liu *et al.*, 2005; Kumar *et al.*, 2009). That of young fruits products consists of long-chain atoms with a sub-atomic load of around 170,000 comprised of

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Generalization of Quasi-Hadamard products of functions with Negative Coefficients

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Abstract

Let T denote the class of functions with negative coefficients which are analytic in the open unit disc U . For functions $f_1(z)$ and $f_2(z)$ belonging to T , generalization of the Quasi-Hadamard product of $f_1(z)$ and $f_2(z)$ represented by $f_1 \nabla f_2(p, q; z)$ are introduced. In this paper, we investigate some interesting properties of these generalization of Quasi-Hadamard product of functions in $ST_0^*(\alpha)$ and $C_0(\alpha)$.

1. Introduction

Let T denote the class of functions of the form

$$f(z) = a_0 z - \sum_{n=2}^{\infty} a_n z^n, \quad (a_1 > 0; a_n \geq 0) \quad (1.1)$$

Which are analytic and univalent in the open unit disc $U = \{z : |z| < 1\}$.

Let $ST_0^*(\alpha)$ and $C_0(\alpha)$ denote the class of functions $f(z)$ belonging to the class T which satisfy

$$\operatorname{Re} \left\{ z \frac{f'(z)}{f(z)} \right\} > \alpha$$

and $\operatorname{Re} \left\{ 1 + z \frac{f''(z)}{f'(z)} \right\} > \alpha$, respectively, where $z \in U$

and $0 \leq \alpha < 1$. Clearly the functions $ST_0^*(\alpha)$ and

$C_0(\alpha)$ are starlike and convex functions of order α , respectively. Evidently $ST_0^*(\alpha) \subset ST_0^*(\beta)$ and $C_0(\alpha) \subset C_0(\beta)$, where $0 \leq \beta < \alpha < 1$.

Let $f_j(z)$ ($j=1, 2$) in T be given by

$$f_j(z) = a_{1,j} z - \sum_{n=2}^{\infty} a_{n,j} z^n, \quad (j=1, 2). \quad (1.2)$$

The Quasi-Hadamard product of two or more functions has been defined and used by Owa [3,4,5], Kumar [1,2] and others. Accordingly, the Quasi-Hadamard product of two functions $f_j(z)$ defined by (1.2) is given by

$$f_1 * f_2(z) = a_{1,1} a_{1,2} z - \sum_{n=2}^{\infty} a_{n,1} a_{n,2} z^n. \quad (1.3)$$

For any real numbers p and q , we define the generalized Quasi-Hadamard product $(f_1 \nabla f_2)$ by



Fractional Derivatives with Two Fixed Points on a Class of Analytic and Univalent Functions

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Abstract

In the present paper, we obtain a class $M(A, B, z_0, \delta, \mu)$ of analytic and univalent functions using fractional derivative with two fixed points. Also, we determine certain properties of the above-mentioned class.

1. Introduction

Let T represent the class of analytic and univalent functions defined in the unit disc $u = \{z: |z| < 1\}$ of the form

$$f(z) = a_1 z - \sum_{n=2}^{\infty} a_n z^n \quad (a_1 > 0; a_n \geq 0). \quad (1.1)$$

and

$$g(z) = b_1 z - \sum_{n=2}^{\infty} b_n z^n \quad (b_1 > 0; b_n \geq 0). \quad (1.2)$$

Then

$$(f * g)(z) = a_1 b_1 z - \sum_{n=2}^{\infty} a_n b_n z^n. \quad (1.3)$$

A function f of $T \in T(\alpha, \beta)$ iff

$$\left| \frac{\frac{zf'(z)}{f(z)} - 1}{\frac{zf''(z)}{f(z)} - (1 - 2\alpha)} \right| < \beta, \quad z \in u \quad (1.4)$$

for $0 \leq \alpha < 1$ and $0 < \beta \leq 1$. Gupta and Ahmad [4] and Srivastava, Sekine, Owa and Nishimoto [1] were studied the class $T(\alpha, \beta)$ and $C(\alpha, \beta)$ iff $zf'(z) \in T(\alpha, \beta)$ of $a_1 = 1$, these classes were studied by Gupta and Jain [5].

Let T_0 and T_1 be two subclasses of T consisting of functions f such that $f(z_0) = z_0$ and $f'(z_0) = 1$ for $0 < z_0 < 1$, respectively. Then the classes $T_0(\alpha, \beta, z_0)$, $C_0(\alpha, \beta, z_0)$, $T_1(\alpha, \beta, z_0)$ and $C_1(\alpha, \beta, z_0)$ are obtained by

$$T_i(\alpha, \beta, z_0) = T(\alpha, \beta) \cap T_i(i = 0, 1) \quad (1.5)$$

and

$$C_i(\alpha, \beta, z_0) = C(\alpha, \beta) \cap T_i(i = 0, 1) \quad (1.6)$$



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Agronomic fortification in wheat (*Triticum aestivum* L.) with zinc

Manish Kumar, RP Singh, PK Yadav, Vibha Singh, SK Patel, SKS Chandel and SN Singh

Abstract

Zinc is one of the essential plant micronutrient and its importance for crop productivity is similar to that of major nutrients. Intensive agriculture coupled with the continuous use of N, P, K fertilizers have remarkably increased the production but simultaneously brought about problems related to micronutrient deficiencies, particularly that of Zn in soil. Zinc deficiency is major risk factor to crop production and human health. A field experiment was conducted during Rabi Season of 2018-19 at Research Plot of Department of Agricultural Chemistry and Soil Science, Udai Pratap (Autonomous) College, Varanasi. The experiment was laid out in a randomized block design with six treatment combinations and three replications. Treatment includes T₀ = Control (RDF), T₁ = RDF + ZnSO₄ @ 25 kg ha⁻¹, T₂ = RDF + ZnSO₄ @ 50 kg ha⁻¹, T₃ = RDF + T₁ + 3 FS @ 0.5% ZnSO₄ at PF, HS and MS, T₄ = T₂ + 2 FS @ 0.5% ZnSO₄ at PF and MS, T₅ = RDF + ZnSO₄ @ 5kg ha⁻¹ + F S @ 0.5% at HS. FS= Foliar Spray, PF= Pre Flowering Stage, HS=Heading Stage, MS= Milking stage, RDF= Recommended Dose of Fertilizer. Important growth parameter (plant height and number of tillers) at different growth stages and dry matter yield (grain and straw) was determined. Application of Zn significantly affected the plant height, number of tillers, grain and straw yields over control (without Zn). Maximum was registered in the treatment T₄ (ZnSO₄ @ 50 kg ha⁻¹ and 2 FS @ 0.5% ZnSO₄ at PF and MS). All the treatments have significant positive effect over control in case of nutrient content in plant. The minimum nutrient content and its uptake were recorded with T₀ and the maximum under the treatment T₄. Application of Zn also increased the availability of nitrogen, phosphorus and potassium in post harvest soil.

Keywords: Wheat yield, NPK & Zn content and uptake, Available NPK

1. Introduction

The state of Uttar Pradesh in North India covers an area of 24.09 m ha and has 16.81 m ha of cultivated area, constituting 70 per cent of the total geographical area. The irrigated area is 73 % and cropping intensity is 153 %. Present agricultural system depend upon mining of plant nutrients by adoption of intensive tillage, use of high yielding varieties imbalanced use of organic and inorganic sources of nutrients, less recycling of crop residues into the soil, soil erosion and unjudicious use of irrigation water. Zinc is one of the essential plant micronutrient and its importance for crop productivity is similar to that of major nutrients. Intensive agriculture coupled with the continuous use of N, P, K fertilizers has remarkably increased the production but simultaneously brought about problems related to micronutrient deficiencies, particularly that of Zn in soil. In India, analysis of over 2,50,000 soil sample from 20 states show that 48 % soils are Zn deficient with DTPA- Zn values below 0.6 mg kg⁻¹ (Singh, 2009) [1]. Shukla et al. (2014) [2] reported that about 43% soils in India are potentially Zn deficient. Zinc application in Zn deficient soil has been found to boost the growth of plants and yield of crops to a great extent. Bio-fortification is a recent approach aimed at increasing the bio-available nutrients, such as Fe and zinc, in the staple crops rather than using fortificants or supplements (Waters and Sankaran, 2011) [3] (White and Broadley, 2009) [2]. Being the major staple, wheat contributes more than two-thirds of Fe and almost one-third of calcium required by adult in low socio-economic groups of the population in northern India. Therefore, the composition and nutritional quality of wheat grain has significant impact on human health and well-being, especially in the developing world. Hence the present study initiated to investigate the agronomic fortification in wheat (*Triticum aestivum* L.) with zinc.

2. Materials and Methods

Field experiment was conducted in Kabi Season of 2018-19 at the research plot of Department of Agricultural Chemistry and Soil Science, Udai Pratap (Autonomous) College, Varanasi. The experiment was carried out in Randomized Block Design (RBD) with six treatments and three replications. Treatments includes T₀ = Control (RDF), T₁ = RDF + ZnSO₄ @ 25 kg ha⁻¹,

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PHOSPHORUS FRACTION AND THEIR RELATIONSHIP WITH PHYSICO-CHEMICAL PROPERTIES OF SURFACE SOIL OF VARANASI RESION(U.P.)

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ABSTRACT

A laboratory was conducted to fractionate the soil P and find the relationship of different P fraction with physicochemical properties of surface soil of Varanasi region (U.P.) in the laboratory of agricultural chemistry and soil science department (Uda Pratap college Varanasi). Most of the soils were light textured. Soils from seven different region were collected and analyzed for phosphorus (P) fraction. The soils were neutral to slight alkaline in nature. The electrical conductivity (EC) ranged from 1.46 to 3.50 dS/m. The bulk density varied from 1.18 to 1.48 Mg/m³. The organic carbon values ranged from 0.50 to 0.75%. The highest value was observed in E1W in surface soils. The distribution of the different fraction of the phosphorus fraction was as Saline P (23.43 to 44.62 ppm), Al-P (10.75 to 20.02 ppm), Fe-P (6.96 to 13.4 ppm), Ca-P (80.97 to 115.75 ppm), reductant soluble P (13.66 to 23.79 ppm), occluded-Al-Fe-P (13.02 to 26.75 ppm), organic P (81.41 to 172.32ppm) with total phosphorus (270.75 to 383.84ppm) in different surface soils. The highest amount of Saline P, Ca-P, and lowest of Fe-P, Al-P, Organic P. Among the different P fractions Ca-P was dominant fraction followed by saline-P, reductant soluble-P, Al-P and Fe-P.

Key words: Phosphorus fractionation, Calcium, Fe, Al

Introduction

Phosphorus is one of the essential plant nutrients for plant growth and is of particular interest in highly weathered tropical and sub-tropical soils (Brady and Weil, 2002). Phosphorus plays an important role as a structural component of the cell constituents and metabolically active compounds. It is a constituent of sugar phosphate viz. ADP, ATP etc., nucleic acid purine, pyrimidine etc. and various coenzymes. In combination with different organic acids, phosphorus forms esters, phosphatides and phospholipids. As phosphate ester of inositol, phosphorus is a major component of phytin. Besides, phosphorus play an important in energy transformation and metabolic process of plants. The deficiency of phosphorus disturb the nitrogen metabolism and also results in an increased accumulation of free reducing sugars, suggesting an involvement of phosphorus in carbohydrate metabolism. Phosphorus is not reduced in plants but remains in its highest oxidised form. Phosphorus in soils almost exclusively occurs as orthophosphate ions. The

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Original Research Article

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Effect of Moisture Conservation Practices on Growth, Yield, Root Development, Water Use and Economics of Sorghum Varieties under Rainfed Condition

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ABSTRACT

Keywords

Rainfed, Growth, Yield, Root development, Water use, Yield attributes, Net return, B: C ratio, Varieties

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A field experiment was conducted during two *kharif* seasons of 2015 and 2016 on sandy loam soil to study the performance of moisture conservation practices on growth, yield attributes, yield, water use, water use efficiency, root development and economics of sorghum varieties under rainfed condition. Results revealed that variety 'Ratna-40' proved to be the most promising in growth, yield attributes, yield, root development, net return and B : C ratio as compared to Hi-tech-3201, Virat and Suraj. Crop yield was better with application of organic residue mulch @ 4 t ha⁻¹ on soil surface in between the crop rows at 25 DAS as compared to ridging and furrowing in between the crop rows at 25 DAS and farmer's practice (control).

Introduction

Water availability for agriculture is going to be in short supply due to tremendous pressure from the ever increasing demands for domestic and industrial uses. To safeguard food security to the growing population and to maintain the environmental quality, the available water resources have to be efficiently managed. This is important particularly in rainfed areas, which covers 63% of the cultivated area of India. Moisture

conservation practices have great potential to conserve moisture, control weeds, moderate soil temperature and nutrient dynamics which enhance the productivity of sorghum in rainfed areas (Patil *et al.*, 2011). Organic residue mulch reduces moisture loss by improving its availability to the plants at later stages of crop growth. Surface mulching of crop residues in line sown crops is employed to reduce soil splash, evaporation and excessive heating of surface soil so that microbiological activities are not adversely



Biomass Productivity, Crop Yield and Socio-Economic Status of Madhoganj Block Watershed of the District Hardoi as Influenced under Various Soil and Water Conservation Measures

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Abstract

A field study was conducted on biomass productivity and crop yield changes in relation to soil and water conservation practices in selected watershed of district Hardoi (U.P.) India. The results achieved after three years of study shows that soil and water conservation measures have influences crop yield and biomass productivity compared to initial year values in the study area. It is obvious from the data of pre and post-project period of various resource from bench mark survey obtain that the average socio-economic status of rural population has been improved due to soil and water conservation practices adopted in selected area. The stakeholders in the study area are marching towards self-dependence in their needs by the introduction of scientific cropping and timely managing their input resource by creating the awareness among them. It was observed that growing cover crops like cowpea in *Kharif* followed by gram in *Rabi* in combination with fodder crops found to be effective for increasing crop yield as well as biomass productivity under scarce moisture condition.

Keywords: Biomass, yield, soil conservation measures, socio-economic status.

Introduction

Conservation agriculture systems require higher levels of biomass production within the rotation to develop and maintain an adequate mulch cover, to increase soil organic matter level, to enhance soil biodiversity and their functions, to raise moisture and nutrient holding capacity, to enhance nutrient supplies, to enrich the soil with nitrogen in the case of legumes and to protect the soil surface. Agricultural practices that enhance soil organic matter are built into conservation agriculture principle and include one or more of the practices, including, minimal or no-till,

ON A NEW SUBCLASS OF HARMONIC UNIVALENT FUNCTIONS WITH MISSING COEFFICIENTS

J. BALA MISHRA, S. POUWAL

ABSTRACT. The purpose of the present paper is to introduce a new subclass of harmonic univalent functions defined by convolution. Coefficient bounds, distortion bounds, extreme points, convolution conditions and convex combinations are studied for this class. Finally, we discuss a class preserving integral operator for this class.

2010 *Mathematics Subject Classification.* 30C15

Keywords: Harmonic functions, extreme points, distortion bounds, convolution.

1. INTRODUCTION

A continuous complex-valued function $f = u + iv$ defined in a simply-connected domain D is said to be harmonic in D if both u and v are harmonic in D . In any simply-connected domain D we can write $f = h + \bar{g}$, where h and g are analytic in D . A necessary and sufficient condition for f to be locally univalent and sense-preserving in D is that $|h'(z)| > |g'(z)|, z \in D$. See Clunie and Sheil-Small [3]. For more basic results on harmonic mappings one may refer to the following excellent text book by Duren [5], (see also Ahuja [1], Pommerai and Rasila [8], [9] and references therein).

Denote by S_H^1 the class of functions $f = h + \bar{g}$ that are harmonic univalent and sense-preserving in the open unit disk $U = \{z : |z| < 1\}$ for which $f(0) = f_z(0) = 1 = a$. Then for $f = h + \bar{g} \in S_H^1$ we may express the analytic functions h and g as

$$h(z) = z + \sum_{k=2}^{\infty} a_k z^k, g(z) = \sum_{k=1}^{\infty} b_k z^k, |b_1| < 1. \quad (1)$$

The harmonic function $f = h + \bar{g}$ for $g \equiv 0$ reduces to an analytic function $f \equiv h$. A function $f = h + \bar{g}$ of the form (1) is said to be harmonic starlike of order



Scanning electron microscopy indicates Pseudomonad strains facilitate AMF mycorrhization in litchi (*Litchi chinensis* Sonn.) air-layers and improving survivability, growth and leaf nutrient status

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ABSTRACT

The efficacy of two plant growth promoting rhizobacteria (PGPR) viz. *Pseudomonas putida* strain PG2 and *Pseudomonas syzygetica* strain RB1 was examined for mycorrhization of arbuscular mycorrhizal (AM) fungi (*Glomus intraradices*), survivability, growth and leaf nutrient status in litchi air-layer system. Therefore, the litchi air-layers were inoculated with PGPR i.e., *Pseudomonad* strains and AM fungi alone and with combination during the preparation of air-layers on the mother tree and planting of air-layers in root trainers just after detachment of the fresh air-layers from the mother tree. The scanning electron microscopy of the litchi roots indicated that *Pseudomonad* strains enhanced the process of mycorrhization of AM fungi and accounted near about 11.5 (tree inoculation) to 14.5 (root trainer inoculation) per cent increase in colonization over the sole inoculation of AM fungi in respective air-layers. No sign of mortality in any air-layered plants was noted in PGPR + AM fungi and sole AM fungi inoculated air-layers up to 18 months of growing. Significantly, the highest shoot and root dry weight, and root length were recorded in the air-layers inoculated with both PGPR and AM fungi. This co-inoculation of PGPR with AM fungi was also responsible for the significant enrichment of the primary (N, P and K) and micro (Zn, Cu and Fe) nutrient concentration of the leaves in the litchi air-layers. However, the inoculation of air-layers with these microorganisms failed to produce any significant effects on leaf secondary (Ca, Mg and S) nutrient content. Further, the inoculation treatments had an adverse impact on leaf Mn content. The fresh air-layers inoculated after detachment from the mother tree were performed better for most of the studied parameters than the tree inoculated air-layers.

... is an essential event during the entire life cycle in ... tree. This association is not only helping the ... of essential elements from soil ...
... a better tolerance level to environmental stresses ...
... (origin) ... The causes of mortality ...
... field conditions are reported to be either the ...
... of adlateral roots ... and/or slow ...
... process in these lateral roots ...

... Since, mycorrhization in litchi is only taking place on short-lived ...
... Therefore, to stimulate the process of mycorrhization, ...
... mixing of pit soil with the soils of old litchi orchards is a common ...
... practice by the litchi growers in India during establishment of a new ...
... orchard by planting of litchi saplings in a barren land ...
... However, the success of this practice depends upon the presence ...
... of the arbuscular mycorrhizal fungi (AM fungi) inoculum in the intro ...
... duced soils i.e., soils of old litchi orchard, proper mixing of both new and ...
... old orchards soils and several other operational and biological factors ...
... Worldwide, young litchi trees are multiplied by the technique of air

(A. Verma), (E. Chakraborty)

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पत्रांक

Ref No/2023-24

दिनांक

Date.....

3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during the last five years

S. No.	Title of paper	Name of the author/s	Name of journal	Year of publication
1	An Study of Chalanges for Financial Well being Through Financial Planning	Dr. YOGESH SHUKLA	Anvesak	2021-22
2	Water saving technologies and modeling of withdrawal allocation and consumptive use of surface groundwater resources in RWCS: A review	Dr. S. K. S. Chandel	The Pharma Innovation Journal	2021-22
3	College libraries structures in higher education system in India	Mr. RamdasVerma	Research journey: multi-disciplinary international e-research Journal	2021-22
4	Utilization ICT in academic libraries in India	Mr. RamdasVerma	The journal of Oriental Research Madras	2021-22
5	Combining Ability for Yield and Its Contributing Characters in Okra (Abelmoschusesculentus (L.) Moench)	Dr. Sanjiv Kumar, Dr. M.P. Singh, Dr. S.K. Vishwakarma, And Dr. M.K. Yadav	International Journal of Agriculture Science	2021-22
6	On Certain Subclasses of Univalent Functions Associated with Wright Function	Dr. InduBala Mishra	Theory and Applications of Mathematics & Computer Science	2021-22
7	Storage studies of Aonla products for quality traits	Dr. A.K. Pandey	Progressive Horticulture	2021-22
8	Some Results on Kulkarni and Nair Class of Analytic and Univalent Functions	Dr. Nalini Shukla	Kaav International Journal of Arts, Humanities & Social Sciences	2021-22
9	Response of pearl millet cultivars to different moisture conservation practices under rainfed condition in light textured soil of Centre U.P. India	Dr. P.K. Rajput	Plant Archives	2021-22
10	Impact and response of irrigation methods on growth and yield of Marigold crop in Etawah District of Uttar Pradesh	Dr. P.K. Rajput, Dr. M.P. Yadav and Dr. M.K. Yadav	International Journal of Agriculture Sciences	2021-22
11	Study of Correlation and pathcoefficient analysis in Radish (Raphanus sativus L.) under Partial shade condition of orchard	Dr. M.P. Yadav, Dr. P.K. Rajput, Dr. Sanjeev Kumar, Dr. M.K. Yadav, Dr. S.K. Vishwakarma	International Journal of Agriculture Sciences	2021-22
12	Post-Harvest Losses of oil seeds, pulses and cereals	Dr. M.P. Yadav, Dr. P.K. Rajput, Dr. Sanjeev Kumar, Dr. M.K. Yadav	International Journal of Agriculture Sciences	2021-22

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पत्रांक

Ref No/2023-24

दिनांक

Date.....

13	Micronutrients status and their spatial variability in Alfisols soil of Damtari districts of Chhattisgarh-a GIS approach	Dr. P.K. Rajput	The Pharma Innovation Journal	2021-22
14	Response of integrated use of bio fertilizer, FYM with inorganic fertilizer on yield nutrient content and quality of wheat	Dr. P.K. Rajput	The Pharma Innovation Journal	2021-22
15	Soil fertility mapping at village level using IRSLISS- IV and Cartosat - 1merged data in two Nyaya Panchayat of Amethi district, U.P.	Dr. P.K. Rajput	The Pharma Innovation Journal	2021-22
16	Effect of Moisture management in Eroded soils on rain fed sorghum varieties of Central UP	Dr.M.P. Yadav, Dr. P.K. Rajput, Dr. M.K. Yadav	International Journal of Agriculture Sciences	2021-22
17	Effect of organic manure and plant growth regulators on vegetative growth and flowering in gladiolus Cv. Nova Lux	Dr. P.K. Rajput, Dr. A. K. Pandey	International Journal of Applied Research	2021-22
18	Performance of Willow Clones in Climatic Condition of U. P.	Dr. P.K. Rajput	Frontiers in Crop Improvement	2021-22
19	Agroforestry as a tool for climate change and livelihood security	Dr. P.K. Rajput	International Journal of Applied Research	2021-22
20	Evaluation of pearl millet genotypes under moisture conservation practices in eroded soil under rain fed condition	Dr. P.K. Rajput	Journal of Pharmacognosy and Phytochemistry	2021-22
21	Social expectations and Individual's Aspirations Unbreakable Autobiography and Movie Mary Kom	Dr. M.K. Yadav	ShodhSimankan	2021-22
22	Impact of Managemental practices for eastern Haryana cow in eastern zone of Uttar Pradesh	Dr. Aditya Kumar	ShodhSamagam	2021-22
23	Pattern of calf mortality in Gangatiri cattle at araziline organised dairy farm of district Varanasi	Dr. Aditya Kumar	Frontiers in crop improvement	2021-22
24	Assessment of highly yielding varieties of mustard through front line demonstration in district Hathras	Dr. Aditya Kumar	Agriways	2021-22
25	Phonon conductivity of Gaas in the temperatures range 2-800K	Dr. PrakashDubey	Indian Research bulletin	2021-22
26	Viscosity and Excess viscosity for non polar system from 298.15 to323.15K	Dr. Prakash Dubey, Dr. Naveen Awasthi and Dr. Jyoti Bhadauriya	Research Journal of Recent sciences	2021-22

Rajesh Prakash

Dr. Rajesh Prakash, T. Pathi

20/11/23

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(Affiliated to C.S.J.M. University, Kanpur)

पत्रांक

Ref No/2023-24

दिनांक

Date.....

27	Induction of sterility effects by Bacillus thuringiensis (B.T) in Diacrisiaoblqua	Dr. Lalit Gupta	Int. J. of multidisciplinary res. edu. analysis and dev.	2021-22
28	Effect of Bacillus thuringiensis on longevity of Diacrisiaoblqua	Dr. Lalit Gupta	Res. J. of Social and Life- Science	2021-22
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An study of challenges for Financial Well-Being through financial Planning

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Abstract

In an era of economic volatility and shifting financial landscapes, achieving and maintaining financial well-being has become a paramount concern for individuals and households. This study delves into the multifaceted realm of savings and financial planning, shedding light on the challenges that hinder the path to financial well-being. By examining these challenges and proposing potential strategies for overcoming them, this research aims to empower individuals with the knowledge and tools necessary to navigate the complexities of modern financial environments. This research endeavors to identify and analyze the most prevalent challenges that individuals encounter when striving for financial well-being. These challenges encompass a wide spectrum, including inadequate savings habits, debt accumulation, lack of financial literacy, unpredictable life events, and the evolving landscape of financial products and services. The study delves into the psychological, socio-economic, and cultural factors that contribute to these challenges, exploring their interconnected nature and impact on individuals' financial trajectories. It investigates the role of technology, educational initiatives, and behavioral economics in shaping healthier financial behaviors. By analyzing case studies, best practices, and success stories, the study aims to provide actionable insights that can empower individuals to proactively address financial challenges and enhance their financial well-being.

Innovation

Water-saving technologies and modeling of withdrawal, allocation and consumptive use of surface water and groundwater resources in RWCS: A review

RK Naresh, PC Jat, M Sharath Chanura, SK Gupta, Sandeep Gawdiya, Shivangi, Brijesh Kumar Pandey and SKS Chandel

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Abstract
Increasing food demand has exerted tremendous stress on agricultural water usages worldwide, often with a threat to sustainability in agricultural production and, hence, food security. Various resource-conservation technologies like conservation agriculture (CA) and water-saving measures are being increasingly adopted to overcome these problems. While these technologies provide some short- and long-term benefits of reduced labor costs, stabilized or increased crop yield, increased water productivity, and improved soil health at farm scale, their overall impacts on hydrology outcomes remain unclear at larger temporal and spatial scales. Though India receives a copious annual precipitation of around $4000 \times 10^9 \text{ m}^3$, only around one fourth ($1123 \times 10^9 \text{ m}^3$) of it is utilizable. Globally, area equipped for irrigation is currently about 301 million ha of which 38% are equipped for irrigation with groundwater. Total consumptive groundwater use for irrigation is estimated at $545 \text{ km}^3 \text{ yr}^{-1}$, or 43% of the total consumptive irrigation water use of $1277 \text{ km}^3 \text{ yr}^{-1}$. Groundwater abstraction from the trans-boundary Indo-Gangetic Basin comprises 25% of global ground water withdrawals, sustaining agricultural productivity in Pakistan, India, Nepal and Bangladesh.

Recent interpretations of satellite gravity data indicate that current abstraction is unsustainable, yet these large-scale interpretations lack the spatio-temporal resolution required to govern groundwater effectively. Here new evidence from high-resolution in situ records of groundwater levels, abstraction and groundwater quality, which reveal that sustainable groundwater supplies are constrained more by extensive contamination than depletion. The volume of groundwater to 200 m depth to be >20 times the combined annual flow of the Indus, Brahmaputra and Ganges, and show the water table has been stable or rising across 70% of the aquifer between 2000 and 2012. Groundwater levels are falling in the remaining 30%, amounting to a net annual depletion of $8.0 \pm 3.0 \text{ km}^3$. Within 60% of the aquifer, access to potable groundwater is restricted by excessive salinity or arsenic. Recent groundwater depletion in northern India has occurred within a longer history of groundwater accumulation from extensive canal leakage. Capitalizing on recent progress in evaporation measurement techniques, we can now close the water balance and directly quantify the exchange flux at the field scale, thus gain a better understanding of regional groundwater dynamics. The comprehensive observations of water balance components in an irrigated cropland were implemented. The water balance analysis showed that the exchange flux and groundwater dynamics were significantly altered by the application of water-saving irrigation. Groundwater recharge sustains groundwater discharge, including natural discharge through springs and the base flow to surface water as well as anthropogenic discharge through pumping wells. Spatial variations in groundwater recharge rates (basin-wide mean: 17 to 960 mm yr^{-1}) were estimated in the major river basins across India. The extensive plains of the Indus-Ganges-Brahmaputra (IGB) river basins are subjected to prevalence of comparatively higher recharge. This is mainly attributed to occurrence of coarse sediments, higher rainfall, and intensive irrigation-linked groundwater-abstraction inducing recharge by increasing available groundwater storage and return flows. However, precipitation rates do not significantly influence groundwater recharge in most of the river basins across India, indicating human influence in prevailing recharge rates. The spatial variability in recharge rates could provide critical input for policymakers to develop more sustainable groundwater management in India.

Keywords: consumptive water use, ecosystem water determinants, environmental sustainability

Introduction
Water is crucial to life on Earth, however, its availability in space and time is not uniform. The near utilization of surface water resources has made the public and Government to look towards groundwater resources to supplement the water supply. The ever increasing demand has resulted in the greater dependence on groundwater and consequently resulting in depletion of groundwater resources in many parts of the country.

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B. Chandel

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College Libraries Structures in Higher Education System in India

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Abstract:

Emerging technological revolution is a wheel of library's transformation from traditional to virtual libraries. Tremendous changes have taken place in the libraries due to the advancement of Information Communication Technologies. In this article, authors have described the growth of libraries, transformation of libraries, its need and the new face of academic libraries. In this transformational phase, the concept of reengineering has applied to academic libraries to change its face drastically to cope up with the modern expectations of library patron. Hence, the concept and its detailed applications are discussed in this article.

Keywords: Reengineering Libraries, Libraries Transformation, ICT tools, Library services

Introduction:

Everyone is witnessed to the development in all the sectors and the way of doing things. Just two decades ago, teachers were using usual tools and methods to teach but now a days the tools for the same are advanced and more convenient than earlier. We are using online resources for research where earlier it was depending upon printed resources available in nearby libraries. Library and information professionals have to keep futuristic approach to avoid such problems due to the lack of knowledge and adoption of recent technologies. Higher Education System more focussed on adoption of new technology in teaching learning and related processes. Library an integrated part of the Higher Education System. Hence, it is compulsory to adopt new technology to change the old way to increase the quality of library and information service. In such a fast changing environment, drastic changes are required.

Chris D. Ferguson, (1997) calls for reengineering libraries "in ways that bring librarians and technologists together within a common service environment" to meet users' needs in a more effective manner. Reengineering is the term which used for such drastic change and dramatic improvement in cost, quality, service and speed. Reengineering has its own theory and practice. Underdeveloped academic libraries have needed such techniques like reengineering to be a good library and resource centre. Now the current era is depended upon the web therefore they expect and prefer most of the services on web. Hence this is the prominent time to use web platform for library and information services. Shastri (2013) have stated about the web platform as "Bridge the digital divide and access to digital resources will definitely help to provide effective and valuable information services to library patrons in order to satisfy their information needs and for that librarians should perform the role of webmaster". Hence, considering the significance of reengineering of academic libraries, it needs to rethink on present problems perspective which may unable to fulfil multidimensional needs of the user.

A. Challenges in reengineering of academic libraries:

Reengineering of library is not an easy job for librarians. It requires systematic planned efforts to apply new tools and techniques to the library. In challenges perspective, LIS professionals may face following major challenges while going for reengineering process :

UTILIZATION ICT IN ACADEMIC LIBRARIES IN INDIA*

BY

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Abstract

Library, as we know that what is the library? Do we also know what the value of the library is? In today's era library is not only the collections of book but is the storage of valuable information. As per the fifth laws of library science, each book is important and every book has its reader, so the library plays a very important role in society. In the library there are collections of numbers of printed resources like books; journals etc, when we talk about books which may be rare, out of print are the most useful source of the library as well as the reader. In this paper, we are discussing library security, tools, and techniques of library security.

Keywords: Library Security, Library Preservation, Library structure, RFID..

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Introduction

Traditionally the main role of the librarian is the storage and dissemination of information, information in the forms of books, periodicals, etc. In the 21st century the role of the librarians is also changed, as we know that now librarians are accepted technology and they do their work with the help of technology. As per the fifth law of Library science, the Library is a growing organization. Every minute of information is generated and this generated information is stored in the printed and electronic form. In the society, library which may be Public, educational or special play as an important role. When we talk about library security, the protection of the books i.e. book lost, library preservation is the major challenge of the Librarians. Protection of Printed material like books, journals, electronic resources like CD-ROM, DVD, audio-video, etc, library equipment, library staff, library users are the areas where security is necessary. Some new technological systems are accepted by libraries for controlling library security, most of which may be implemented for security purposes. Some technology used in libraries like RFID technology, CCTV cameras, Barcode technology which helps librarians to maintain and secure library property.

What is Library Security?

The precaution and safety of library assets. Each property of the Library includes printed materials like books, Journals, electronic materials like CD-ROM, DVD, etc, library equipment like Computers, printers, scanners, and dead stock like chairs, tables, and Library buildings, etc.

Areas to be observed under Library security:

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Research Article

COMBINING ABILITY FOR YIELD AND ITS CONTRIBUTING CHARACTERS IN OKRA [*Abelmoschus esculentus* (L.) Moench]S. KUMAR¹, SINGH M.P.², VISHWAKARMA S.K.¹, SINGH P.³, SANJEEV KUMAR⁴, SHRIVASTAVA P.⁵, YADAV S.S.⁶ AND YADAV M.K.^{7*}¹Department of Horticulture, Janta College, Bakewar, Etawah, 206124, Chhatrapati Shahu Ji Maharaj University, Kanpur, 208024, Uttar Pradesh, India²Department of Agronomy, Janta College, Bakewar, Etawah, 206124, Chhatrapati Shahu Ji Maharaj University, Kanpur, 208024, Uttar Pradesh, India³Department of Chemistry, Chhatrapati Shahu Ji Maharaj University, Kanpur, 208024, Uttar Pradesh, India⁴Department of Horticulture, Janta Mahavidyalaya, Ajitmal, Auraiya, Chhatrapati Shahu Ji Maharaj University, Kanpur, 208024, Uttar Pradesh, India⁵Department of Plant Pathology, S.S.M.M. Takha, Etawah, 206124, Chhatrapati Shahu Ji Maharaj University, Kanpur, 208024, Uttar Pradesh, India⁶Department of English, Pt. D. D. U. Govt. Girls P.G. College, Rajajipuram, Lucknow, 226017, Lucknow University, Lucknow, 226007, Uttar Pradesh, India⁷Department of Plant Pathology, Janta College, Bakewar, Etawah, 206124, Chhatrapati Shahu Ji Maharaj University, Kanpur, 208024, Uttar Pradesh, India

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Abstract: The experiment was conducted at the Research Farm of the Department of Vegetable Science, C.S. Azad University of Agriculture and Technology, Kalyanpur, Kanpur during kharif 2006. The observations were recorded for 10 quantitative traits namely days to flowering, height of plant (cm), number of branches per plant, number of first fruiting node, number of nodes per plant, length of internode (cm), length of fruit (cm), width of fruit (cm), number of fruits per plant, and yield per plant (g). The study was revealed that, the significant general combining ability effects were shown by parents AB-1, AB-2 and PK. On the basis of specific combining ability effects, the cross-combination AB-1xVRO-5 and AB-2xPK were found promising for most of the yield traits in both the generations.

Keywords: Okra, Contributing characters, *gca* and *sca*

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Introduction

Okra is an important vegetable crop of India. It belongs to the family malvaceae and having chromosome some number $2n = 130$. It is grown successfully both in the plains and hills. It is crop of warm wet season in the North India, but it is also taken as winter crop in the frost-free areas of the Central and South India, particularly Gujarat and Maharashtra. It is an interesting crop to the breeders and geneticists for its monadelphous condition of the stamens and large flower are amenable to easy emasculation and its capsule bears large number of seeds.

Combining ability of a strain is to produce superior progeny upon hybridization with other strain and termed general combining ability is the average performance of a genotype in a series of hybrid combination and specific combining ability as the performance of a parent in a specific cross in relation to general combining ability. Further they concluded that *gca* is primarily due to additive effects of genes, while *sca* is consequence of intra-allelic interaction (epistasis) and inter-allelic interaction (dominance).

Methods and Materials

A set of 8 varieties of okra namely AB-2, AB-1, KS-312, BO-2, P-7, VRO-3, VRO-5 and PK were crossed in a diallel technique excluding reciprocals. All the 28 F₁s, 28 F₂s, 28 B₁s and 28 B₂s along with 8 parents were sown in a randomized block design with three replications at the Department of Vegetable Science of C.S. Azad university of agriculture and Technology, Kalyanpur, Kanpur during kharif 2006. parents were sown in single row with ten plants and F₁s, F₂s, B₁s and B₂s were sown in double row with ten plants in each row.

The competitive plants of parents and F₁s, F₂s, B₁s and B₂s were randomly selected and observations were recorded for days to flowering height of plant (cm), number of branches per plant, number of first fruiting node, number of nodes

per plant, length of internode (cm), length of fruit (cm), width of fruit (cm), number of fruits per plant and yield per plant (g). The data was analysed for combining ability using (1) method II model I.

Result and Discussion

The analysis of variance for combining ability was carried out for attributes in [Table-1]. The analysis of variance for combining ability showed significant values both for *gca* and *sca* variances in based on both generations. Additive gene action was observed for days to flowering and number of branches per plant in F₁ only and for width of fruit in both the generations. Other characters showed the preponderance role of none additive gene for controlling the traits in both the generations.

The magnitude of *gca* revealed that none of the parent were good general combiner for all the characters [Table-2] and [Table-3]. However, parents AB-1, AB-2 and PK were good general combiner for different characters under study. It has also been concluded the different parents were good general combiner for different characters. It can be concluded that parents like AB-1, AB-2 and PK were found good general combiner for most of the yield contributing traits based on both the generations. The best crosses on the basis of performance of *sca* effects are AB-1 X VRO-5 and VRO-3 X PK were found desirable for yield per plant based on both the generations. Other crosses found desirable for yield were BO-2X P-7, AB-2XAB-1, in F₁ and BO-2XVRO-3, P-7XPK and KS-312X VRO-3 in F₂. These crosses showed significant *sca* effect at least two quantitative characters, yield and earliness. The crosses AB-1X VRO-5, VRO-3XPK, BO-2X P-7, AB-2XAB-1 and AB-1XPK can be utilized in development of hybrids. Similar result was reported [1-3].

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6

On Certain Subclasses of Univalent Functions Associated with Wright Function

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Abstract

The main object of this paper is to obtain some necessary and sufficient condition for normalized Wright function on certain subclasses of univalent functions. We also consider an integral operator associated with normalized Wright function

Keywords: Analytic function, univalent function, convex and starlike functions; Wright function.
2010 MSC: 30C45

1. Introduction

Let \mathcal{A} denote the class of all analytic functions in the open unit disc

$$\mathbb{U} := \{z \in \mathbb{C} : |z| < 1\}$$

with the normalization $f(0) = 0$ and $f'(0) = 1$. As usual, we denote by \mathcal{S} the subclass of \mathcal{A} consisting of functions which are univalent in \mathbb{U} . The functions of the class \mathcal{S} can be represented by the power series expansion about the origin in the form

$$f(z) = z + \sum_{n=2}^{\infty} a_n z^n \tag{1.1}$$

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प्राचार्य
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[Research Article]

Storage studies of aonla products for quality traits

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ABSTRACT

Aonla fruits are not consumed freely in fresh form because of its astringent taste. Therefore, various cultivars of aonla were screened for their suitability for processing into different products and accordingly the fruits of cultivar Chakaiya were used for preparation of fruit beverages (RTS and squash) and NA-7 for making preserve, pickle and sauce. Observations on vitamin C (ascorbic acid), total soluble solids, acidity, browning and organoleptic quality of these products were recorded during storage at monthly interval. The vitamin C content of these products decreased continuously with the storage period. The total soluble solids of RTS, squash and preserve increased slightly during storage but in pickle and sauce it started declining after two months of storage. Acidity content of aonla products increased with the storage period except pickle where it declined after three months of storage. A progressive increase in browning of aonla products was also observed with the storage period. Organoleptic score of the aonla products declined continuously during storage. The acceptable quality of aonla preserve and pickle was maintained upto nine months, while sauce was acceptable upto six months and beverages (RTS and squash) up-to four months of storage.

KEY WORDS : Aonla, *Embilca officinalis*, cultivars, products, storage, quality

Aonla or Indian gooseberry (*Embilca officinalis* Gaertn) occupies an important place among the indigenous fruits of the India. Aonla fruits are not consumed freely in fresh form because of its astringent taste but due to its high nutraceutical and antioxidant properties it can be processed into various value added products viz. beverages (RTS and squash), preserve, pickle, sauce etc. In order to ensure the aonla production a profitable enterprise, there is dire need to standardize the stability of processed value added products during storage.

Storage studies are part of every product development programme, whether it includes a new product, a product improvement, or simply a change in type or specification of an ingredient (Kumar and Singh, 2001). The present investigation was, therefore, undertaken to determine the storage stability of aonla products by assessing the chemical changes and sensory evaluation.

The study was carried out at Department of Horticulture, Janta College, Bakewar, Etawah (U.P.). Fruits of eight cultivars namely Banarasi, Chakaiya, Kanchan,

Krishna, NA-6, NA-7, NA-8 and NA-9 were screened for their suitability into different products. The fruits of Chakaiya cultivar were found best for making fruit beverages (RTS and squash) and NA-7 for preserve, pickle and sauce.

For storage study, RTS and squash of ideal recipes were prepared from the fruits of Chakaiya cultivar and bottled. Bottled RTS was pasteurized for 20 minutes in boiled water and cooled in air. Preserve, pickle and sauce of ideal recipes were prepared from the fruits of NA-7 cultivar. Preserve and pickle were packed in sterilized wide mouthed bottles (500g capacity), sealed air tight and kept at ambient temperature ($20 \pm 7^\circ\text{C}$) for storage studies. The prepared sauce was bottled, crown corked and pasteurized for 30 minutes in boiling water, air cooled and kept at ambient temperature for storage studies. Chemical analysis and organoleptic assessment were performed at the zero month (just after preparation) and thereafter at monthly intervals.

Vitamin C and acidity were analysed in accordance



Some Results on Kulkarni and Naik Class of Analytic and Univalent Functions

(8)

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Abstract

In the present paper we introduce a class preserving integral operator for the family $\rho(\mu, \delta, A, B, z_0)$ studied in [1]. Further, we also investigate the Quasi-Hadamard product of several functions belonging to the class. Finally, we prove that the above family is closed under "arithmetic mean" and "convex linear combinations".

1. Introduction

Let \mathcal{A} represent the family of all analytic functions defined in the open unit disc $U = \{z : |z| < 1\}$ of the form

$$f(z) = z - \sum_{n=2}^{\infty} a_n z^n, \quad (a_n \geq 0).$$

In 1976, Silverman [8] studied the family of analytic univalent functions consisting of the form

$$f(z) = a_1 z - \sum_{n=2}^{\infty} a_n z^n, \quad (a_n \geq 0), \quad (1.1)$$

We have, either

$$f(z_0) = z_0 \quad (-1 < z_0 < 1, \quad z_0 \neq 0)$$

or

$$f'(z_0) = 1 \quad (-1 < z_0 < 1).$$

Further, Uralegaddi and Somonatha [9] generalized this class by considering the functions of the form defined by (1.1) with

$$(1-\mu) \frac{f(z_0)}{z_0} + \mu f'(z_0) = 1, \quad (1.2)$$

Where

$$-1 < z_0 < 1, \quad 0 \leq \mu \leq 1.$$

Kulkarni and Naik [1] investigate a class $\rho(\mu, \delta, A, B, z_0)$ of analytic and univalent functions $f(z)$ given by (1.1) and satisfying (1.2) iff

$$\left| \frac{F(z) - a_1}{BF(z) - a_1 A} \right| < 1, \quad (z \in U, -1 \leq B < A \leq 1) \quad (1.3)$$

where, for convenience,

$$F(z) = \Gamma(2-\delta) z^{\delta-1} D_{\delta}^{\delta} f(z), \quad (0 \leq \delta < 1)$$



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RESPONSE OF PEARLMILLET CULTIVARS TO DIFFERENT MOISTURE CONSERVATION PRACTICES UNDER RAINFED CONDITION ON LIGHT TEXTURED SOIL OF CENTRAL UTTAR PRADESH, INDIA

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ABSTRACT

A field experiment was conducted during *kharif* seasons of 2018 and 2019 at Soil Conservation and Water Management Farm of C.S. Azad University of Agriculture and Technology, Kanpur, to study the performance of pearl millet cultivars under varying moisture conservation practices in terms of production, total water use, water use efficiency and root development under rainfed condition. Results revealed that among cultivars, 'Krishna-834' considered to be the most promising in terms of yield, WUE, root development, net return and B:C ratio. One weeding and hoeing + organic residue mulch @ 4 t ha⁻¹ on soil surface at 25 DAS brought out significantly higher production as compared to ridging and furrowing as well as one weeding and hoeing practices. The roots plant⁻¹, dry weight of roots plant⁻¹, soil moisture status, WUE and net return were also the highest, where mulching practice was taken as moisture conservation practice.

Keywords: Soil moisture status, consumptive use, water use efficiency, root development, B:C ratio.

Introduction

The economy of India has a close and vital link with rainfall during the south-west monsoon season. The onset and advancement of south-west monsoon over the country play a crucial role during the sowing of *kharif* crops. The timely onset of south-west monsoon over Kerala and its northward progress across the country is of vital importance to the agriculture operations all over India as well as for water replenishment and management. A late onset or advancement of monsoon may have devastating effects on agriculture, even if the mean annual rainfall is normal (Tyagi *et al.*, 2011). However, these rational distribution of rainfall which affected crop growth and development, in turn reduced the pearl millet productivity. This indicates the role of soil moisture even at the time of planting. Suitable *in situ* moisture conservation practice and choice of a good cultivar consistent with available moisture at the critical stage of crop growth offer a good scope to enhance the production potential of pearl millet crop. Therefore, the present experiment was conducted.

Materials and Methods

A field experiment was conducted during *kharif* seasons of 2018 and 2019 at Soil Conservation and Water Management Farm of the C.S. Azad University of Agriculture and Technology, Kanpur. The experiment site had a slope of 1.7% with the top soil washed out by water erosion. However, the area was made cultivable by

bunding. The soil of experimental field was moderately deep, well drained, sandy loam in nature having 0.33% organic carbon, 0.031% total-N, 166.2 kg ha⁻¹ available-N, 17.8 kg ha⁻¹ available P₂O₅ and 131.3 kg ha⁻¹ available K₂O. The soil pH was 7.9 and EC (1:2.5) was 0.36 dSm⁻¹. The values of field capacity, wilting point, water holding capacity, bulk density, particle density and porosity of the surface soil 18.6%, 6.1%, 28.8%, 1.35 Mg m⁻³, 2.60 Mg m⁻³ and 48.1%, respectively. The treatments consisted of 3 cultivars i.e. Krishna-4311, Anand, Krishna-834 and 3 moisture conservation practices i.e. one weeding and hoeing by *khurpi* at 25 DAS, ridging and furrowing with the help of spade in between the crop rows at 25 DAS and one weeding and hoeing by *khurpi* + organic residue mulch @ 4 t ha⁻¹ on soil surface at 25 DAS were tested in 4 experiment. The treatments were replicated thrice in a factorial randomized block design. The gross plot size was 5.0 m x 3.60 m but the net plot size was 4.0 m x 2.70 m. Pearl millet crop was sown spaced at 45 cm apart with recommended seed rate of 5 kg ha⁻¹ on July 27 and 28 during 2018 and 2019, respectively. A uniform dose of 40 kg N + 40 kg P₂O₅ + 40 kg K₂O ha⁻¹ was applied as basal at sowing through funnel attached with country plough. Additional 40 kg N ha⁻¹ through Urea top dressed in standing crop at optimum soil moisture condition. Recommended package of cultural operations was applied. The crop was harvested on November 7 and 5 during first and second year, respectively. At sowing time, available

प्राचार्य

जनता कालेज
बकेवर (इटावा)



Research Article

IMPACT AND RESPONSE OF IRRIGATION METHODS ON GROWTH AND YIELD OF MARIGOLD CROP IN ETAWAH DISTRICT OF UTTAR PRADESH

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Abstract: In India, Marigold (*Tagetes erecta*) is one of the most commonly grown floriculture crops. Its natural tendency of profuse flowering of short duration to produce market flower, wide spectrum of attractive colours, shape, and size with good keeping quality attracted the attention of people. It is extensively used on religious ceremonies, social functions as offering and also for decoration purpose all over the sub-continent. The estimated area on which flowers are grown in India is about 65,000 hectares. Major growing states are Karnataka, Tamil Nadu, West Bengal, Andhra Pradesh and Maharashtra. The present study is confined on an impact and response of different methods of irrigation e.g. Border, Check basin, Drip and Sprinkler with a fur treatment and our replication along with randomized block design on growth and yield of marigold cultivation at Etawah District of Uttar Pradesh.

Keywords: Drip irrigation, benefit cost Ratio, Irrigation efficiency, Performance and Marketable yield

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Introduction

Marigold plants originally from Central America, probably in Mexico. Today they are naturalized in the tropics and subtropics of the old new worlds. They are cultivated in India and Pakistan as a medicinal flowering, dye and ornamental plant. A simply grown half-hardy annual, marigolds are especially popular to cultivate in gardens all over the world. They are not fussy about where they grow provided, they have plenty of sun shine. In north India, the small-scale farmers of Himachal Pradesh, are growing marigold and other flower crops for garlands and decoration. They are relatively easy to cultivate and do not require expensive packing or processing. The present investigation has been carried out with four treatments and four replications and sixteen plot of size 2m x 5m each, in which treatment T₁ is the border method of irrigation, T₂ is the check basin, T₃ is the Drip irrigation and T₄ is the sprinkler method of irrigation respectively and R₁, R₂, R₃, and R₄ are the replication of research work at Agriculture Farm, Janta College, Bakewar, Etawah, 206124. Single factor randomized block design used for the statistical analysis for the experiment. The plant spacing was kept 50cm x 50 cm as per requirement of the statistical design of the experiment. The present experiment is conducted to determine the irrigation efficiencies of the different methods of irrigation, net return, benefit cost ratio, optimum water requirement and yield of the crops under different treatments in sandy loam soil [1-3].

Material and Methods

Marigold is even helping to play a vital role as a cash crop to poor small and marginal farmers in north India. Marigold flowers are sold in the form of garlands for decoration, medicinal and also various religious occasions. Much of what is produced, which is consumed in India, although the Indian government is looking into expanding in export market. The investigation is deals with installation of drip irrigation system, filter with control unit, Land preparation, experimental design and layout of the experiment, fertilizer doses, irrigation water requirement,

and economics analysis of the experiment [4-6]. Research work based on comparison of irrigation efficiencies of various methods of irrigation, net return and benefit cost ratio, gross return, total cost of production and optimum water requirement of marigold crop. Studied about the response of vegetables like onion, radish, chra and marigold crop at Hissar and Haryana on drip, border and check basin method of irrigation [7-9].

They reported that drip system saved about 30% less water than traditional method of irrigation with the increased in yield about 50%. Hansen and Pasian (1999) [10] conducted a study on loam soil at San Diego, California in USA to compare water use efficiency and crop yield of marigold, onion and sweet corn under drip, border, & Check basin methods of irrigation. They reported that drip method of irrigation produced highest yield of marigold. Keeping in view present study revealed that net return and benefit cost ratio was found Rs. 16,464.30 per hectare and 1.690 (BC-ratio) respectively.

Installation Of Drip Irrigation System and Filter with Control Unit

The system required for maintenance by trained skill persons. Equipment must be checked regularly. Operating pressure and clogging or damage of drip lines and drippers discharge should be maintained properly. There should be minimum use of filling such as elbows, socket, and bends. The connections of pump delivery should be directly to the sand/screen filter & it can be easily connected to main pipe lines.

Hard surface and cement concrete foundation to be made for sand filter to avoid the collapsing of sand filter due to vibration and loads. PVC main and sub main pipe line was laid 30-60 cm below the ground surface to avoid damage during cultural operations. The poly tube should be containing water fixing drippers. A desired pressure the discharge of drippers at the minimum of free place and check the working of air release valve at the sub main.



Research Article

STUDY OF CORRELATION AND PATHCOEFFICIENT ANALYSIS IN RADISH (*RAPHANUS SATIVUS* L.) UNDER PARTIAL SHADE CONDITION OF ORCHARD

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Abstract: Genotypic and phenotypic correlation coefficients and path coefficient analysis were carried out in radish using Twenty-five diverse genotypes for fourteen quantitative characters. In general, magnitudes of genotypic correlation coefficient were higher than their corresponding phenotypic correlation coefficient, suggesting therefore, a strong inherent relationship in different pair of characters. Root weight was found to be significantly and positively associated with plant height, leaf weight, leaf length, root thickness and root size at phenotypic and genotypic levels. On the other hand, negative and significant correlation was found with leaf: root length ratio at phenotypic level only. Therefore, these characters should be taken into considerable, while making selection for improvement of root yield. Path coefficient analysis revealed that plant height, root length, root thickness, root size and leaf: root weight ratio has direct positive effect at phenotypic and genotypic levels on root weight, which indicating these are the main contributor to root weight. Root size had high direct positive effect towards root weight, whereas, root thickness has less direct effects on root weight.

Keywords: Genotypic and phenotypic, Correlation coefficients, Coefficient analysis

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Introduction

Radish is an important root vegetable due to high yielding and early maturing nature. The leafy tops are very rich in minerals particularly calcium and iron. Radish is a good appetizer and considered to be useful for patients suffering from piles and gastro-duoditis, liver and gall bladder trouble and jaundice. The nature and degree of association between yield and its components claims distinct importance and will assist the breeder to ascertain the actual yield components and furnish an effective basis of phenotypic selection. Path coefficient analysis provide the intrinsic nature of observation associated between yield and its attributes and reveal the extent of contribution made by various traits in constructing yield. Path analysis facilitates the partitioning of correlation coefficient into the direct and indirect effects on yield and other significant characters. Therefore, the present investigation was undertaken to find out the interrelationship among the components responsible for yield and the direct and indirect influences of each component character towards the production of root in radish [1-4].

Materials and Methods

The present investigation was carried out in the orchard of Department of Horticulture, Janta P.G. College, Bakewar, Etawah during rabi season in the year of 2016. Twenty five diverse genotypes tested were in this experiment. The trial was laid out in a randomized block design with three replications.

Observations were recorded on ten randomly selected representative plants from each replication in each genotype on fourteen economically important quantitative characters. The genotypic and phenotypic correlation coefficients were calculated as per method given by Parise and Sukhatme [1967] [5]. The path coefficients were obtained by subsequent the method of Dewey and Lu [1969] [6].

Results and Discussion

In general, the estimate genotypic correlation coefficient was higher than the corresponding correlation coefficient (Table-1). This indicates a strong inherent association between different characters under study but phenotypic value lessened by the significant influence of environment, thereby suggesting the usefulness of genotypic estimate. Similar findings were obtained by Singh et al [1977] [7]. Root yield being dependent character is highly influenced by environment, which required considerable breeding value for improvement. Root weight was found to be significantly and positively associated with plant height, leaf weight, leaf length, root thickness and root size at phenotypic and genotypic levels [8-10]. On the other sense, negative and significant correlation was found with Leaf: Root length ratio and leaf: root weight ratio at phenotypic level only. Therefore, these characters should be taken into considerable, while making selection for improvement of root yield. Leaf: root weight ratio showed significant and positive correlation with all the characters except root length, root thickness, root size and root shape at both the levels. Leaf: root length ratio had significant positive correlation with all the characters except the number of leaves/plant, root length and root size at genotypic level, while significant correlation with root shape at both the levels. Similar trend was observed in radish by Khan et al. [1983] and Singh et al., (2002).

Path analyses signifies the method of partitioning of the total correlation coefficient into direct and indirect effects and measure the relative importance of causal factor individually. Plant height, root length, root thickness, root size and root: leaf weight ratio has direct positive effect at phenotypic and genotypic levels on root weight, which indicating these are the main contributor to root weight [Table-2]. Root size has high direct positive effect towards root weight, whereas, root thickness had less direct effect on root weight.

Research Article

POST HARVEST LOSSES OF OIL SEEDS, PULSES AND CEREALS

12

YADAV M.P.¹, RAJPUT P.K.², KEERTI¹, KUMAR S.¹, YADAV S.S.³, SHRIVASTAVA P.⁴ AND YADAV M.K.^{*5}¹Department of Horticulture, Janta College, Bakewar, Etawah, 206124, Chhatrapati Shahu Ji Maharaj University, Kanpur, 208024, Uttar Pradesh, India²Department of Soil Conservation, Janta College, Bakewar, Etawah, 206124, Chhatrapati Shahu Ji Maharaj University, Kanpur, 208024, Uttar Pradesh, India³Department of English, Pt. D.D.U. Govt. Girls P.G. College, Rajajpuram, Lucknow, 226017, Lucknow University, Lucknow, 226007, Uttar Pradesh, India⁴Department of Plant Pathology, S.S.M.M. Takha, Etawah, 206123, Chhatrapati Shahu Ji Maharaj University, Kanpur, 208024, Uttar Pradesh, India⁵Department of Plant Pathology, Janta College, Bakewar, Etawah, 206124, Chhatrapati Shahu Ji Maharaj University, Kanpur, 208024, Uttar Pradesh, India^{*}Corresponding Author: Email - manojhu87@gmail.com

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Abstract: The total loss owing to poor post-harvest processing of agricultural products in India when valued in conditions of financial reflects a remarkable loss in the economy. Post-harvest losses of rice, wheat, sugarcane, pulses, oil seed, vegetables fruits and root crops due to insufficient processing and preservation reached to 4.96 MMT in 1989-2001. These losses were valued in US\$ 503 million. Post harvest losses of food grains refer to different losses produced by a variety of factors. These losses include harvesting, collection, threshing, cleaning, drying, packing, transportation and storage losses. Food grains include cereals, pulses and oilseeds. It is estimated that total losses in post harvested rice operation range between 6-24% even through agricultural technology is claimed to have substantial development. Ministry of food processing estimated that Rs 23 000 crores has been lost by estimating of minimum 10% post harvest losses in cereals, pulses and oilseeds. The study in post harvest losses of food grains in Etawah district of Uttar Pradesh was conducted enquiry and observation method. The study also covered the prediction of perception gap of post harvest losses. Two villages were selected purposely in all eight blocks for study. The crops like Paddy, Millet, Sorghum, Maize, Groundnut, Pigeon pea, Sesame, Wheat, Gram, Pea, Lentil, Toriya (Lahi), Mustard, Black gram and Green gram were identified as per survey of blocks. Detailed information and data of post harvest losses were collected in prescribed performs generated by Central Institute of Post Harvest Engineering and Technology, Ludhiana. The recorded data of all prescribed performs of enquiry and observation method were analyzed. Post harvest losses of various operations like harvesting, collection, threshing/sieving, cleaning/winnowing, drying, packing, transportation and storage of all fifteen crops were obtained. Post harvest total losses of different crops like Paddy, Millet, Sorghum, Maize, Groundnut, Pigeon pea, Sesame, Wheat, Gram, Pea, Lentil, Toriya (Lahi), Mustard, Black gram and Green gram were found 14.95%, 10.08%, 8.99%, 11.77%, 11.61%, 8.6%, 14.55%, 17.18%, 14.08%, 13.43%, 9.79%, 8.71%, 7.98%, 11.21% and 11.62% respectively in observation method. Maximum 15.80 % and minimum 8.41% post harvest losses were found in crops Sesame and paddy respectively in enquiry method whereas in observation method, maximum 17.18% and minimum 7.98% losses were found in crops wheat and mustard respectively. Perception gap was obtained maximum (7.11%) in wheat crop whereas minimum perception gap was found 0.38% in Black gram.

Keywords: Food grains, Harvesting, Post harvest losses, Substantial and Oilseeds**Citation:** Yadav M.P., et al., (2022) Post Harvest Losses of Oil Seeds, Pulses and Cereals. International Journal of Agriculture Sciences, ISSN: 0975-3710 & E-ISSN: 0975-9107, Volume 14, Issue 1, pp:- 11058-11060.**Copyright:** Copyright©2022 Yadav M.P., et al., This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.**Academic Editor / Reviewer:** Anjeeb R., Dr Lalwal Mohammad Anka Dr Abhishek Naik**Introduction**

Post-harvest system encompasses the delivery of crop from the time and place of harvest to the time and place of consumption with minimum loss and maximum efficiency and return for all involved [1]. The quantitative and qualitative losses happen in horticultural crops between harvest and consumption. Qualitative losses, such as loss in edibility, nutritional quality, caloric value, and consumer adequacy of the products, are much more complicated to assess than quantitative losses. Standards of quality and consumer preferences and purchasing power fluctuate significantly among countries and cultures. For example, elimination of defects from a given commodity before marketing is much less rigorous in developing countries than in developed countries. Agriculture contributes 25% to annual gross domestic products and provides livelihoods to more than 76% of the people. Majority of the rural people earn their livelihood through agriculture [2]. Post harvest losses of food grains (Cereals, Pulses and oilseeds) include harvesting, collection, threshing, cleaning, drying, packing, transportation and storage losses. Due to using old and outdated method of these operations of food grains, we lose a more amount of production. It is estimated that 10% of food grains produced in India are lost in processing and storage [3].

Insects-pests are one of the most important factors responsible for losses in agricultural production at various stages. Living organism and the environment interact to bring about spoilage of stored products. It is estimated that 5-10% of the world production is damaged by insects during storage. Post harvest losses in durable commodities are around 10% whereas in perishable it is to around 40% which result in economic losses to the tune of Rs. 50,000 crores a year [4].

The post harvest losses are enormous for the farm wealth. About 10% food grains and 25-40% fruits and vegetables are wasted as the food produced is not processed in the catchment areas. This happens due to huge shortage of processing facilities in catchment areas. In the agricultural produce about 33% is edible portion and 67% is the by product or waste, which has greater value for feed and industry uses.

The better post harvest management as well as value addition can reduce these enormous losses [5]. Therefore, the study was undertaken to find out the post harvest losses of food grains in Etawah district by enquiry and observation method. The study also covered the prediction of perception gap of post harvest losses.

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Micronutrient status and their spatial variability in Alfisols soil of Damtari districts of Chhattisgarh-a GIS approach

Ku Reena, Dashrath Singh, SG Rajput, Alok Kumar and PK Rajput

Abstract

A systematic set of geo-referenced 670 soil samples was collected from Dhamtari district, soils comes under Alfisols order covering 119630 ha i.e. 29.18% entire area using GPS (Global positioning system) and the maps showing the spatial variability of individual micronutrient cation (Zn, Cu, Mn and Fe) were generated using Arc Info GIS (Geographic information system). The multi-micronutrient status map was also generated by integrating the individual micronutrient map in GIS. The descriptive statistics on soil characteristics indicated that the pH of the soils varied from 4.8 to 7.9 (mean = 6.3). The electrical conductivity (EC) ranged from 0.02 to 0.91 dS m⁻¹ (mean = 0.20 dS m⁻¹). The organic carbon (OC) ranged from 0.07 to 1.25% (mean = 0.56%). The DTPA-Fe, Mn, Zn and Cu ranged from 7.40 to 93.50, 0.24 to 66.50, 0.11 to 3.88 and 0.21 to 6.00 mg kg⁻¹, respectively, while the mean 40.92, 22.72, 0.80 and 2.50 mg kg⁻¹. Organic carbon, EC and pH were the important factors in controlling the micronutrient availability. The GIS-aided thematic maps indicate the toxicity of Fe, Mn and Cu were 93.70%, 40.39% and 73.02% respectively, while the 40% deficiency of Zn under was found. The soil of Dhamtari district under Alfisol soil was observe a severe toxicity of cationic micro nutrient except Zn, the Zn deficiency due to rise based cropping system.

Keywords: Systematic, alfisol, global positioning system (GPS), geographic information system (GIS), DTPA extractable micronutrient

Introduction

Alfisols are locally called Dorsa soils. Most Alfisols fields are bonded and levelled. Impact of drought is relatively less in this situation. They constitute the major land situation which has traditionally been used for growing oilseed and pulse crops as relay crops (utera) on residual soil moisture especially after irrigated rice and effective rainfall. Soil micro-nutrients are as essential as primary and secondary nutrients for the development and crop growth. The addition of micro nutrients to fertilizers in the optimum amounts and in degraded soils ensures the sustainability of cropping through balanced nutrition and ultimately sustainable development of the fertilizer industry. There has been a substantial increase in food production from about 51 million tonnes (Mt) in 1950 to about 211.32 Mt in 2001-2002. To steer these agricultural achievements towards the path of an evergreen revolution, there is a need to blend the traditional knowledge with frontier technologies. Information and Communication Technology (LCT), Space Technology (Remote Sensing), Geographical Information Systems (GIS), Ground Positioning System (GPS) are the tools of such frontier technologies, which would help in generation of agricultural management systems and formulating plans for sustainable agricultural development. The adoption of major technological developments in agriculture by the farmers generally takes much time and efforts in our country, as majority of farmers are small and marginal, illiterate and resource-poor. But we must get started, step-wise of course, as we are already far behind the developed world. In the present study an attempt has been made to assess the micronutrient status of soils in Dhamtari district to evaluate the magnitude of micronutrient (Fe, Cu, Zn and Mn) deficiencies and to map their spatial variability using GPS and GIS.

Study Area

Dhamtari is abbreviated from "Dhamma" and "Tarai". District is situated in the fertile plains of Chhattisgarh, which includes seventy-eight villages for evaluation of soil fertility status of Dhamtari district.



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Response of integrated use of biofertilizer, FYM with inorganic fertilizer on yield, nutrient content and quality of wheat

Reena, SG Rajput, DD Tiwari, PK Rajput and Ajay Kumar Singh

Abstract

The field experiment was carried out for two Rabi season 2013-14 and 2014-15 at Nawabganj Research farm C.S. Azad University of Agriculture & Technology Kanpur. There are seven treatments combination i.e. T₁ - control, T₂ - N₁₅₀P₆₀K₆₀, T₃ - 75% NPK+10t FYM, T₄ - 75% NPK+PSB, T₅ - 75% NPK+Azotobacter, T₆ - 75% NPK+PMB and T₇ - 75% NPK+PSB+Azotobacter+PMB+10t FYM. Result of the experiment revealed that grains and straw yield both increased due to single or combine use of biofertilizer and FYM with 75% NPK over sole use of N₁₅₀P₆₀K₆₀. Maximum mean grain yield 44.47 q ha⁻¹ and straw yield 55.45 q ha⁻¹ were recorded at T₇ (75% NPK+PSB+Azotobacter+PMB+10t FYM). NPK S&B content in wheat grain significantly increased due to combined use of inorganic fertilizer FYM & biofertilizer compared to sole use of N₁₅₀P₆₀K₆₀. Maximum NPKS and B content in grain were recorded as 1.78, 0.45, 0.49 0.17 percent and 7.45 mg kg⁻¹ respectively at T₇ (15% NPK+PSB+Azotobacter+PMB+10t FYM ha⁻¹). Protein content in wheat grain increased due to use of FYM, PSB, PMB & Azotobacter single or combined with 75% NPK. Maximum 11.15 percent protein content obtained with combine use of biofertilizer, FYM with 75% NPK (T₇).

Keywords: Wheat, NPK SB content Azotobacter, PSB, PMB, FYM

Introduction

Wheat is the important cereal crop and rich source of protein for vegetarian. The demand for wheat in India by 2020 has been projected to be between 105 to 109 m tonnes as against 72 m tonnes production, as the land area under wheat is not expected to expand. Efficient inputs management along with varietal improvement is the two basic aspects that can help us in achieving the target. About 10-12% protein requirement is met by wheat. Mannering the application of different fertilizers could increase the productivity of the wheat crop and the protein content.

Many attempts have been tried to replace a part of those harmful fertilizers by biofertilizer. Integrated nutrient management strategies involving chemical fertilizer and biofertilizer have suggested to enhance the sustainability of crop production (Manske *et al.*, 1998) [4]. Biofertilizers are able to fix atmospheric nitrogen in the available form for plant and have beneficial effect on plant growth by production of antibiotic (Zahir *et al.*, 2004) [9]. Azotobacter is used as biofertilizer in the cultivation of most crops (Yasari *et al.*, 2007) [8]. It can successfully grow in the rhizospheric zone of wheat, corn, rice and many other crops (Jadhav *et al.*, 1987) [1].

On account of continuing world energy crisis and spiraling price of chemical fertilizer, the use of organic manure as a renewable source of plant nutrients is assuming importance. In this endeavor proper blend of organic and inorganic fertilizer is important not only for increasing yield but also for sustaining soil health (Pullicino *et al.* 2009) [6]. Therefore, present research was under taken to find out the integrated use of inorganic, organic & biofertilizer on yield, nutrient content, and quality of wheat.

Materials and Methods

The field experiment was conducted at Nawabganj Research farm, C.S. Azad University of Agri. & Tech. Kanpur during Rabi 2013-14 & 2014-15 to test the effect of integrated use of biofertilizer, FYM with inorganic fertilizer on yield, nutrient concentration in grain & quality of wheat seven treatment combinations were tested in Randomized Block Design with three replications. The detailed treatments tested in the present experiment are given under abstract.

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Soil fertility mapping at village level using IRS LISS-IV and Cartosat-1 merged data in two Nyaya panchayat of Amethi district, U. P.

SG Rajput, PPS Yadav, SL Pal, PK Rajput and Dashrath Singh

Abstract

The study presents a soil fertility mapping carried out in two Nyaya panchayat, consisting of 23 villages of Amethi district of Uttar Pradesh. The soil fertility map has been generated by interpreting Resourcesat-1 LISS-IV and Cartosat-1 merged data on 1:1,00,000 scale, and both Nyaya panchayat fertility maps have been mapped. The soil database was integrated with plot (khayat) boundary which helps in generating soil information at plot and farmer level. Soil fertility maps were prepared for each parameter under GIS environment using Arc GIS v. 10.4. Soils were neutral to very strongly alkaline with non saline to slight salinity. Soil organic carbon content was low to medium OC and available N was low in 2/3 of area. Available nitrogen was low, available phosphorus was low to medium, available potassium was medium to high and sulphur was low to medium. Regarding available micronutrients, zinc and iron were deficient in about half of the sub watershed area whereas copper and manganese were sufficient in the soils. The mapping of nutrients by GIS technique in the sub watershed revealed that available N, P, S, Zn and Fe are important soil fertility constraints.

Keywords: Remote sensing, geographic information system (GIS), high resolution satellite data, soil fertility, DTMA Extractable

Introduction

Soil maps presently available in India are generally on 1:50,000 scale which provide information that are regional in nature, rather than local and site-specific. With the focus of rural development planning having been shifted to village panchayats, it has become imperative that the soil resource information is prepared on a larger scale, with finer level of details so that these can be used for developmental planning at village level (Ravisankar and Thanappa 2004; Rao *et al.* 2004)^[1]. Large scale soil mapping in India has been mostly done by traditional methods, using cadastral map (village map) as base (Jagdish Prasad *et al.* 2009; Anil Kumar *et al.* 2010; Sub *et al.* 2010 and Sankar *et al.* 2010)^[2-4]. The scale of these maps varies from 1:1000 to 1:10,000. However, mapping using village cadaster as base and soil sampling at fixed grid interval requires large number of observations and are time consuming and expensive (Simon, 2010). Due to these reasons, the use of satellite remote sensing data as a base for soil mapping has become common in recent years. The dynamic relationship between physiography and soils is utilized in deriving information on soils from satellite data (Singh and Dwivedi 1986; Kudrat *et al.* 2000)^[5-6]. Dwivedi (2001)^[7] has observed that proper identification of land type, drainage pattern and drainage condition, vegetation, land use, slope and relief is essential in the interpretation of satellite image for soil mapping. The use of satellite image has been reported to save about 60-80% time in soil mapping, as compared to manual methods (Liengsakul *et al.* 1993)^[8]. Macro and micronutrients are important for maintaining soil health and also increasing productivity of crops (Rattan *et al.* 2008). The soil must supply nutrients for desired growth of plants and synthesis of human food. Increased removal of micronutrients as a consequence of adoption of high yielding varieties (HYVs) and intensive cropping together with shift towards high analysis NPK fertilizers has caused decline in the level of micronutrients in the soil to below normal at which productivity of crops cannot be sustained. The improper nutrient management has led to emergence of multi-nutrient deficiencies in the Indian soils (Sharma 2004). Keeping in view the close relationship between soil properties and nutrient availability, the present study was undertaken to analyze the influence of soil properties on availability of nutrients for better land use management. Amethi district of Uttar Pradesh as information on these aspects is rather scanty and scattered.

प्राचार्य

जनता कालेज
 बकेवर (इटावा)



Research Article

EFFECT OF MOISTURE MANAGEMENT IN ERODED SOILS ON RAINFED SORGHUM VARIETIES OF CENTRAL UTTAR PRADESH

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Abstract: A field experiment was conducted on light texture soil at Kanpur during Kharif 2015 and 2016 to study the effect of moisture conservation practices. (Farmer's practice, ridging and furrowing and mulching) on splash loss, canopy development, water use, water use Efficiency, root development, growth behaviour and yield of sorghum varieties (Suraj, Viral Hi-tech-3201 and Reha-40) under rainfed condition. Results revealed that a variety "Reha-40" performed better yield level of 26.20 Q/ha, total water use of 386.0 mm and also had a higher net return (Rs 32067/ha) as well as B:C ratio (2.09). Organic residue mulching in between the crop rows at 25 DAS gave significantly higher grain yield (26.70 Q/ha) and stover yield (66.29 q/ha) over and ridging furrowing as well as farmer's practice treatments. The higher WUE (7.51 kg grain/ha/mm of water) and net return (Rs 27970/ha) were also recorded. When mulching practices were adopted. Highest splash loss was found under farmer's practice followed by ridging and furrowing and lowest under mulching plot.

Keywords: Moisture management, Varieties, Splash loss, Canopy development, Yield attributes, Net return, B:C ratio

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Introduction

Indian agriculture is dominated rainfed farming. Rainfed agriculture contributes to 42% of the national food grain production mainly through sorghum, millets and pulses, therefore dryland areas are important for the economy of the country and will continue to be so in future. Crop cultivated in rainfed situation are prone to water stress, due to rapid loss of soil water from profile resultant in little water accessibility for root growth. Moisture conservation practices changes its structure, controls the weeds and improve the water holding capacity of soil [1]. The cultivation of sorghum hybrids was found more economical than traditional varieties. It seems to be desirable that local or improved varieties of sorghum may be replaced by sorghum hybrids for higher crop yield and profit even under rainfed condition [2]. Therefore, the present investigation was undertaken to study the moisture conservation practice effects on growth, WUE, root development and yield of rainfed sorghum varieties in light textured eroded soil of Central Uttar Pradesh.

Materials and Methods

A field experiment on rainfed sorghum was conducted during Kharif seasons of 2015 and 2016 at Soil Conservation and Water Management farm of C.S. Azad University of Agriculture and Technology, Kanpur on eroded alluvial sandy loam and calcareous soil. The experimental site had a slope of 1.8 % with the top soil washed out by water erosion. However, the area was made cultivable by bunding. Initial soil properties of the experimental field (0-25 cm depth) are given below.

Silt 17.4%
Clay 16.6%

(B) Physical properties

Bulk density 1.38 Mgm⁻³
Particle density 2.60 Mgm⁻³
Total Porosity 46.9 %
Field capacity 18.3 %
Wilting Point 6.0 %
Water Holding Capacity 28.3 %

(C) Physico-chemical properties

pH 7.8
EC 0.26ds/m

(D) Chemical Properties

Organic Carbon 0.31 %
Total-N 0.029
Available - N 168.5 kg/ha
Available P₂O₅ 15.8 kg/ha
Available K₂O 193.0 Kg/ha

Four Varieties and 3 in-situ moisture conservation practices were tested in the experiment (Table-1, 2 and 3). The treatments were replicated thrice in a factorial randomized block design. Uniform dose of 40kg N +90kg P₂O₅+40kg K₂O /ha was applied as basal at sowing through funnel as attached with country plough.

(A) Mechanical Composition

Coarse Sand 55.1%
Fine sand 10.0%



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Effect of organic manure and plant growth regulators on vegetative growth and flowering in gladiolus Cv. Nova Lux

Keerti, Pandey AK and Rajput PK

Abstract

The experiment was conducted in Randomized Block Design (RBD) with three replications. A field experiment was done to assess the effect of vermicompost (20t/ha, 15t/ha), (FYM 20t/ha, 15t/ha), Poultry Manure (20t/ha, 15t/ha), Vermicompost + GA3 (20t+100ppm, FYM + GA3 20t + 100ppm) and Poultry Manure + GA3 (20t+100ppm) on growth and flowering in Gladiolus Cv. Nova Lux. Application of Vermicompost + GA3 20t+100 ppm shows increasing growth character like Height of plants, Number of sprouts per corn, Length of largest leaf, Width of longest leaf, Number of leaves per plant and flowering characteristics such as Number of days for emergence of spike, Length of spike, Number of Florets per spike, Diameter and Length of Florets. Showed the maximum value followed by Poultry Manure+GA3 20t+100ppm.

Keywords: Vermicompost, FYM, poultry manure and GA3

Introduction

An important role of flower in human's life that it is used to convey emotions and thoughts. Flowers are associated with mankind since the dawn of the civilization. They are symbol of love, beauty and tranquillity. In India, we have been growing and using flowers for time immemorial. Flowers have become integral part of our day to day life. Gladiolus occupied about 0.05 percent of the total cut flowers produced which is much lesser. In Maharashtra, gladiolus is cultivated in large scale in Pune, Nashik, Solapur, Kolhapur, Aurangabad, Nagpur districts. In India gladiolus is cultivated in an area about 11660 ha. The total area under floriculture was 305000 ha during 2019-2020 with a production of 2301 thousand tone of loose flower and 762 million cut flower (<http://agribhant.com>). It has bright, beautiful and different coloured flowers which are used as cut flowers, herbaceous border, bedding, rockers pot it is also used in bouquet and flower arrangement having to excellent keeping quality. Gladiolus is a valuable an economic flowering bulbous plant used as a landscape plant in the home gardens and in decoration as long use life. The genus Gladiolus comprises about 180 species having more than 10,000 cultivars out of which about 20 cultivars are grown marketable for cut flowers purpose and numerous others are used as seasonal flowering plants in garden and in exhibitions (Kumar *et al.*, 2019) [1].

Materials and Methods

The present investigation was carried out at Horticulture Garden of Janta College Bakewar, Etawah (U.P.) during year 2020- 2021, to find out the effect of Organic manure and plant Growth Regulators on growth and flowering parameters of Cv. Nova lux. Organic manures, vermicompost (VC), FYM and Poultry Manure (PM) were used with combination of GA3 @ 100ppm. The data were recorded for height of plants, number of sprouts sprouts per corn, length of largest leaf, width of longest leaf, number of leaves per plant, Number of days for emergence of spike, length of spike, number of florets per spike, diameter of florets, length of florets. The experiment was laid out in a randomized block design (RBD) with 10 treatments and three replications. Statistical analysis were done as per the procedure given by Panse and Sukhatme (1989) [6].

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Performance of Willow Clones in Climatic Condition of U.P.

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Abstract

A field experiment entitled "Performance of willow Clones in Climatic Condition of U.P." was conducted at Soil Conservation and Water Management Farm of Chandra Shekhar Azad University of Agriculture and Technology, Kanpur. The results showed much better growth of clone PN-731 in terms of plant height and girth (289 cm and 9.2 cm during 2009-10 and 325 cm & 12.1 cm during 2010-11) followed by PN - 227 and GBP selection during experimentation years. Clone 795, PN 272, SE-69002 and SI-63-007 were also attained better height and girth as compared to remaining clones.

Introduction

Short rotation forestry is the need of the hour because of forest area decreasing day by day and short duration tree species attract farmers to incorporate in agricultural system. Agroforestry is practiced in both irrigated and rainfed conditions where it produces food, fuel, fodder, timber, fertilizer and fibre. contributes to food, nutritional and ecological security, sustains livelihoods, alleviates poverty and promotes productive and resilient cropping and farming environments. Agroforestry also has the potential to enhance ecosystem services through carbon storage, prevention biodiversity and soil / water conservation. In addition, when strategically applied on a large scale, with appropriate mix of species, agroforestry enables agricultural land to tolerate extreme weather events, such as floods and droughts, and climate change. Agroforestry has significant potential to provide employment to rural and urban population through production, industrial application and value addition ventures. Current estimates show that about 65 % of the country's timber requirement is met from the trees grown on farms. It is also recognized that agroforestry is perhaps the only alternative to meeting the target of increasing forest or tree cover to 33 per cent from the present level of less than 25 per cent, as envisaged in the National Forest Policy (1988). Agroforestry species are known to sequester as much carbon in below ground biomass as the primary forests, and far greater than the crop and grass systems. *Salix alba* (white willow) is a species of Willow native to Europe and Western and Central Asia. It is a medium-sized to large deciduous tree growing up to 10-30 m tall, with a trunk up to 1 m diameter and an irregular, often-leaning crown. The bark is grey-brown, and deeply fissured in older trees.

The cultivation of *Salix alba* (Willow) has a long history for its variety of benefit to mankind, which is grown in many area of the world for bioenergy and bioproducts,

agroforestry and phyto-remedation (Volk *et al.* 2006). *Salix alba* commonly known as the white willow or English willow is an introduced willow species. It grows upon 2100 m above m.s. l. and has the character of a height of about 30 m and girth from 1 to 2 m. This tree species is most favored account of its fast growth, multipurpose utility, high adaptability and short duration, thereby ensuring quick return to the farmers. Due to its short duration, *Salix alba* is a great boost to the rural economy (Heaton *et al.* 1999). The wood of willow is used for making fruit boxes (Apples) in Kashmir valley. The other local and international use of *Salix alba* construction material for wide array of items likes; sweet lodges, furniture, baskets, splint of match boxes and agricultural implements, etc.

Materials and Methods

A field experiment entitled "Performance of willow Clones in Climatic Condition of U.P." was conducted at Soil Conservation and Water Management Farm of Chandra Shekhar Azad University of Agriculture and Technology, Kanpur during 2009-10 to 2011- 2012 with the objectives that to screen out suitable willow clones for waterlogged soil. The experimental site is situated at an elevation of 125.9 metre above mean sea level and lies between 25° 26' and 26° 58' North latitude and 79° 31' and 80° 34' East longitude. Kanpur falls in central U.P. and sub-tropical zone having average annual rainfall 800 mm and altuvial soil with neutral pH. Treatment comprises of 22 willow clones used to raise nursery which were collected from Dr. Y.S. Parmar University of Horticulture and Forestry, Solan (Himanchal Pradesh) and one clone collected from G.B. Pant University of Agriculture and Technology, Pantnagar, U.S. Nagar (Uttanchal). Another second experiment entitled "Effect of weed management and irrigation interval on plant height of willow in nursery" planned at Kanpur at same location. Cuttings of willow were transplanted in second week of February in each experimental year at 50 cm row to row and 20 cm plant to

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Agroforestry as a tool for climate change and livelihood security

Rajput PK

Abstract

The present study is an attempt to review the global agroforestry system. Agroforestry has enormous potential to prevent climate change, safeguard people and livelihoods, and lay the ground-work for more sustainable economic and social growth. Agroforestry continues to play an important role in illuminating the agricultural sector's competitive position. The primary problem for improving output in agroforestry systems is rational resource utilization by maximizing positive interactions and reducing negative ones. Climate change, which is produced by global warming, is a phenomena induced in part by an excess of carbon dioxide in the atmosphere. Adaptation strategies that encourage sustainable management and community-based practices have the potential not only to protect land and people from some of the negative effects of rising global temperatures, but also to provide opportunities for greater, more sustainable rural development and poverty reduction. The dominance of many traditional agroforestry systems in India provides an opportunity worth examining for carbon sequestration, improved livelihoods, biodiversity protection, soil fertility improvements, and rural employment.

Keywords: Agroforestry, climate change, livelihoods, sustainable management

Introduction

Agroforestry refers to land-use systems and methods that intentionally mix woody perennials with crops and/or animals on the same land management unit. The trees may be planted alone or in groups within parcels (silvoarable agroforestry, silvopastoralism, grazed or intercropped orchards) or on parcel boundaries (hedges, tree lines) (EURAF 2012). Climate change is a shift in the long-term weather patterns that define different parts of the planet. The globe is warming, according to scientists. This pattern cannot be explained only by natural climate fluctuation. Human activities, particularly the combustion of coal and oil, have warmed the planet by significantly increasing the quantities of heat-trapping gases in the atmosphere. There is growing acceptance that even very ambitious greenhouse gas mitigation measures that go beyond current international climate agreements will not be effective enough to halt the increase in atmospheric greenhouse gas concentrations in the medium term, and that adaptation measures are just as important as mitigation measures. Climate change will have a greater impact on developing countries than on industrialized countries, not least because of their relatively low adaptive capacities (IPCC, 2003). The agricultural sector will be among the most vulnerable in these countries, putting rural populations at risk. The global climate change has heightened interest and concern in the green economy. According to the Planning Commission's "Greening India" study, agroforestry is the only way to achieve 33% forest cover. Land management operations play an important role in the context of global change and sustainable development through mitigating climate change. Forests, on the other hand, are affected by climate change, and their contribution to mitigation efforts may be influenced by stressors caused by it. Agroforestry has the potential to make a large contribution to a low-cost global mitigation strategy that also includes adaptation and sustainable development. However, only a small percentage of this potential is currently being utilized. Carbon mitigation potentials through minimizing deforestation, forest management, afforestation, and agro-forestry vary substantially depending on activity, region, and system. Globally, millions of households depend on goods and services provided by forests. This underlines the importance of assessing forest sector activities aimed at mitigating climate change in the broader context of sustainable development and community impact.

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Evaluation of pearl millet genotypes under moisture conservation practices in eroded soil under rainfed condition

PK Rajput, AK Katiyar, Yogesh Kumar and Hemant Kumar

Abstract

Three varieties of pearl millet were tested under three moisture conservation practices during *Kharif* 2018 and 2019 at Soil Conservation and Water Management Farm, Kanpur. Variety 'Krishna-834' provided the highest yield with substantial benefit over 'Anand' and 'Krishna-4311' varieties. One weeding and hoeing + organic residue mulch @ 4 t ha⁻¹ on soil surface at 25 DAS gave the highest growth, yield, stability, grain yield and net return but lowest splash loss as compared to ridging and furrowing as well as to one weeding and hoeing practices. Interaction between varieties and moisture conservation practices was found to be non-significant.

Keywords: splash, canopy development, splash loss, yield, net return

Introduction

Rainfed agriculture plays an important role in contributing to world food security. In India, area under rainfed agriculture is about 85 m ha representing 60% of net cultivated area and support 40% population of the country. Apart from erratic rainfall, soils are highly degraded physically, chemically and biologically (Sharma *et al.* 2005) [1] and Manathi Sankar *et al.* 2010) [2]. A single practice is insufficient to increase the productivity and strategy needs modification with integrated approach of soil and water conservation, crop, variety, land, nutrient management and alternate land use for stabilizing productivity. The challenge of improving productivity in rainfed areas can be addressed by a suitable crop variety and soil moisture management by efficiently utilizing natural resources. The present study was conducted to identify efficient variety and moisture conservation management for attaining sustainable yield, net returns and splash loss from pearl millet under rainfed condition.

Materials and Methods

A field experiment was conducted during two consecutive *kharif* seasons of 2018 and 2019 at Soil Conservation and Water Management Farm of C. S. Azad University of Agriculture and Technology, Kanpur. The treatments consisted of 3 varieties i.e. (i) Krishna-4311 (ii) Anand (iii) Krishna-834 and 3 moisture conservation practices i.e. (i) One weeding and hoeing by *khurpi* at 25 DAS (ii) Ridging and furrowing with the help of spade in between the crop rows at 25 DAS (iii) One weeding and hoeing by *khurpi* + organic residue mulch @ 4 t ha⁻¹ on soil surface at 25 DAS were tested in the experiment. The treatments were replicated thrice in a factorial randomized block design. The gross plot size was 5.0 m x 3.6 m but the net plot size was 4.0 m x 2.70 m. Pearl millet crop was sown spaced at 45 cm apart with recommended seed rate of 5 kg ha⁻¹ on July 27 and 28 during 2018 and 2019, respectively. An uniform dose of 40 kg N + 40 kg P₂O₅ + 40 kg K₂O ha⁻¹ was applied as basal at sowing through funnel attached with *deshi* plough. Additional 40 kg N ha⁻¹ through Urea top dressed in standing crop at optimum soil moisture condition. Recommended package of cultural operations was applied. The crop was harvested on November 7 and 5 during first and second year, respectively. The soil of the experimental field was deep, well drained, sandy loam in nature having 0.33% organic carbon, 0.031% total-N, 166.2 kg ha⁻¹ available-N, 17.8 kg ha⁻¹ available P₂O₅ and 131.3 kg ha⁻¹ available K₂O. The soil pH was 7.9 and EC (1:2.5) was 0.76 d S m⁻¹. The values of field capacity, wilting point, WHC, bulk density and particle density of the surface soil were 18.6%, 6.1%, 28.6%, 1.35 Mg m⁻³ and 2.60 Mg m⁻³, respectively. Total rainfed during crop period was 420.6 and 592.0 mm during first and second year, respectively.

The crop canopy was measured with the help of a quadrat (2'x2' size) having 2504 small squares. The quadrat was help over the rows of plants and the number of squares covered by plant canopy was counted and the canopy percentage was calculated.

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Social Expectations and Individual's Aspirations in Unbreakable Autobiography and Movie Mary Kom

SADHANA SINGH YADAV*

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Abstract

Mary Kom is a name that resonate patience and perseverance. A five-time world champion, Kom has battled far more than what we have seen her fight in the ring. From struggling with poverty to playing the multiple roles of a mother, daughter, and elder sister, she has achieved much more than the average of us can possibly dream of. In an age when society loves to advise women on what's best for them, it takes courage to chase the dreams that are so close to your heart. It's probably easier to choose a sport that is hailed and encouraged by the vast majority, which is why Kom deserves all the respect in the world for having the will to pursue boxing. The main objective of this research paper is to bring out the struggle of female player and her unbreakable aspirations. Autobiography 'Unbreakable' traces Mary Kom's life from the time she was born to her sojourn at the 2012 London Olympics. We often find women sacrificing their career for their families. However, Kom juggled all her struggles and emerged as a rockstar mom and wife, and bagged the world championship not once, but five times.

Keywords: *Autobiography; Perseverance; Sojourn; Unbreakable*

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Impact of Managemental Practices for Eastern Hariyana Cow in Eastern Zone of Uttar Pradesh

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ABSTRACT

The present study was conducted in the origin place of eastern hariyana cow in Uttar Pradesh. The information was collected from 100 respondents, many people of livelihood rearing of eastern hariyana cattle.

It observed that most (52.75%) of the respondents are active 6-10 hour grazing of their cow herd. All the needed farmers were providing natural service to cow in the estrus period. maximum number of particular (57.50%) between 12-14 hours after detection of estrus and (52.75%) of them with sire available in cattle owner area and surrounding. Maximum number of respondents (35.20%) initially used indigenous knowledge for disease treatment and after that consult to veterinary doctor/stockman. Major disease prevalent in the village include FMD, HS, BQ and Mastitis. Eastern hariyana cow were present to more resistance to the disease and heat tolerant as compared to cross bred and exotic breed of cattle. Majority of respondents (80.16%) are kept their cattle on kachcha floor in the good sanitary conditions. Account (70%) respondents made cattle shed, majority (58.98%) of the cattle owners were using hand method of milking. Grazing land and input for health management practices are needed to make the Eastern hariyana cow husbandry is more lucrative. Use of AI Programme is more benificieried as compared to natural method.

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Pattern of Calf Mortality in Gangatiri Cattle at Araziline Organized Dairy Farm of District, Varanasi

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Abstract

Pattern of calf mortality to study of the objectives in Gangatiri breed of cattle. The information were collected from the record of Gangatiri herd, maintained at Government cattle farm Araziline block of district Varanasi. The data was recorded for a period of 12 years (from 2008-2020). The period wise distribution of calf mortality presented that highest mortality rate (16.50%) was recorded in the period P4 (2012-2016) and the lowest mortality rate (7.50%) was showed in P2 (2010-2015). Disease-wise distribution of calf mortality presented that it was maximum (8.53%) in gastrointestinal troubles in both sex and the minimum calf mortality rate was found in tympany 2.46 percent, which might be due to better management practices given to this age group. The mortality rate from season to season from winter to rainy was also calculated. Season-wise distribution of calf mortality presented that the high mortality of calf 5.45% was determined in those calf born in winter season, many managerial practices are also not apply for calf to proper growth and this reason increased mortality of calf.

Key words : Mortality, calf, disease, managerial practices.

Introduction

The mortality of calf is a most important character for breeding and economic point of view in dairy farming. More survival rate in dairy herds help increase the selection criteria, which is one of main factor regulating genetic gain and more economic benefits. Mortality was higher in male than female calf as well as was lower in winter and higher in summer season. The objectives of present study was determinate the Gangatiri cattle in respect survival of young stock and suckling practices of different sex up to 15 days of their life for obtaining about improvement in overall efficiency. Gangatiri cattle is one of the well known dual purpose breed, especially found in eastern zone of Uttar Pradesh and adjoining areas of Bihar.

Materials and Methods

The information of present study were collected from the obtained of Gangatiri herd, maintained at Government cattle farm, Shahanshah pur, Araziline Block District, Varanasi. Uttar Pradesh maintaining data to a period of 12 years from 2008 to 2020.

The total period of the calf mortality was divided in to three groups (p1: 2008-2012, p2: 2013-2016, p3:2017-2020). The years was divided in to three reason, Winter-October to January, Summer-February to May and Rainy season- June to September.

Results and Discussion

Mortality rate on the basis of different period of the year :

The mortality rate showed that the maximum (16.13%) was recorded in p1(2008-2012), which included 35.00% and 22.64% in male and female calves respectively, whereas the lowest (9.24%) was indicates that in the p2 (2013-2016) which included that 8 and 3 percent male and female calves respectively (Table-1). Second phase of calf mortality was lowest indicates that out of total 103 male calves, 33 female calves(14.89%) died, whereas out of 203 female calves a total of 23 calves (16.58%) were reported to be died. The reason of higher percentage of death in male calves than female calves. Better care and management practices would have been adopted for rearing of female calves, whereas male calves sometimes ignored. In the present study, the overall average mortality in Gangatiri calves were obtained to be 16.13%, however Mishra et. al. (2015) a higher mortality rate (18.50%) in buffaloes.

Mortality rates of calves according seasons :

The overall mortality was found to maximum in winter season (5.45%) probably due to excessive low temperature below 3 and un productive managerial practices. Ghosh et. al. (1996) in different breeds of cattle and their cross reported resembling lethal factor effect of the winter season on calve mortality rate in the present study. Higher mortality in male (6.82%) than the female (3.96) percent was recorded.

Mortality rates of calves according to cause of disease :

The highest mortality rate in Gangatiri calves were found due to gastrointestinal troubles (8.53%), which was due to bacterial or viral infections or due to feeding of

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Assessment of high yielding varieties of mustard through front line demonstration in district Hathras

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Abstract Assessment of Front Line Demonstration on Mustard Crop in Hathras District of Uttar Pradesh. The domestic requirement of oil seed had been manifold of a modern living standard which has been fulfilled through the import that lead to imbalance the Indian economy. The aim of this study was to evaluate the influence of mustard varieties and year of production in relation of weather condition on seed yields, oil content and its quality with a focus on human nutrition value through a field study carried at three different locations in Hathras. The seed yield was significantly affected by the year of production the location and the variety. The environmental factors that negatively affected seed yield are temperature in summer, water shortage, wet and cold soil in spring. The highest seed yield reached at mid-heavy soil in the region with lower precipitation amount. R.H-749 would be recommendable for Hathras environmental condition. R.H.-749 variety gave the significantly highest oil yield.

Keywords: Seed yield, nutrition quality, oil, field production, growth conditions

Introduction

Mustard (*Brassica campestris L.*) is a traditional oil seed crop in district Hathras that represents a valuable alternative for cropping system because of the high quality of the seed oil. Which is being increasingly appreciated by consumers for cosmetic, food and eco-materials. In India, it occupies an area of about 6.23 m hectares producing over 72.42 MT with the productivity of 1.84 tons/ha. In Uttar Pradesh, the crop is cultivating to an extent of 11.20% with a production of 10.49 lakh tones and productivity of 1.75 tons/ha. (Anon., 2018). Hathras district situated in south western semi-arid eco-system (Zone - IV) of U.P. There are 4- sub-divisions and seven development blocks in district. The small and marginal farmers are growing mustard in Rabi season as main oil seed crop of the area. Although area (11098 ha), with an annual production 14.15 Mt and productivity 17.5 q/ha under mustard crop is suffering from large number of diseases and insects. Chaudhary, R.P., Chaudhary, G.K.,

Prasad, R., Singh, R. and Chaudhary, A.K. (2018), S.K., Chhonkar, D.S. and Kanwat, M. (2019), Singh, G., Sirohi, A. and Malik, Y.P. (2008), Singh, S.N., Singh, V.K., Singh, R.K. and Singh, R.K. (2007).

Materials and Methods

The present study was carried out by the Krishi Vigyan Kendra, Hathras, C. S. Azad University of Agriculture & Technology, Kanpur (U.P.) during rainy seasons of two consecutive years 2017-18 to 2018-19 in the farmers fields of 03-villages of Sasni block of the district in agro-climatic zone - IV of Uttar Pradesh to 2017-18 in irrigated condition on medium soils with low to medium fertility. The selected farmers of the demonstration area were of small and marginal in nature front line demonstration of mustard variety of RH-749 was conducted in 10 ha area in each year 2017-18 to 2018-19. The soil samples from each adopted village were analyzed. It was found to be sand and alluvial in texture

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Phonon Conductivity of GaAs in the Temperature Range 2-800 K

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Abstract

The expression for the three - phonon scattering relaxation rate used in the present analysis is capable of explaining the temperature dependent phonon conductivity of an insulator quite satisfactorily.

1. Introduction

Phonon conductivity of GaAs has been studied by a new approach in the entire temperature range 2 to 800 K by calculating separate contributions due to transverse and longitudinal phonons. A good agreement has been achieved between calculated and experimental values in the entire temperature range of study. It is seen that at high

temperature, the percentage contribution of transverse phonons dominates over the percentage contribution due to longitudinal phonons. At the same time it can also be seen that at very high temperature, the entire lattice thermal conductivity is mainly due to transverse phonons alone. This result is similar to the earlier predictions of Holland as well as Verma et al⁽⁹⁾. At lower temperatures, the contributions of longitudinal and transverse phonons are in the ratio nearly 1 : 3. This may be due to the role of boundary scattering relaxation rates. These are also similar to those of Holland⁽¹⁾ (reported separately). However, at some intermediate temperatures where conductivity maximizes, percentage K_L is larger than percentage

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Viscosity and Excess viscosity for non-polar system from 298.15 to 323.15K

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Abstract

Viscosity and excess viscosity for a non-polar liquid mixture cyclohexane (1)+ 2,2,4-trimethylpentane (2) were computed at temperature 298.15, 303.15, 308.15, 313.15, 318.15, 323.15K with mole fraction of cyclohexane. Calculated theoretical values compared and tested with the measured data of Jose M. Navaza. Prigogine-Flory-Patterson (PFP), Glinski (GLI) and Ramaswamy (RS) model based on non-associated and associated process respectively. Nature and the behaviour of binary system was studied with help of these models. Redlich-Kister relation was utilized to determine the respective parameters and deviation from experimental values in term of standard deviation (δn). Extent of interactions between the like and unlike components and nature of binary system can be predicted by excess viscosity. Estimation of experimental findings were carried out with help of Jouyban Acree Model, McAllister model, Jouyban Acree Model correlate the experimental findings more accurately than McAllister model.

Keywords: Viscosity, Excess viscosity, Prigogine-Flory-Patterson, Jouyban Acree, McAllister, Binary liquid.

Introduction

Viscosity is an important physicochemical property having a wide applicability in industries such as paint, petroleum, pharmaceutical and food. Theoretical study of viscous behaviour of liquids has its strategic importance in designing calculations because many times it is difficult to determine the physicochemical properties experimentally at all external conditions of interests. Literature survey reveals that recently, it has been applied in the study of different fluid systems¹, quartz parameter², hydrodynamics of super cooled liquids³, nano litter viscometer for analysing blood plasma⁴, shear viscosity relaxation of liquid alkanes⁵, viscous shear thinning fluids large reactors⁶, non-ionic C₁₂E₈ solution⁷, R.K Shukla et al⁸ and his co-workers have published a research work on viscosities and excess viscosities for polar binary liquid mixtures at various temperatures. The present work deals with the excess and transport properties for non-polar binary system at various temperatures. Results theoretical models for transport and excess thermodynamic function and the experimental work of Jose M. Navaza et al⁹ for binary system at 298.15, 303.15, 308.15, 313.15, 318.15, 323.15K are presented in the paper. Non-associated (PFP) model depends on additivity of liquids¹⁰⁻¹⁵ and associated liquid model of Ramaswamy (RS)¹⁶ and Glinski¹⁷ (GLI) were used to predict the intermolecular relations. These two associated models depend adjustable coefficients. In present study we used the liquid which are non-polar in nature and having a very weak intermolecular relation. Δn were calculated and applied to Redlich-Kister relation¹⁸ to derive the respective parameters. McAllister model¹⁹ based on Eyring theory was applied to estimate the observation values. The aim of this work was to analyse and compare the different theoretical models

which will able to explain the physicochemical relation between different liquids.

Theoretical models: Prigogine-Flory-Patterson Model: Theoretical models provide a relation between the viscosity and activation energy of molecule to reduce the intermolecular force of attraction and movement to new site or existing vacant site near a neighboring molecule. Macedo and Litovitz²⁰ proposed a hypothesis involving the activation energy of molecule and vacant site near the neighboring molecules. The product of these two effects deals with the viscous flow. Solution consists of similar assumption. Using the above hypothesis, a relation has been made between the activation energy of pure component (ΔG_K^*), residual mixing free energy ($\Delta G_{M(x)}^R$) and activation energy of solution (ΔG_S^*).

$$\Delta G_S^* = x_1 \Delta G_1^* + x_2 \Delta G_2^* - \Delta G_M^R \quad (1)$$

Viscosity of pure component (η_i) and solution can be determined by the following equation

$$\eta_i = A \exp \left[\frac{\Delta G_i^*}{RT} + (\bar{v}_i - 1)^{-1} \right] \quad (2)$$

Where \bar{v}_i is reduced volume, taking logarithms of equation (2)

$$\ln \eta_i = \ln A + \frac{\Delta G_i^*}{RT} + (\bar{v}_i - 1)^{-1} \quad (3)$$

Applying equation (3) to solution and pure component one obtained



Induction of Sterility Effects by *Bacillus Thuringiensis* (B.T.) in *Diacrisia Obliqua*

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Abstract

Well known *Diacrisia obliqua* Walker (Lepidoptera: Arctiidae) causes a huge loss to farmers. In order to control this pest, a bacterial preparation was administered and tested by Leaf Dip Method (LDM) and Topical Method (TM). It was found that bacteria causes a drastic reduction in fecundity and fertility from lowest concentration (0.05%) to highest concentration (1.0%) and causes sterility in adult insects.

Keywords: *Diacrisia*, Leaf Dip Method, Topical Method and Pest

Introduction-

Chemical pesticides also cause development of resistance. So microorganisms like bacteria, virus & fungi are being used as biopesticides & have been tested against various pests. (Gupta L¹, 2016). *Bacillus thuringiensis* (B.T.) is a gram positive bacteria and pathogenic to over 500 insect species. It is proteomaceous in nature. (Bulla et. al.² 1977).

Material and Method-

Larvae for the experiment were obtained from eggs of females already treated with thuricidel. The number of eggs laid, hatching and incubation period were recorded. Thuricide is a commercial preparation of B.T. It is a wettable powder. It contains 30×10^9 viable spores of B.T. per gram of final product. To increase the stickyness of thuricidel, we added 2% skimmed milk powder to it and we used two methods **Leaf Dip method (LDM) and Topical Method (TM)** to test the effect.

Result & Discussion-

The results show a clear reduction in fecundity from 36.2% to 74.5% with increasing concentration of bacterial preparation under LDM. This method gives a control over net sterility which varied from 6.78% to 72.35% with the increasing concentration of thuricide. Topical method produced net sterility in the tested insect from 5.93% to 72.48% significantly from concentration to concentration ($P < 0.05$). Moreover, LDM exhibits comparatively better results.

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Effect of *Bacillus thuringiensis* (*B.t.*) on longevity of *Diacrisia obliqua*

• Lalit Gupta

Abstract- *Diacrisia obliqua* walker (Lepidoptera: Arctiidae) is a phytophagous insect causing great loss to different crops. To control this pest different concentrations of bacterial preparations were administered by Leaf Dip Method and Topical Method. It was observed that bacterial preparation reduces the longevity of adult insect. It was also found that bacterial preparation is more effective under LDM.

Keywords- *Bacillus thuringiensis*, *Diacrisia obliqua*

Introduction- Bihar hairy caterpillar, *Diacrisia obliqua* is a notorious polyphagous pest of various economically important crops. Chemical insecticides have been used by farmers to control this pest but older larva survived their toxicity. Chemical pesticides are also harmful to human & pct animals. They also impose resistance development and environmental pollution. Biopesticides are being popular day by day in order to control the pests. Microbial agents like virus, bacteria & fungi have been widely used & tested to control several crop pests.

Bacillus thuringiensis (*B.t.*) is a gram positive bacterium. It has been found very effective to control lepidopteran pests. *B.t.* has been found pathogenic to more than 525 insect species. A number of toxins like endotoxin and many more are produced by it. This toxin is a protein produced when spores are formed. It targets the insect's midgut epithelium upon ingestion. In the light of previous work done & literature available, following work was planned to study the effect of Dipel (a commercial preparation of *B.t.*) on growth of *D. obliqua*.

Material & Method- For the study male & female moths were collected and maintained in laboratory to ensure the regular supply of insects. Adults were maintained in glass chimneys and larva obtained from them were kept in large petridishes. Full grown larvae were transferred to pneumatic trough having 10-15 cm thick soil on their bottom, for pupation.

Dipel is a commercial preparation of *B.t.* whose efficacy has been already evaluated to control different insects. It is a wettable powder containing 25×10^8 viable spores per gram of final product of *B.t.* var *Kurstaki* (Serotype 3a, b strain HD-1).

The concentrations of Dipel used in this study included 0.05, 0.10, 0.50, 0.75 & 1.0%. 2% skimmed milk powder was added to Dipel which increased its adhering property.

Ultrasonic Study of Various Liquid State Models Using Protic and Aprotic Solvents from 298.15 to 318.15K

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Abstract:

Theoretical ultrasonic velocity was calculated for binary mixture of n-Dodecane and 1-Butanol from 298.15 to 318.15K over the entire composition range from the measured work of J. Peleterio. Collision factor theory (CFT), Free length theory (FLT), Nomoto relation (NOMO) and Van deal relation (VAN) have been used to evaluate the ultrasonic velocity and compare with the experimental values at different temperatures. Validity of these theoretical models and relations were explained with help of molecular interaction. Degree of molecular interactions were computed at different temperatures. Average absolute % deviation was the criteria of the success of the result. Collision factor theory (CFT) gave excellent results in comparison to other liquid state models.

Keywords — Collision factor, Free length, Nomoto, Van Deal, Ultrasonic velocity.

I. INTRODUCTION

In past few years, ultrasonic study has become a subject of wide interest to show various thermophysical properties and acoustical parameters evaluated from ultrasonic velocity, which is basically depend on the intermolecular interaction. Several workers [1]-[8] have done an extensive theoretical study on acoustical properties based on intermolecular force of interactions and the free space that present between the weakly bounded like and unlike components of pure liquids and binary mixtures. In present investigation binary mixture of dodecane and 1-butanol has been taken from the measured work of J. Peleterio [9] and theoretical evaluation of ultrasonic velocity has been performed by using Schaaff's collision factor theory [10]-[11], Jacobson's free length theory [12]-[13], Nomoto relation [14] and van deal [15]-[16] ideal mixing relation. Degree of molecular interaction has also been calculated from temperature 298.15-318.15K. the main

aim of this work to test the validity of various liquid state models applicable to different kind of liquids, which help to predict the different acoustical properties.

II. THEORETICAL MODELS

A. Collision factor theory.

W. Schaaf [10] derived a relation between ultrasonic velocity and space filling factor using collision factor and U_{∞} in pure liquid is given below:

$$U = \left(\frac{B}{V_m}\right) U_{\infty} S(1)$$

Where S is collision factor, $U_{\infty} = 1600$ m/s $\left(\frac{B}{V_m}\right)$ is space filling factor, V_m is molar volume and B is actual volume of molecules per mole.

$$B = \frac{b}{4} = \frac{4}{3} \pi r^3 N \quad (2)$$

Where r and b are the molecular radius and Van der Waals constant respectively.

$$r = \left(\frac{3b}{16\pi N}\right)^{1/3} (3)$$



Estimation of Physicochemical properties of Acetonitrile and Formamide from 293.15-313.15K

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Abstract

Density, viscosity and refractive index of binary system of acetonitrile and formamide at 293.15, 298.15, 303.15, 308.15, 313.15K were experimentally determined over the mole fraction range of (0.1225-0.9187) and atmospheric pressure. Theoretical results were computed from Jouyban-Acree model based on least square method and compared with experimental findings. Behavior standard deviation (RSD) for density, viscosity and refractive index was treated as a criterion of success. Corresponding RSD at 293.15, 298.15, 303.15, 308.15, 313.15K are (1.0 ± 0.5%, 0.98 ± 0.8%, 0.98 ± 0.8%, 0.95 ± 0.4%, 0.94 ± 0.7%), (2.30 ± 5.8%, 2.28 ± 7.5%, 2.26 ± 7.9, 2.21 ± 10.8%, 2.28 ± 13.4%) and (1.39 ± 0.2%, 1.39 ± 0.3%, 1.39 ± 0.3%, 1.38 ± 0.3%, 1.38 ± 0.2%) respectively. R² values for density, viscosity and refractive index were also calculated to determine the accuracy of the mathematical model. This study shows that model deals in agreement with experimental findings for all the physico-chemical properties of binary system at different temperatures with acceptable deviations in calculation.

Keywords: Acetonitrile, formamide, viscosity, correlation, theoretical

Introduction

Physicochemical properties of liquids are important data used in many thermodynamic applications. These properties were utilized to understand the transport phenomenon and liquid-liquid interaction. Data of these physicochemical properties are used in the development of various theoretical calculations. Continuing our work, experimental values of binary system from 293.15-313.15K temperature and mole fraction range of acetonitrile (0.1225-0.9187) are presented in this paper. Acetonitrile and formamide are two important liquids having wide range of applications in industry. Mahendra Nath Roy¹ measured the physicochemical properties of binary system by mixing different organic solutions with formamide at 298.15-313.15K. Jouyban-Acree model²⁻⁷ was used to estimate the physicochemical property of binary system at various temperatures.

$$\ln Y_{AB} = X_A \ln Y_A + X_B \ln Y_B + l_P \left[\frac{X_A X_B}{T_0} \right] + l_Q \left[\frac{X_A X_B (X_A - X_B)}{T_0} \right] + l_R \left[\frac{X_A X_B (X_A + X_B)}{T_0} \right] \quad (1)$$

Rearranging the above equation

$$\ln Y_{AB} - X_A \ln Y_A - X_B \ln Y_B = l_P \left[\frac{X_A X_B}{T_0} \right] + l_Q \left[\frac{X_A X_B (X_A - X_B)}{T_0} \right] + l_R \left[\frac{X_A X_B (X_A + X_B)}{T_0} \right] \quad (2)$$

l_P , l_Q , l_R are coefficients which could be calculated using no-intercept regression of the experimental values Y_{AB} , Y_A and Y_B are physicochemical properties of binary system and liquid A, B

respectively. The aim of this work to correlate experimentally determined physicochemical properties of acetonitrile - formamide mixture from (293.15-313.15K) with Jouyban-Acree model. Various researchers⁸⁻¹² including our research¹³ have tried to correlate the different physicochemical properties.

Materials and methods

Experiment⁴ was carried out using high grade chemical of acetonitrile and formamide. Which were purchased from the German company (Merck). During experiment chemicals were purified by distillation process and middle fraction was collected. To store the chemicals dark bottles with 0.4x10⁻³m were used. Which were degassed with vacuum pump and utilized in reduction of percentage of water. Gas chromatography was used to check the purity of chemicals and the result obtained from the purity check indicate that the purity was higher than 0.99.0 which were examined by comparing with experimental physicochemical properties with literature value as shown in Table-1.

Bicapillary pycnometer was used to measure the density of acetonitrile, formamide and their binary system. Mixtures were Shimadzu AX-200 electronic balance with uncertainty ±0.1mg was utilized in the preparation of binary system in an tight bottle by mass. Instrument was calibrated before each set of experiments with pure water. The published value of uncertainty was found to be ±6.7Kgm⁻³ in density observation. For binary system average uncertainty in composition was reported below ±0.0001.

THEORETICAL INTERPRETATION OF EXCESS VOLUME AND REFRACTIVE INDEX OF NON-POLAR MIXTURE FROM 298.15-323.15K

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ABSTRACT

Theoretical evaluation of refractive indices was carried out from 298.15 to 323.15K by Lorentz-Lorentz (L-L) relation, Ramaswamy-Anbananthan (RS) and Głinski model (GLI) over the entire mole fraction range and atmospheric pressure. Excess volume was also computed using Prigogine-Flory-Patterson (Flory) model based on non-association concept. Theoretical results of refractive indices were correlated with measured values using Jouyban Acree model for all the temperature. Lorentz-Lorentz relation deals fair agreement with measured values in comparison to other two models.

Keywords: Lorentz-Lorentz, Refractive Index, Excess Volume, Ramaswamy, Flory.

I. INTRODUCTION

Refractive index is an intensive physicochemical property which is used to predict the purity and identification of the compounds. The prediction of excess volume and refractive index of binary system are required for many thermophysical calculations. Various mixing rules for theoretical prediction of refractive indices of binary liquid mixtures have been given by many worker [1-6]. Pandey et al. [7] has applied various mixing rules of refraction for theoretical prediction of refractive indices of binary system and found a close relation between refractivity and change in volume for their successful prediction. The present investigation deals with the theoretical calculation of refractive indices of non-polar binary system of cyclohexane and 2,2,4-trimethyl pentane by Lorentz-Lorentz [8] relation, Ramaswamy-Anbananthan [9] and Głinski model [10] from 298.15-323.15K and atmospheric pressure and compared with the measured value of Jose M. Nawaz [11]. Average absolute % deviation (AAPD) was the criterion of the success of result. Correlation of calculated and measured values of refractive indices at different temperatures have been carried out using Jouyban Acree model [12-13]. Relative deviation (RD) was the criterion of the success of correlation model. Excess volume of binary system was calculated from 298.15- 323.15K by Flory [14] model based on non-association concept over the entire mole fraction to understand the extent of molecular interactions between the components at different temperatures. The main purpose of this work to test the applicability of liquid state models at different temperatures and to understand the associational behaviour of weakly interacting liquids.

II. MODELING AND ANALYSIS

A. Lorentz-Lorentz Relation

Lorentz-Lorentz relation [8] deals with the theoretical evaluation of refractive indices of binary system using density of pure liquids and density of mixture:

$$\left[\frac{(n^2 - 1)}{(n^2 + 2)} \right] \rho_{MIX} = \left[\frac{n_1^2 - 1}{n_1^2 + 2} \right] \frac{W_1}{\rho_1} + \left[\frac{n_2^2 - 1}{n_2^2 + 2} \right] \frac{W_2}{\rho_2} \quad (1)$$

Where (n_1, n_2) , (ρ_1, ρ_2) and (W_1, W_2) are refractive index, density and weight fraction of pure components respectively.

Above relation can be represented in term of volume fraction (ϕ) as

$$\left[\frac{(n^2 - 1)}{(n^2 + 2)} \right] = \left[\frac{n_1^2 - 1}{n_1^2 + 2} \right] \phi_1 + \left[\frac{n_2^2 - 1}{n_2^2 + 2} \right] \phi_2 \quad (2)$$

ϕ_1 and ϕ_2 are volume fraction of pure components respectively. Volume fraction of individual component can be calculated by the following relation

$$\phi_1 = \frac{X_1 V_1}{X_1 V_1 + X_2 V_2} \quad (3)$$

$$\phi_2 = \frac{X_2 V_2}{X_1 V_1 + X_2 V_2} \quad (4)$$

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ESTIMATION OF HEAT CAPACITY OF ISOMERIC ALCOHOLS WITH LONG CHAIN SATURATED HYDROCARBON BY LIQUID STATE MODELS FROM 288.15-318.15K

32

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ABSTRACT

Heat capacity of two binary liquid system of 1-Butanol and its positional isomer 2-Butanol with long chain saturated hydrocarbon Dodecane was computed over the whole composition range from Jouyban Acree model and McAllister 3 and 4 body interaction models from 288.15 to 318.15K. Results were compared with measured values of J. Pelelerin. Average absolute % deviation was the criteria of the success of the results. McAllister 4 body and Jouyban Acree models were found to be more accurate than McAllister 3 body model with measured values.

Keywords: Heat Capacity, Jouyban Acree, Mcallister, Correlation Models.

I. INTRODUCTION

Heat capacity is an extensive thermodynamic property which changes with change in composition and temperature. It is helpful for the prediction of different thermophysical parameters such as enthalpy and entropy of different systems. Values of heat capacity for liquid system plays a significant role in the process development of chemical reactors and equipment of heat exchangers. Various researchers [1-4] have evaluated heat capacity at different temperatures for binary liquid system. In the continuation of previously published work [5-6] this paper is concerned with the theoretical evaluation of heat capacity of two binary liquid systems 1-Butanol+Dodecane and 2-Butanol+Dodecane from temperature 288.15-318.15K over the whole composition range. Theoretical evaluation was carried out by Jouyban Acree [7-11] and McAllister multibody [12] interaction models and compared with the measured work of J. Pelelerio [13]. The aim of this work was to estimate the heat capacity of two binary systems of isomeric alcohols with long chain saturated hydrocarbon at different temperatures and test the accuracy and range of applicability of these liquid state models.

II. MODELING

Jouyban Acree model

Jouyban Acree model [7-11] is one of the most useful correlation model based on least square regression analysis method.

$$\ln C_{P, \text{Mix}} = X_A \ln C_{P(1)} + X_B \ln C_{P(2)} + J_0 \left[\frac{X_A X_B}{T} \right] + J_1 \left[\frac{X_A X_B (X_A - X_B)}{T} \right] + J_2 \left[\frac{X_A X_B (X_A - X_B)^2}{T} \right] \quad (1)$$


J_0, J_1, J_2 are parameters calculated from no intercept regression method. $C_{P(1)}$ and $C_{P(2)}$ are heat capacity of liquid 1 and liquid 2 respectively. $C_{P, \text{Mix}}$ is heat capacity of binary system.

McAllister model

McAllister model [12] is based on Eyring's absolute reaction rate theory. Which is mainly used to correlate the physicochemical properties of liquids with mole fraction adopting the concept of additivity.

McAllister -3-body model

$$\ln C_{P, \text{Mix}} = x_1^2 \ln C_{P_1} + 3x_1^2 x_2 \ln A_1 + 3x_1 x_2^2 \ln A_2 + x_2^3 \ln C_{P_2} - \ln \{x_1 + x_2 M_2/M_1\} + 3x_1^2 x_2 \ln \{(2 + M_2/M_1)/3\} + 3x_1 x_2^2 \ln \{(1 - 2 M_2/M_1)/3\} + x_2^3 \ln \{M_2/M_1\} \quad (2)$$


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MATHEMATICAL CORRELATION OF THERMOPHYSICAL PROPERTIES FOR ACETONITRILE + N, N - DIMETHYLFORMAMIDE FROM 293.15-313.15K BY JOUYBAN ACREE MODEL

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Abstract— Density, viscosity and refractive indices were measured for a weak interacting liquid formed by acetonitrile and N, N-dimethylformamide (DMF) at 293.15, 298.15, 303.15, 308.15, 313.15K temperature and 1atm pressure over the whole concentration range (0.2142-0.9567). Jouyban Acree model was used to calculate the physicochemical properties. Results obtained from Jouyban Acree model for various physicochemical properties were compared and tested with experimental values. Standard deviation was calculated from calculated and experimental values at different temperatures for all the three physicochemical properties and used as a criterion for the success of correlation. Mathematical calculation by the Jouyban Acree model deals a fair agreement with experimental results for all the three physico-chemical properties.

where J_1, J_2, J_3 are coefficients which could be calculated using no -intercept regression of the experimental values. PCP_{AB} , PCP_A and PCP_B are physicochemical properties of binary system, acetonitrile and dimethylformamide respectively.

Keywords— Density, viscosity, refractive index, Jouyban Acree, acetonitrile, DMF

I. INTRODUCTION

In the Continuation of our previously published work [1], an attempt has been made to correlate the experimental data of density, viscosity and refractive index of weakly interacting liquids at different temperature with Jouyban Acree model [2-6]. Khattab et al [7] correlate the physicochemical properties of water and ethanol system. Awasthi et al [8] correlate the viscosity of binary system at different temperatures. Different physicochemical properties were calculated by Jouyban Acree [2-6] correlation model.

$$\ln PCP_{AB} = X_A \cdot \ln PCP_A + X_B \cdot \ln PCP_B + J_1 \left[\frac{X_A \cdot X_B}{T^0} \right] + J_2 \left[\frac{X_A \cdot X_B \cdot (X_A - X_B)^2}{T^0} \right] + J_3 \left[\frac{X_A \cdot X_B \cdot (X_A - X_B)}{\sigma} \right] \quad (1)$$

$$\sigma = \left[\frac{\sum_{k=1}^n \frac{\Delta \eta}{(k)^2}}{\sum_{k=1}^n \frac{1}{(k)^2}} \right]^{1/2} \quad (2)$$

II. MATERIALS AND METHOD

A. Experimental section

Experimental work [1] has been performed by using AR quality acetonitrile and dimethyl formamide (DMF). Before starting the experiments each of liquid was purified by distillation process. Which was verified by chromatographic technique (Gas). Bicapillary pycnometer, Ubbelohde suspended-level viscometer, and Abbe refractometer (Atago-3T) thermostatically controlled were used to determine the experimental density, viscosity and refractive index respectively at different temperatures. Physical properties of pure liquids at different temperatures were compared with the literature values presented in table 1.

B. computational method

computation of these physicochemical properties has been performed by no intercept regression method. Experimental and calculated values of these properties were compared and tested in term of standard deviation which was calculated by the given equation.

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Research Journal of Pharmaceutical, Biological and Chemical Sciences

Prediction Of Molecular Interactions In Binary System From 288.15 To 318.15 K By Ultrasonic Speed And Isentropic Compressibility.

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ABSTRACT

Ultrasonic speed for a mixture of dodecane and 1-butanol were calculated from (288.15 to 318.15K) over the whole composition range at atmospheric pressure, from the experimental work of J. Peleterio. Flory(non-associated), Ramaswamy and Glinski (associated) were used to predict the behaviour and molecular interactions of binary system. Deviation in ultrasonic speed (ΔU) was used in Redlich Kister polynomial to determine the numerical coefficients and standard deviation. Isentropic compressibility was also calculated over the entire composition range at various temperatures. Eyring's theory-based McAllister models were used to correlate the thermoacoustic properties. Calculation by these models were compared with the experimental values to test extent of the molecular interactions. Ramaswamy was found more consistent with experimental values in comparison to Flory.

Keywords: Ultrasonic speed, Isentropic compressibility, McAllister model, Redlich Kister

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Growth, yield, yield attributes and quality of linseed (*Linum usitatissimum* L.) as influenced by organic sources of nutrients under rainfed condition

Manu Patel, Ashok Kumar, Rajeev Kumar, Anil Kumar, Dharmendra Kumar, Chaman Singh, Bhupendra Kumar, Sanjiv Kumar and Sandip Kumar

Abstract

Experimental results revealed that the application of 33.3% FYM + 33.3% Vermicompost + 33.3% Poultry manure significantly gave better plant height (85.30 cm), number of primary branches per plant (6.35), number of secondary branches per plant (19.17 cm), number of capsules per plant (56.69), number of seeds per capsule (8.53), seed yield per plant (5.25 g), seed yield (16.10 t ha⁻¹), 1000 seed weight (8.14 g), germination percentage (94.29%), root length (8.01 cm), shoot length (6.33 cm) and seed vigour index (1352.12), respectively as compared to other treatment combination while lower plant height, number of primary branches per plant, number of secondary branches per plant, number of capsules per plant, number of seeds per capsule, seed yield per plant, seed yield, 1000 seed weight, germination percentage, root length, shoot length and seed vigour index (78.76 cm, 3.75, 16.22, 50.62, 7.17, 3.67 g, 13.08 q ha⁻¹, 7.27 g, 86.00%, 5.93 cm, 4.83 cm and 925.36, respectively were recorded in control.

Keywords: Linseed, FYM, Vermicompost, Poultry manure, growth, yield and seed quality

Introduction

Linseed (*Linum usitatissimum* L.) occupies a greater importance among oilseeds in world, having to its various uses and specially qualities. It is mainly grown for oil and fibers. Oil are mainly used in paints, varnishes, linoleum, oilcloth, printer's ink, patent and imitation leather products and many others. Flax fibers are amongst the oldest fiber crops in the world after silk (Narayan, 1987) [10]. The fibre is pale yellow in colour, soft and lustrous but less flexible and stronger than cotton. It absorbs and releases water quickly making linen comfortable to wear in hot weather. The best grades are used for linen fabrics such as damasks, lace and sheeting. Coarser grades are used for the manufacturing of twine and rope. The quality papers like currency note and rolling paper for cigarettes are also made with the raw material of its fibre. India ranks first in terms of area under linseed cultivation and third in production in the world. Linseed, containing a mixture of fatty acids, is rich in two essential fatty acids such as alpha-linolenic acid (ALA) and linoleic acid (LA), and is used on food applications where stability is essential. Linolenic acid and linoleic acid are considered to be indispensable for human beings and must be obtained from food oils and fats. They are important nutrients for nervous system and the intake of linolenic acid is particularly helpful for a good blood circulation and heart protection. It is the best source of omega-3 fatty acid and it is essential as it cannot be synthesized by the body, but must be supplemented directly from foods. This imparts in cholesterol lowering, cardiovascular benefits by affecting prostaglandins and leukotrienes related to blood clotting and inflammatory disorder like rheumatoid arthritis. Linseed is one of the richest source of lignans, and provide protection against certain form of cancer due to estrogenic and anti-estrogenic activity in the body. Linseed Tea which contains mucilage provides relief during cough and sneezing. Linseed powder can be consumed directly, mixing with flour for preparation of chapatti and can be mixed with cooked pulse etc. India is one of the world's leading oilseed growing country and oilseed sector has an important position in the agricultural industry. It contribute 12-15% of the global oilseeds area, 7.8% of oilseeds production, 6-7% of vegetable oils production, 9-12% of vegetable oils imported and


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Impact of hydropriming and organic manure on seed emergence, seed vigour and grain yield of wheat (*Triticum durum* L.) under rainfed condition

Abhishek Kumar Kaushal, Ashok Kumar, Rajeev Kumar, Anil Kumar, Dharmendra Kumar, Chaman Singh, Dashrath Singh and AK Bharti

Abstract

To evaluate the impact of hydropriming and organic manure on seed emergence, seed vigour and grain yield of wheat (*Triticum durum* L.) under rainfed condition. The seed emergence, plant height, number of tillers per plant, spike length, number of spikelets per spike, number of seeds per spike, seed yield per plant, seed yield per ha, 1000 seed weight, seed germination percentage, root length, shoot length and seedling vigour index were found significantly affected by hydropriming (5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100 hours), organic manure (10, 20, 30, 40, 50, 60, 70, 80, 90, 100 t/ha) and their interaction. Maximum plant height (101.80 cm), number of tillers per plant (1.67), spike length (18.87 cm), number of spikelets per spike (38.00), number of seeds per spike (42.85), seed yield per plant (0.21) and grain yield (28.85 q/ha) were recorded with the application of Hydropriming for 10 hours + FYM @ 10 t/ha. Poultry manure @ 5 t/ha (HEM4) followed by Hydropriming for 10 hours + Poultry manure @ 5 t/ha + Vermicompost @ 5 t/ha (HEM6). However, plant height, spike length, number of spikelets per spike, number of seeds per spike, grain yield per plant and per ha were recorded poor performance with Hydropriming for 5 hours + FYM @ 10 t/ha (HEM1).

Keywords: wheat, hydropriming and organic manures, growth, grain yield and seed yield.

Introduction

Wheat (*Triticum aestivum* L.) is one of the most important staple food crops of the world under diverse growing conditions of soil and climate. It is an excellent health-building food containing approximately, 78% carbohydrates, 12% protein, 2% fat and minerals each and considerable amount of vitamins (Kumar *et al.*, 2011).

About 80 to 85% of wheat grains are ground into flour (atta) and consumed in the form of chapatties. Soft wheat is used for making chapatties, bread, cakes, biscuits, pasta and other bakery products while, hard wheat is used for flour (achingra) (atta, suji and sooji) and sooji is mainly used as fodder for livestock.

India stands second among wheat producing countries (after wheat with respect to area and production). In India wheat was grown over an area of 29.14 million hectares with production of 102.19 million tonnes with an average productivity of 3507 kg per ha (Anonymous, 2020).

In Uttar Pradesh, wheat is grown over an area 9.54 million hectares with a production of 32.75 million tonnes and with an average productivity of 3432 kg per ha which is much lower than national average (Anonymous, 2020).

Organic agriculture is defined as a production system which largely excludes or completely avoids the use of synthetically compounded pesticides, fertilizers, growth regulators, preservatives and livestock feed additives, organic agriculture practices thus relies upon recycling of crop residues, animal manures, off-farm organic (excess) and wastes, bio-fertilizers, exploitation of native soil fertility, non-pesticidal methods of pest control and weed management.

Seed priming resulting in faster development, earlier flowering and maturity, and higher yield in barley (Abdulahman *et al.*, 2007; Harris *et al.*, 1999) demonstrated that overnight seed priming (soaking seeds overnight in water) markedly improved establishment and early vigour of upland rice, maize and chickpea, resulting in faster development, earlier flowering and maturity and higher yields.

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Influence of biopriming and organic manures on growth, seed yield and quality of black wheat (*Triticum aestivum* L.)

Priyansh Rahangdale, Ashok Kumar, Rajeev Kumar, Anil Kumar, Ajay Kumar, Dharmendra Kumar, Chaman Singh, Dashrath Singh, Sanjay Kumar, AK Bharti and Sanjeev Kumar

Abstract

To study the influence of biopriming and organic manures on growth, seed yield and quality of black wheat (*Triticum aestivum* L.), results revealed that the application of 50% Poultry manure + 50% Vermicompost + Priming with water showed significantly maximum plant height (107.86 cm), number of tillers per plant (21.33), spike length (14.22 cm), number of spikelets per spike (18.48), number of seeds per spike (42.17), seed yield per plant (7.35 g), seed yield (28.78 q ha⁻¹), 1000 seed weight (40.76g), germination percentage (97.35%), root length (23.47cm), shoot length (14.56 cm) and seed vigour index (3702.22), respectively in comparisons to other treatments. While lower plant height, number of tillers per plant, spike length, number of spikelets per spike, number of seeds per spike, seed yield per plant, seed yield, 1000 seed weight, germination percentage, root length, shoot length and seed vigour index (21.33, 14.22 cm, 18.48, 42.17, 7.35 g, 28.78 q ha⁻¹, 40.76g, 97.35%, 23.47cm, 14.56 cm) and 3702.22, respectively) was recorded in 100% Poultry manure - Priming with *Trichoderma viride*.

Keywords: black wheat, biopriming and organic manures

Introduction

Cereals play an important role in healthy diet among all the food grains. It is used as a form of bread, noodles and biscuits. It is a good source of starch, proteins, minerals and dietary fibre and is major contributor towards daily caloric requirements of most of the consuming population. Further enhancement in its nutritional value is expected to increase consumer demands regarding health, nutrition and convenience.

The wheat is named 'Nabi MG' is available in black, blue and purple colour and much more nutritious than common wheat. The pigment anthocyanin is generally available 5 to 15 passes per million in common wheat, while black wheat contain 40 to 140 passes per million in black wheat. It provides health benefits like fruits like blueberry. Anthocyanins removes free radicals from the body and prevents heart, cancer, diabetes, obesity, and other diseases. The amount of zinc is also found in higher quantity in this wheat.

India stands second among wheat producing countries with respect to area and production. Wheat was grown over an area of 29.14 million ha, with production of 102.19 MT with an average productivity of 3507 kg per ha Anonymous 2019 [2]. In Uttar Pradesh, wheat is grown over an area 9.54 million hectares with production of 32.75 million tonnes and with an average productivity of 3432 kg per ha which is much lower than national average (Anonymous, 2020) [1]. Organic agriculture is a production techniques which largely excludes or completely avoids the use of synthetically compounded pesticides, fertilizers, growth regulators, preservatives and livestock feed additives, organic agriculture practices, thus rely upon recycling of crop residues, animal manures, off-farm organic residues and wastes, biofertilizers exploitation of native soil fertility, non-pesticidal methods of pest control and weed management. Seed priming is a technique to reduce emergence time, better allometric (changes in growth of plant parts over time) attributes and provide requisite stand in many horticultural and field crops. Many prehydration or priming treatments have been employed to increase the speed and synchrony of seed germination (Bradford, 1986). Seed priming resulting in faster development, earlier flowering and maturity and higher yields in barley (Abdulrahmani *et al.*, 2007). Harris *et al.* (1999) demonstrated that on-farm seed priming (soaking seeds overnight in

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Effect of seed priming on growth, seed yield and vigour of french bean (*Phaseolus vulgaris* L.) under organic condition

Rajat Awasthi, Ashok Kumar, Rajeev Kumar, Anil Kumar, Sugreev Kumar Maurya, Chaman Singh, Dharmendra Kumar, Dashrath Singh and AK Bharti

Abstract

To examine the effect of seed priming on growth, seed yield and vigour of French bean (*Phaseolus vulgaris* L.) under organic condition, results revealed that the application of priming with 1% KNO₃ for 12 hours recorded significantly highest plant height (36.59cm), number of primary branches per plant (4.63), number of secondary branches per plant (7.69 cm), pod length (11.48 cm), number of pods per plant (35.45), number of seeds per pod (7.13), seed yield per plant (13.10 g), seed yield (18.43 q/ha), 100 seed weight (38.13 g), germination percentage (87.91%), root length (14.83 cm), shoot length (19.57 cm) and seed vigour index (3024.10) respectively in comparison to other treatments while, the lowest plant height, number of primary branches per plant, number of secondary branches per plant, pod length, number of pods per plant, number of seeds per pod, seed yield per plant, seed yield, 100 seed weight, germination percentage, root length, shoot length and seed vigour index (29.34 cm, 3.70, 5.19, 8.07cm), 27.52, 4.95, 9.56 g, 11.88 q/ha, 32.59 g, 82.80%, 8.68 cm, 13.47 cm and 1834.02, respectively) were recorded in control.

Keywords: french bean, priming, growth, yield and seed quality

Introduction

The French bean (kidney bean, snap bean, haricot bean and navy bean) is most important leguminous crop grown for the tender vegetable, shelled green beans and dry beans (rajma). Among all the beans, it is the most extensively short duration having rich nutritive values. It is a valuable source of protein, vitamins and minerals. Its dry seed contains 21.1 per cent protein, 69.9 per cent carbohydrates, 1.7 per cent fat, 381 mg calcium, 425 mg phosphorous and 12.4 mg iron per 100 g of edible part (Ali and Kishwaha 1987)^[1]. French bean mainly grown in Andhra Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Uttarakhand, Uttar Pradesh and Tamil Nadu, having an area of 230078 ha with annual production of 647965 tonnes with a productivity of 28165 kg/ha (Anonymous, 2019)^[2].

Seed priming is a technique to controlled hydration process followed by re-drying that allows seed to imbibe water and begin internal biological processes necessary for germination, but which does not allow the seed to actually germinate. On the other hand, seed priming the amount of water absorption is controlled so as necessary metabolic activities occurred for germination but radical emergence is prohibited. Now-a-days, various seed priming techniques have been developed by seed scientists, including hydro priming (soaking in water), halo priming (soaking in inorganic salt solutions), osmo-priming (soaking in solutions of different organic osmotic), thermo priming (treatment of seed with low or high temperatures), solid matrix priming (treatment of seed with solid matrices) and bio priming (hydration using biological compounds). Seed priming has been successfully demonstrated to improve germination and emergence in seeds of many crops, particularly seeds of vegetables and small seeded grasses. Harris *et al.* (1999)^[3] demonstrated that seed priming (soaking seeds overnight in water) markedly improved establishment and early vigour of upland rice, maize and chickpea, resulting in faster development, earlier flowering and maturity and higher yields.

Material and Methods

A field experiment was carried out at Organic Research Farm, Institute of Agricultural Sciences, Bundelkhand University, Jhansi during 2020-21, to evaluate the impact of seed priming on growth, seed yield and vigour of French bean (*Phaseolus vulgaris* L.) under



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3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during the last five years

S. No.	Title of paper	Name of the author/s	Name of journal	Calendar Year of publication
1	SMALL SCALE INDUSTRIES	Dr. YOGESH SHUKLA	Academic Social Research Journal	2022-23
2	Innovative Strategies for Healthcare Equity for Exploring Social Entrepreneurship	Dr. YOGESH SHUKLA	MADHYA BHARTI	2022-23
3	Study on Economic Factors and Biodiversity	Dr. YOGESH SHUKLA	Printing Area	2022-23
4	A Study of Financial Stability and Profitability in Regional Rural Banks: Trend and Determinants.	Dr. YOGESH SHUKLA	Journal of Management and Entrepreneurship	2022-23
5	Relative study of compression ratio variation with pressure for Nano materials using EOS	Dr. PrakashDubey	International Journal of advanced research	2022-23
6	Hinduism and modern technology	Dr. PrakashDubey	International Journal of multidisciplinary educational research	2022-23
7	Response of mustard to levels of irrigation and nitrogen with and without mulch	Mr. Brihmanand	The Pharma Innovation Journal	2022-23
8	Response of wheat (<i>Triticum aestivum</i> L.) to different organic and inorganic sources of Nutrients	Mr. Brihmanand	The Pharma Innovation Journal	2022-23
9	Growth and yield attainment of wheat under different levels of vermicompost, biofertilizers and nitrogen	Mr. Brihmanand	The Pharma Innovation Journal	2022-23
10	ON A CERTAIN CLASS OF ANALYTIC UNIVALENT FUNCTIONS WITH POSITIVE COEFFICIENTS DEFINED BY q -CALCULUS	Dr. InduBala Mishra	Jnanabha	2022-23
11	Effect of Organic manure and Plant growth regulators on Flowering and Corm Production in <i>Gladiolus</i> Cv. Nova Lux	Dr. Pramod Kumar Rajput	International Journal of Advanced Multidisciplinary Research	2022-23
12	Physicochemical study of a binary liquid mixture by ultrasonic speed, isentropic compressibility and acoustic impedance from 288.15-318.15K	Dr. Naveen Awasthi	Research Journal of chemical sciences	2022-23
13	Estimation of acoustic impedance of binary liquid system from 288.15 to 318.15K by associated and non-associated process	Dr. Naveen Awasthi	Research Journal of physical sciences	2022-23

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14	Prediction of molecular interactions based on theoretical evaluation of ultrasonic velocity and excess acoustical parameters from 288.15-318.15K	Dr. Naveen Awasthi	International journal of engineering applied science and technology	2022-23
15	Post-harvest losses of Oil Seeds, Pulses and Cereals	Dr. M.P. Yadav, Dr. P.K. Rajput, Dr. Sanjeev Kumar, Dr. M.K. Yadav	International journal of Agriculture Science	2022-23
16	Study of Correlation and Path Coefficient analysis in Radish (Raphanussativus L.) under partial shade condition of Orchard	Dr. M.P. Yadav, Dr. P.K. Rajput, Dr. Sanjeev Kumar, Dr. M.K. Yadav, Dr. S.K. Vishwakarma	International journal of Agriculture Science	2022-23
17	Influence of biopriming and organic manures on growth, seed yield and quality of black wheat (Triticumaestivum L.) Journal of pharmacognosy and photochemistry	Dr. Dharmendra Kumar and Dr. Sanjiv Kumar	Journal of Pharmacognosy and Phytochemistry	2022-23
18	Race, Culture and Identity in the play of NozakeShange. Research journal of social and life sciences	Dr. M.K. Yadav	Research journal of social and life sciences	2022-23
19	Effect of Chemosterilants on Fecundity and Fertility of Diacrisia obliqua	Dr. Lalit Gupta	Res.J. of Social and Life Science	2022-23

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SMALL SCALE INDUSTRIES**Dr. YOGESH SHUKLA (ASSISTANT PROFESSOR)**DEPT. OF COMMERCE,
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The world has undergone enormous transformation in the last three months that will be remembered. Every aspect of life has been impacted by technology, whether it is manufacturing, services, the public or private sector, domestic or international. The majority of economies changed their policies during the globalisation process, some of which were quite extreme, in order to promote economic liberalisation and the internationalisation of goods and services. The state of the global economy has significantly changed. The world is moving toward a single economy due to a number of variables. In order to refute this argument, the current essay makes an effort to examine the expansion and development of small-scale companies in India.

Despite the unprecedented synchronised global recession, small-scale enterprises were essential in boosting industrial growth, promoting poverty alleviation, and achieving sustainability in both industrialised and developing countries. Small and medium-sized firms (SMEs) should be utilised instead of small-scale industries, which is becoming more and more clear (SSIs). Due to the fact that SMEs make up more than 80% of their industrial base, the majority of industrialised nations tend to think about SMEs rather than SSIs.

Due to their maximum resource use efficiency, ability to create employment, technical innovation, encouraging interlinkages, & aiding exports, and development of entrepreneurship abilities, SMEs are widely acknowledged to have a significant role to play in the contemporary environment. Regional distinctions are drastically reduced, their spatial adaptability. Because of their strategic importance in any discussion about restructuring the industrial sector, the future of SMEs is a significant policy concern. Since India's independence, the government's support for the small-scale manufacturing sector has become a key source of worry due to the fierce competition created by economic liberalisation and globalisation. The administration was forced to change its strategy as a result.

The small-scale sector has continuously expanded through time and made a substantial contribution to the economy. It has a considerable impact on the expansion of output, employment, and exports. By the end of March 2021, there were 4.37 million registered units in the SSI sector, up from 0.42 million at the end of March 2020; 95% of industrial facilities are used by small businesses. Nearly 47 million people are employed in the manufacturing sector, which also accounts for 35% of exports and 40% of total output. The industry is made up of numerous small, auxiliary, and specialised firms. In actuality, it includes every aspect of the arts, from conventional handicrafts units at one end to cutting-edge industrial facilities with considerable investments at the other, generating a diverse range of more than 7,500 products. The industry offers an ideal setting for aspiring business owners. Policymakers have given the SSI sector a lot of consideration when addressing its needs, whether they relate to audit, marketing, technology, entrepreneurial development, fiscal assistance, or infrastructure support.

The main industry (factory) sector, the small-scale factory sector, and the rural and small industries sector roughly correspond to India's manufacturing industry. Based on a maximum investment in plant and machinery, the units in the huge industrial sector and small size industry are divided into two categories. Modern small businesses and traditional industries make up the second division of the village and small industries sector. Powerloom and SSI units are examples of contemporary small businesses. Small and cottage businesses include things like handicrafts, sericulture, silk, cotton, and village industries. The SSI sector is further broken down into other sub-sectors, including small units, units with an export focus, female-owned businesses, and small-scale services and manufacturing firms.

Comparatively speaking, the manufacturing and industrial sectors as a whole have experienced slower growth than the SSI sector. The trajectory of the growth, however, has altered over time. In contrast to the manufacturing and industrial sectors, which have seen a considerable decline in growth over the past few years, the SSI sector has only had a slight decline in growth.

Innovative Strategies for Healthcare Equity for Exploring Social Entrepreneurship

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Abstract

Healthcare inequities continue to persist as a global challenge, with marginalized and underserved populations disproportionately experiencing barriers to access and quality care. Addressing these disparities requires innovative approaches that go beyond traditional healthcare models. This abstract introduces a research study focused on exploring the potential of social entrepreneurship as a catalyst for promoting healthcare equity. Social entrepreneurship, characterized by its emphasis on creating sustainable solutions to social problems, has gained prominence in various sectors, including healthcare. This study aims to identify and analyze innovative strategies within the realm of social entrepreneurship that have successfully tackled healthcare inequities. By examining case studies, models, and initiatives from around the world, this research seeks to uncover the underlying principles and mechanisms that contribute to their effectiveness. The research employs a mixed-method approach, combining qualitative analysis of in-depth interviews with key stakeholders, beneficiaries, and founders of healthcare-focused social enterprises, along with quantitative assessments of their impact on healthcare outcomes and equity indicators. Through this approach, the study aims to provide a comprehensive understanding of the diverse ways in which social entrepreneurship can contribute to healthcare equity.

Introduction

In today's rapidly evolving healthcare landscape, achieving equity in access to quality medical services has emerged as a paramount concern. Addressing the pervasive disparities in healthcare requires innovative approaches that go beyond conventional models. This is where the dynamic

A sense of place and landscape in this
 is closely connected to the sense of identity.
 We feel blown free, but circle back
 to be in love, to touch and part
 and meet again, spun
 past the face of the moon, the precise
 underpinning of stars. The cycle begins
 with one and ends with one. (Taal)
 She underlines that that socio-cultural and
 socio-political restrictions on women have robbed
 them of all their potentialities and she speaks for
 their freedom, dignity and respectful living of
 women, especially in the Muslim society.

Dr. Dharker's poetry makes an interesting
 contribution to understanding feminism because she
 underlines that that socio-cultural and socio-
 political restrictions on women have robbed
 them of all their potentialities and she speaks
 for their freedom, dignity and respectful living of
 women, especially in the Muslim society.

A filmmaker as well as a visual artist and
 Dr. Dharker's writing always recognizes the centrality
 and proliferation of the image. Imtiaz Dharker's
 development as a poet is an impressive phenomenon
 in contemporary Indian writing in
 English. Imtiaz Dharker belongs to that generation of
 independence women poets who ensures that
 English Poetry matches the best anywhere.
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STUDY ON ECONOMIC FACTORS AND BIODIVERSITY

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Abstract :

Economic research on biodiversity
 conservation has focused on the costs of
 conservation reserves and the benefits of intact
 ecosystems; however, no study has
 simultaneously considered the costs and
 benefits of species diversity, a fundamental
 component of biodiversity.

This paper describes how economists
 ascribe values to the things people can choose.
 The economic value of an ecosystem function
 or service relates to the contribution it makes
 to human welfare, where human welfare is
 measured in terms of each individual's own
 assessment of well being. After developing how
 this definition is used, the paper describes
 problems and opportunities for advancing the
 state-of-the-art in measuring economic values
 for nature. These arguments are developed
 using recent studies that attempted to estimate
 economic values for ecosystems on a global
 scale. Biodiversity, sustainable development
 and environment are inter-related and inter-
 dependent with each other. In this research
 paper the researcher has tried to discuss critical
 issues on biodiversity and sustainable

A Study of Financial Stability and Profitability in Regional Rural Banks: Trends and Determinants

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Abstract

Regional Rural Banks (RRBs) play a vital role in providing financial services to rural and remote areas of India. These banks are created with the objective of promoting financial inclusion and rural development. As such, it is crucial to understand the financial stability and profitability of RRBs in order to assess their effectiveness in achieving these goals. This study aims to examine the trends and determinants of financial stability and profitability in RRBs. Regional Rural Banks (RRBs) play a vital role in providing financial services to rural and remote areas of India. These banks are created with the objective of promoting financial inclusion and rural development. As such, it is crucial to understand the financial stability and profitability of RRBs in order to assess their effectiveness in achieving these goals. This study aims to examine the trends and determinants of financial stability and profitability in RRBs. Rural Banks were founded "as a view to developing the rural economy by providing credit and other facilities, particularly to Small and Marginal Farmers, Agricultural Labourers, artisans and Small Entrepreneurs and for matters connected therewith and incidental thereto" for the advancement of agriculture, trade, commerce, industry, and other productive activities in rural areas. By this time, we get and support some to whom who heavily rely on informal sources of funding like moneylenders, landlords, and traders, among others, who exploit farmers and small business owners by charging exorbitant rates of interest and force farmers to sell their goods at low prices to them, rural banks are deemed to be necessary. Regional rural banks provide financial support to India's poor and rural residents to resolve their financial issues. The analysis of RRBs financial performance in Uttar Pradesh is a good survey. RRBs merged, no study has been done. Therefore, our study is a first attempt to understand the implications of RRB merger.



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RESEARCH ARTICLE

RELATIVE STUDY OF COMPRESSION RATIO VARIATION WITH PRESSURE FOR NANOMATERIALS USING EOS

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Abstract

A basic thermodynamical study of various nanomaterials has been done. Different Equation of states [EOS] (Tait, Shanker & Suzuki) have been applied and compared with the experimental result. An derived equation using thermodynamical approximation is used to investigate the isothermal compression and pressure dependency of bulk modulus of nanomaterials i.e. TiO_2 (rutile phase), MgO , CuO , 3C-SiC , ZrO_2 , Tb_2O_3 , t-Fe , Rb_2C_{60} , Ge (13 nm). The acquired results are found to be in excellent accord with known experimental data, demonstrating the validity of the formulation utilized in this work.

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Introduction:-

Nanomaterials are projected to represent the tipping point in the next technological revolution in solid-state electronics, emerging as novel structural materials, serving as medication delivery systems, and having a significant influence across virtually all fields of research. External elements like as pressure and temperature are extremely sensitive to nanoparticles. The study of nanoparticles under high pressure is being examined as a way to broaden the spectrum of solid-state materials accessible. High pressure applications offer the potential to explore an infinite number of avenues for nano-assembling or phase change in a regulated manner, and they represent a one-of-a-kind route for the development of novel materials. Pressure application, similar to that used on bulk materials, allows for continual alteration of the nano-interatomic object's interactions and is a useful tool for studying physico-chemical interactions at the nanoscale and their relationship to physical attributes of interest.

The structure and interatomic spacing of materials have a substantial impact on their physical characteristics. High pressure can change these distances, allowing us to investigate correlations between material structure and attributes [1]

Many mechanical characteristics, such as hardness, elastic modulus, fracture, toughness, scratch resistance, and fatigue strength, are changed and varied at the nanoscale compared to their bulk counterparts. Many nanomaterial systems have been found to have high value of hardness. Recently, it was discovered that nano semiconductors with decreased dimensions have electrical and optical characteristics that change with particle size, making them attractive candidates for applications requiring tenability of optical and/or electronic properties [2]

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HINDUISM AND MODERN TECHNOLOGY

6

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Abstract: Hinduism is the world's oldest religion, Sanatan Dharma or Hinduism is one of the most precise and shreshtha as it's not only a single religion but a wholesome combination of numerous traditions and beliefs. Indian Astronomy is substantially girdled by their spiritual beliefs and their culture. But also, Sanatan Dharma has more accurate compliances in the field of Astrophysics. Indian astronomy is principally the description of the macrocosm and the state of intimdate matters.

Keywords: Combination, Astronomy, Macrocosm.

Introduction: The vedic textbooks are easily the oldest textbooks of the Indian heritage. Rig Veda is the oldest of them, Rig Veda is each about rituals and culture bedded, also it has a unique section on astronomy called 'Vedang Jyotisha'- which connects the relations between ultramodern wisdom and the ancient wisdom of Cosmos. After the applicability of Rig Veda, Yajur Veda is the coming most apparent literature in the knowledge of Ancient Astronomy. The most accurate applicability in the field of astrophysics in India is connected to Rig veda (c1700- 1100 BCE), one of the foremost textbooks in Hinduism. Rig Veda and Yajur Veda subordinally created a pathway for numerous ancient astronomers and mathematicians to compose their models and propositions about Space and Cosmos. The Shlokas of creation from the Rig Veda concludes that nothing knows how the macrocosm has started. According to Hindu Beliefs the macrocosm is that of millions or trillions of times old. As per by ancient hindu beliefs in reincarnation, the macrocosm we live isn't the first and indeed, there are trillions of macrocosm and Brahma floating, beyond our thinking capacities. Vedas, Puranas like Shrimad Bhagwat Geeta have clear attestations to the straight vedic period and cosmology- It's believed that these textbooks have evolved over centuries.

Indian Astronomy and Its Applicability to the Modern Technology

Vedas and Puranasnoway mentioned that earth is flat or that of some other. Puranas always mentioned that earth is ellipsoidal in shape, as when demon Hiranyanetra trapped earth into an ocean, Shri Hari Vishnu took his third of the 10 embodiars(avtars) as a boar. According to VarahPurana; The Varah or Boar Icon of Vishnu is depicted as holding up the ellipsoidal Earth with his ivory. Bhagwat Geeta also have substantiation related to the ellipsoid shape of earth. This shloka from SrimadBhagvatGeeta describes about the globular shape of earth.

“तत्रस्थानादिवसमध्यहगतप्रसदाऽऽदित्य-
स्तपतिस्वयेनाचलदक्षिणेनकरोति
यत्रोदेतिवस्यहसमानमुत्रनिपाते
निम्नोत्थस्त्रक्वचनस्यन्देनाभितपति
तस्यहैषसमानमुत्रनिपातेप्रस्वापयति
तत्रगतनपश्यन्तिनेतंसमनुपश्येत्”

Restatement- People living in countries at points diametrically contrary to where the sun is first seen rising will see the sun setting, and if a straight line were drawn from a point where the sun is atmid-day, One side of the people will see no sky that means the night whereas the other side will be able to see the sun and vice-versa. BhagvatGeeta Verse 5 Chapter 21 Shlok 8-9 ²

These verses easily explain the Earth as an ellipsoid.

If you 'll ask that how right it's or when it came public is always been of part of pivotal contestation in between ancient astronomers and western knowledge. The fact that the Sun is at the centre of solar system and earth with rest of the planets are revolving around. It is established times ago in Hindu Vedas and Puranas. Great Scientist Galileo admitted to the fact that the positions of solar bodies in universe is formerly mentioned in the Bhagavatham, which was collected in a period that goes from the end of Mahabharata age, at the morning of Kali- Yuga (3102 BC) and at the rearmost around 2600 BC.



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Response of mustard to levels of irrigation and nitrogen with and without mulch

Ashok K Saini, Lalita H Saini, Brihama Nand, Pratikkumar J Vaghela and SH Malve

Abstract

A field experiment was conducted during *rabi* season of 2021-22 on loamy sand of Agronomy Instructional Farm, C. P. College of Agriculture, S. D. Agricultural University, Sardarkrushinagar, Gujarat to assess the impact of levels of irrigation and nitrogen with & without mulch on growth, yield attributes, yield, field water use efficiency and economics of mustard. The soil was normal in EC (0.112 dS/m), low in organic carbon (0.30%), available nitrogen (187.56 kg/ha), medium in available phosphorus (49.80 kg/ha), available potash (256.40 kg/ha) with slightly alkaline (7.6 pH) in reaction. The experiment was laid out in split plot design and replicated four times. Twelve treatment combinations consisting three levels of irrigation (0.6, 0.8 and 1.0 IW/CPE), two levels of nitrogen (75 and 100% RDN) with and without mustard straw mulch (2 and 0 t/ha) were embedded. The results indicated that significantly higher growth and yield parameters viz., plant height at harvest (195.6, 191.9 cm), dry matter accumulation at harvest (46.69, 49.26 g/plant), CGR, BGR, number of primary branches per plant (5.50, 5.58), number of siliqua per plant (277.0, 279.3), number of seeds per siliqua (13.50, 12.48), seed yield (2106, 1999 kg/ha) and stover yield (4783, 4765 kg/ha) with irrigation scheduled at 1.0 IW/CPE and 100% RDN with mustard straw mulch @ 2 tonne per ha, individually. Siliqua length, test weight and harvest index of mustard were not affected by irrigation and nitrogen levels with & without mulch. Higher FWUE was found with irrigation scheduled at 0.6 IW/CPE and 100% RDN with mulch. Total N, P and K uptake as well as available N, P₂O₅ and K₂O after harvest were found highest with higher level of inputs i.e., irrigation, nitrogen and mulch. Maximum net return (₹ 107647/ha) and BCR (3.47) was secured with irrigation scheduled at 1.0 IW/CPE along with 100% RDN with mustard straw mulch @ 2 tonne per ha. Thus, it is concluded that mustard crop should be irrigated at 1.0 IW/CPE and fertilized with 75% RDN (three splits, i.e., 50% as basal and 25% each after 25 and 55 DAS) along with 2 tonne per ha mustard straw mulch for securing higher yield in loamy sand soil.

Keywords: Irrigation, mustard, yield, mulch

Introduction

Indian mustard is the member of Brassica group and commonly known as *rai* or *laha* and grown under wide range of agro-climatic conditions. Among the nine edible oilseeds cultivated in India, rapeseed-mustard (*Brassica spp.*) contributes 28.6% in the total production of oilseeds. In India, rapeseed-mustard is grown in 6.69 million hectare of area with 10.11 million tonnes of total production and productivity of 151 kg/ha (Anonymous, 2021)^[1]. Rajasthan and Uttar Pradesh are the major mustard producing states in the country. Irrigation scheduling is one of the important managerial activities and affects the effective and efficient utilization of water by crops. It determines the process to decide when to irrigate the crop and how much water is to be applied. It optimizes agricultural production with minimizing yield loss due to water shortage and improving performance and sustainability of any irrigation system through conserving the moisture. Rapeseed-mustard group of crops have relatively high demand for N than many other crops owing to larger N content in seeds and plant tissues (Malagoli *et al.*, 2005)^[2]. Yield increases in Indian mustard at various locations in India have been reported with application of N as high as 150 kg/ha or more (Singh *et al.*, 2008)^[11]. Since N fertilizers are costly, poor nitrogen use efficiency is of great concern and therefore, attempts are needed to improve the contribution of applied N in production of grain and this approach will reduce the environmental hazards and production costs in agriculture. Application of optimum dose of nitrogen may be an important factor which can be used for exploration of the yield potential as well as economical crop production.

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Response of wheat (*Triticum aestivum* L.) to different organic and inorganic sources of nutrients

AK Saini, Lalita H Saini, HS Chaudhary, Brihama Nand and Jaykumar P Patel

Abstract

Wheat (*Triticum aestivum* L.) is king of cereals and one of the most important staple food crops. Wheat belongs to *Gramineae* family and second important food grain crop of India being next to rice. This crop is mainly responsible for the green revolution and mitigating the problem of food insecurity in India. An adequate supply of nitrogen is associated with vegetative growth and maintains genetical material, while its deficit results in yellowing and stunted plant growth thereby, adversely affecting quantity and quality of crop produce. A field experiment was conducted during *rabi* season of 2020-21 on loamy sand soils of Agronomy Instructional Farm, Chimanbhai Patel College of Agriculture, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar, Gujarat to assess the impact of vermicompost, biofertilizer and nitrogen levels on growth, yield and economics of wheat. The soil was low in organic carbon (0.22%) and available nitrogen (165.8 kg/ha), medium in available phosphorus (43.8 kg/ha) and high in potash (330.9 kg/ha). The results indicated that significantly higher growth and yield parameters viz. plant height (85.1, 81.6, 82.5 cm), number of tillers per plant (3.72, 3.56, 3.62), dry matter accumulation at harvest (261.0, 242.5, 249.4 g/m²), length of spike (10.9, 10.2, 10.4 cm), number of seeds per spike (40.16, 37.74, 37.93), grain weight per spike (1.52, 1.45, 1.48 g) and test weight (38.54, 37.28, 37.65 g) with individual application of 4 t/ha vermicompost, *Azotobacter chroococcum* inoculation @ 5 ml/kg seed and 100% RDN, respectively. Combined application of 4 t/ha vermicompost + 100% RDN produced significantly higher grain yield (5096 kg/ha) and straw yield (6362 kg/ha) over other combination but being at par with treatment combination 4 t/ha vermicompost + 75% RDN. Total N, P and K uptake as well as available N, P₂O₅ and K₂O after harvest were found the highest with higher level of inputs i.e., vermicompost, biofertilizer and nitrogen. The maximum net realization ₹ 58272/ha was secured with application of 2 t/ha vermicompost along with 100% RDN and biofertilizer inoculation.

Keywords: Wheat, vermicompost, biofertilizer and nitrogen

Introduction

About 35 per cent of the world's population directly or indirectly depends upon wheat for food and providing 20 per cent of human dietary and serving as the main source of protein in developing nations. Wheat (*Triticumaestivum* L.) is king of cereals and one of the most important staple food crops. Wheat belongs to *Gramineae* family and second important food grain crop of India being next to rice. This crop is mainly responsible for the green revolution and mitigating the problem of food insecurity in India.

The nutritive value of wheat is fairly high as compared to other cereals. It contains protein (11.80%), fat (1.50%), carbohydrates (71.20%), mineral matter (1.50%), calcium (0.50%) and phosphorus (0.32%) (Swaminathan *et al.*, 1981) [18]. Wheat protein is known as gluten which provides the structural framework for the spongy, cellular texture of bread and bakery products. Apart from food purposes, wheat grains have also industrial importance for manufacturing paste, alcohol, gluten etc. Residues obtained after milling i.e. bran used as cattle feed. Wheat straw is utilized as a fodder for feeding the livestock and also useful in manufacturing mattresses, straw hats, paper and articles of art purposes. Wheat straw is also a good source of bedding material for livestock.

The major wheat growing countries in the world are China, India, Russia, USA, France, Australia, Canada, Pakistan, Ukraine and Germany. It is an important winter cereal contributing about 38% of the total food grain production in India. Wheat straw is an important source of fodder for a large animal population in India. India, being the second largest producer of wheat all over the world, next to china, produce around 12 per cent of the world wheat. In India, it is cultivated in an area about 29.32 million hectares with total production of 103.60 million tonnes having productivity of 3053 kg/ha during 2019-20.



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Growth and yield attainment of wheat under different levels of vermicompost, biofertilizers and nitrogen

Lalita H Saini, AK Saini, SH Malve, Jaykumar P Patel and Brihama Nand and HS Chaudhary

Abstract

A field experiment was conducted during *rabi* season of 2020-21 on loamy sand soils of Agronomy Instructional Farm, Chimanbhai Patel College of Agriculture, Sardarkrushinagar Dantwada Agricultural University, Sardarkrushinagar, Gujarat to assess the impact of vermicompost, biofertilizer and nitrogen levels on growth, yield and economics of wheat. The soil was low in organic carbon (0.22%) and available nitrogen (165.8 kg/ha), medium in available phosphorus (43.8 kg/ha) and high in potash (330.9 kg/ha). The experiment was laid out in Randomized Block Design (Factorial concept) and replicated thrice. Twelve treatment combinations consisting three levels of vermicompost, two levels of biofertilizer and two levels of nitrogen were embedded. The results indicated that significantly higher growth and yield parameters viz., plant height (85.1, 81.6, 82.5 cm), number of tillers per plant (3.72, 3.56, 3.62), dry matter accumulation at harvest (261.0, 242.5, 249.4 g/m²), length of spike (10.9, 10.2, 10.4 cm), number of seeds per spike (40.16, 37.74, 37.93), grain weight per spike (1.52, 1.45, 1.48 g) and test weight (38.54, 37.28, 37.65 g) with individual application of 4 t/ha vermicompost, *Azotobacter chroococcum* inoculation @ 5 ml/kg seed and 100% RDN, respectively. Combined application of 4 t/ha vermicompost + 100% RDN produced significantly higher grain yield (5096 kg/ha) and straw yield (6362 kg/ha) over other combination but being at par with treatment combination 4 t/ha vermicompost + 75% RDN. Thus, it is concluded that for securing higher grain and straw yield the wheat seed should be inoculated with *Azotobacter chroococcum* @ 5 ml/kg seed and crop should be fertilized with 90 kg nitrogen per ha (two splits, i.e. 50% as basal and 50% at 21 days after sowing) along with application of 4 t vermicompost and phosphorus 60 kg per ha as basal application in loamy sand.

Keywords: Biofertilizer, *Azotobacter chroococcum*

Introduction

Wheat (*Triticum aestivum* L.) is king of cereals and one of the most important staple food crops. Wheat belongs to *Gramineae* family and second important food grain crop of India being next to rice. This crop is mainly responsible for the green revolution and mitigating the problem of food insecurity in India. About 35 per cent of the world's population directly or indirectly depends upon wheat for food and providing 20 per cent of human dietary and serving as the main source of protein in developing nations.

India, being the second largest producer of wheat all over the world, next to china, produce around 12 per cent of the world wheat. In India, it is cultivated in an area about 29.32 million hectares with total production of 103.60 million tonnes having productivity of 3053 kg/ha during 2019-20. (Anon., 2020b) [2]. Three main species of wheat viz., *Triticum aestivum*, *Triticum durum* and *Triticum dicoccum* are cultivated in India. However, *Triticum aestivum* and *Triticum durum* are popularly grown in Gujarat.

The recycling of waste through earthworms is called vermiculture technology or vermicomposting. Vermicompost is a rich source of different essential nutrients which improve overall soil condition and promote yield and growth of plant (Pezeshkpour *et al.*, 2014) [18]. On an average vermicompost contains nitrogen 2-3%, potassium 1.85-2.25% and phosphorus 1.55-2.25% (Sinha, 2009) [25]. Vermicompost contains different types of soil beneficial microbes that can improve plant growth through vitamins, hormones and antibodies (Lourduraj, 2006) [12]. Vermicompost also contains different enzymes which are responsible for degradation of large organic molecules for enhancement of further microbial activity (Gupta, 2003) [28]. It is also advantageous in preventing leaching of nutrients and even in conserving nutrients, bacterial, valuable enzymes and vitamins in soil.

Soil fertility and other agronomic practices play an indispensable role in determining the



ON A CERTAIN CLASS OF ANALYTIC UNIVALENT FUNCTIONS WITH POSITIVE COEFFICIENTS DEFINED BY q -CALCULUS

By

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Abstract

The main object of this paper is to introduce a new subclass of analytic univalent functions by using q -calculus. We obtain results regarding coefficient estimates, extreme points, distortion bounds, convolution condition and convex combination for this class. Finally, we discuss a class preserving integral operator for this class. Relevant connections of the results presented here with various well-known results are briefly indicated.

2020 Mathematical Sciences Classification: 30C55

Keywords and Phrases: Analytic, univalent, Salazaran operator, q -calculus

1. Introduction

Let A denote the class of functions of the form

$$f(z) = z + \sum_{k=2}^{\infty} a_k z^k, \tag{1.1}$$

which are analytic in the open unit disk $U = \{z : |z| < 1\}$. As usual, we denote by S the subclass of A consisting of functions $f(z)$ of the form (1.1) which are univalent in U .

A function $f \in S$ is said to be starlike of order α , $0 \leq \alpha < 1$, if it satisfies the following analytic criteria

$$\Re \left\{ \frac{zf'(z)}{f(z)} \right\} > \alpha.$$

Similarly, a function $f \in S$ is said to be convex of order α , $0 \leq \alpha < 1$, if it satisfies the condition

$$\Re \left\{ 1 + \frac{zf''(z)}{f'(z)} \right\} > \alpha, \quad z \in U.$$

The classes of all starlike and convex functions of order α are denoted by $S^*(\alpha)$ and $K(\alpha)$ respectively, introduced and studied by Robertson [14]. These classes with negative coefficients extensively studied by Silverman [16].

In 1994, Uralegaddi et al. [17] introduced the analogues classes of starlike and convex functions of order β with positive coefficients and opened up a new and interesting direction of research in geometric function theory. They introduced the classes $M(\beta)$, $L(\beta)$ and $R(\beta)$ in the following way.

A function $f(z)$ of the form (1.1) is said to be in the class $M(\beta)$, if it satisfy the following condition

$$\Re \left\{ \frac{zf'(z)}{f(z)} \right\} < \beta, \quad z \in U,$$

where $1 < \beta \leq 4/3$.

A function $f(z)$ of the form (1.1) is said to be in the class $L(\beta)$, if it satisfy the condition

$$\Re \left\{ 1 + \frac{zf''(z)}{f'(z)} \right\} < \beta, \quad z \in U,$$

where $1 < \beta \leq 3/2$.

Similarly, a function $f(z)$ of the form (1.1) is said to be in the class $R(\beta)$ if it satisfy the condition

$$\Re \{f''(z)\} < \beta, \quad z \in U,$$

where $1 < \beta \leq 2$.

Let S_j denote the class of functions of the form

$$f(z) = z + \sum_{k=j+1}^{\infty} a_k z^k, \tag{1.2}$$

where $j \in \mathbb{N} = \{1, 2, 3, \dots\}$ and $z \in U$, which are analytic and univalent in the open unit disk U . It is interesting to note that for $j = 1$, the class S_j reduces to the class S of analytic univalent functions.

प्राचार्य
जनता कालेज
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Effect of Organic Manure and Plant Growth Regulators on Flowering and Corm Production in Gladiolus Cv. Nova Lux

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Abstract

The experiment was conducted in Randomized Block Design (RBD) with three replications. A field experiment was conducted to assess the effect of vermicompost 20t/ha, 15t/ha, FYM 20t/ha, 15t/ha, Poultry Manure 20t/ha, 15t/ha, Vermicompost + GA₃ 20t+100ppm, FYM+GA₃ 20t+100ppm, PoultryManure+GA₃ 20t+100ppm on flowering and corm production in Gladiolus Cv. Nova Lux. Application of Vermicompost+GA₃ 20t + 100 ppm increasing floral character like number of days for emergence of spike, Length of spike, Number of Florets per spike, Diameter and Length of Florets and Corm characteristics such as Diameter of corm, Weight of one corm per plant, Number of cormels per plot, Corm yield per plot, Corm yield per hectare. Showed the maximum value followed by Poultry Manure + GA₃ 20t + 100ppm.

Keywords

Vermicompost,
FYM,
Poultry manure and
GA₃

Introduction

Gladiolus commonly called as "Sword Lily" or "Corm Flag". The genus Gladiolus is comprised of about 180 species. It is the seventh most important flower crop in the world. In India, we have been growing and using flowers for time immemorial. Flowers have become integral part of our day-to-day life. It is particularly for

religious and social offering has been on the increase due to changing life style. This has led to the appreciation of the economic importance of flowers in addition to its aesthetic value. In our country and world not much work has been done on the use of organic manures for production of gladiolus but in present time reported that organically grown gladiolus shows luxuriant growth producing maximum number of



Physicochemical study of a binary liquid mixture by ultrasonic speed, isentropic compressibility and acoustic impedance from 288.15-318.15K

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Abstract

Ultrasonic study of intermolecular interactions between the solvents of different nature have been performed by ultrasonic speed (U), isentropic compressibility (β) and acoustic impedance (Z). Ultrasonic speed and aforesaid acoustical parameters for binary liquid mixture of 2-butanol and dodecane were computed from 288.15-318.15K over the entire range of concentration and atmospheric pressure and compared with the literature values. Poirson-Flory-Prigogine (PFP), Ramaswamy-Anbananthan (RS) and Glinski model (GLI) were used to study the intermolecular interactions between the pair interacting liquids at different temperatures. Standard deviations and numerical coefficients of mixing properties were estimated by Redlich Kister polynomial. McAllister multibody correlation model was used to correlate the experimental findings. Ramaswamy model deals a fair agreement with experimental values in comparison to statistical liquid state PFP model.

Keywords: Isentropic compressibility, Acoustic impedance, Ultrasonic speed, PFP.

Introduction

Ultrasonic studies play a significant role to analyse various thermodynamic properties and to predict the molecular interactions between like and unlike components of liquid mixtures at varying concentration. In the continuation of previously published work¹. This paper is concerned with the study of intermolecular interaction in weakly interacting liquid mixture of 2-butanol and long chain saturated hydrocarbon dodecane. Theoretical interpretation of various physicochemical properties and intermolecular interactions by ultrasonic speed and other acoustical parameters such as isentropic compressibility and acoustic impedance have become a subject of deep interest in past few years. Several researchers²⁻⁶ have made a successful attempt to evaluate theoretical ultrasonic speed and other acoustical parameters of different binary liquid mixtures at different temperatures using various liquid state models. PFP^{7,12} model based on non-associated process, Ramaswamy¹ and Glinski model¹² based on associated process with association constant as adjustable parameter were used to study the extent of interaction between the binary components. McAllister multibody interaction model¹² based on Eyring's theory were used to correlate the theoretical values with experimental findings. Redlich Kister¹⁰ equation was used to determine the binary coefficient and standard deviation using deviation in ultrasonic speed and other acoustical parameters. In this paper an attempt has been made to evaluate the ultrasonic speed, isentropic compressibility and acoustic impedance of binary liquid mixture using different liquid state models from 288.15-318.15K and compared with experimental analysis of Peletero¹¹. The aim of this work to understand the extent of

intermolecular interactions and to estimate the associated and non-associated liquid state models at different temperatures.

Modelling

Prigogine-Flory- Patterson: PFP^{7,12} is a statistical liquid state model based on non-associated process. Ultrasonic speed can be calculated using surface tension of binary liquid mixture from Auerbach relation

$$U = \left(\frac{\sigma}{6.3 \times 10^{-4} \rho_{\text{MIX}}} \right)^{2/3} \quad (1)$$

Where σ is surface tension can be calculated in terms of characteristic surface tension σ^* and reduce surface tension $\bar{\sigma}(v)$ by the following equation:

$$\sigma = \sigma^* \bar{\sigma}(v) \quad (2)$$

characteristic surface tension σ^* can be calculated by proposed concept of Patterson and Rastogi of extension of corresponding state theory

$$\sigma^* = K^{1/3} P^* T^{*1/3} \quad (3)$$

Where K , T^* and P^* Boltzmann constant, characteristic temperature and characteristic pressure respectively.

Reduced surface tension $\bar{\sigma}(v)$ can be calculated by the following equation:

$$\bar{\sigma}(v) = Mv^{5/3} - \frac{(\theta^{1/3} - 1)}{(\theta^2)} \ln \frac{(\theta^{1/3} - 0.5)}{(\theta^{1/3} - 1)} \quad (4)$$



Estimation of acoustic impedance of binary liquid system from 288.15 to 318.15K by associated and non-associated process

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Abstract

In the present study acoustic impedance (Z) was computed for weakly interacting liquid mixture of 1-butanol and dodecane at different concentration range and atmospheric pressure from 288.15, 318.15K. Flory's statistical liquid state model based on non-association process and models based on association process such as Ramaswamy-Aubananthim (RS) and Glinzki have been applied for the computation of ultrasonic parameters and compared with the experimental work of J. Peletero, McAllister's model based on Eyring's theory of absolute reaction rate was used to correlate the experimental results in terms of numerical coefficients and standard deviation. Theoretical results calculated from association process shows a good agreement with experimental results in comparison to non-association process.

Keywords: Flory statistical model, Ramaswamy, ultrasonic speed, acoustic impedance

Introduction

In past few years ultrasonic parameters have become a subject of deep interest for researchers¹ in the analyses of various thermodynamic properties and the molecular interactions present between the components of liquid mixtures. Theoretical interpretation of these parameters plays a significant role in absence of experimental data for the prediction of molecular interaction and other physicochemical properties. In the continuation of our previously published work² this paper is concerned with the estimation of acoustic impedance for the above said liquid mixture from 288.15-318.15K. Flory's model³ based on non-association process, Ramaswamy⁴ model and a model corrected by Glinzki⁵ based on association process were used to compute the ultrasonic parameters of binary liquid mixture over the entire concentration range and atmospheric pressure at different temperatures. Association constant (K_{12}) and adjustable parameters (Z_{ij}) are two important criteria for the computation of various thermodynamic properties for Ramaswamy and Glinzki models. The handling procedure of these two liquid state models was almost similar. While statistical model of Flory assumes the additivity of liquids. Theoretical values were compared and tested with measured values of J. Peletero⁶. McAllister⁷ model based on Eyring's theory of absolute reaction rate was used to correlate the experimental results in terms of numerical coefficients and standard deviation. The main aim of this work to study the molecular interactions of binary liquid mixture based on the estimation of acoustic impedance at various temperatures by aforementioned liquid state models and to test their applicability.

Modeling

Flory model: Flory^{3,8} proposed a most famous liquid state model based on the additivity of liquids. Ultrasonic speed can be calculated by Auerbach equation because Flory theory has a direct relation with ultrasonic speed

$$U_{\text{Flory}} = \left[\frac{\sigma}{6.3 \times 10^{-7} \rho_{\text{MIX}}} \right]^{2/3} \quad (1)$$

Where σ and ρ_{MIX} are surface tension and density of binary liquid mixture respectively.

Ramaswamy model: Ramaswamy model⁴ based on the linear relation of acoustic impedance with the mole fraction of liquid components.

$$Z_{\text{RS}} = [X_1 Z_1 + X_2 Z_2 + X_{12} Z_{12}]^{\theta} \quad (2)$$

Where θ is adjustable parameter which depend on the temperature

Glinzki model: Glinzki⁵ model based on association process assume additivity with the volume fraction (Φ) of components of liquids

$$Z_{\text{Glinzki}} = \frac{Z_1 Z_2}{\Phi_1 Z_1 Z_{12} + \Phi_2 Z_2 Z_{12} + \Phi_{12} Z_1 Z_2} \quad (3)$$

Where Φ_1 , Φ_2 and Φ_{12} are volume fraction of pure liquid components and their associates respectively



PREDICTION OF MOLECULAR INTERACTIONS BASED ON THEORETICAL EVALUATION OF ULTRASONIC VELOCITY AND EXCESS ACOUSTICAL PARAMETERS FROM 288.15- 318.15K

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Abstract-Ultrasonic velocity was computed from collision factor theory (CFT), Free length theory (FLT), Nomoto (NOM) and Van dael (VAN) liquid state model for 2-butanol and dodecane from 288.15-318.15K over the whole composition range and atmospheric pressure and compared with the literature values. Excess isentropic compressibility (β_s^E) and Excess acoustic impedance (Z^E) were also calculated for aforesaid binary systems at different temperatures. Average absolute % deviation was the criteria of the success of these liquid state models. R^2 values were also calculated to test the accuracy and applicability of aforementioned liquid state models at different temperatures. Degree of molecular interactions (α) were computed from ideal mixing relation to determine the extent of molecular association between the binary components. Collision factor theory deals a fair agreement with experimental findings in comparison to other liquid state models.

Keywords- Free length theory, CFT, Van dael, Nomoto, molecular interaction.

I. INTRODUCTION

In recent years ultrasonic velocity has become a subject of deep interest in the determination of various thermodynamic and acoustical properties of pure liquid and liquid mixture which plays a significant role in the development of various liquid state models and to analyze the molecular interactions present in the liquid mixture. The variation of ultrasonic velocity with concentration of binary mixture provides a very fruitful information regarding the molecular interactions. An exhaustive literature survey reveals that various researcher [1-7] have evaluated ultrasonic velocity with help of collision factor theory (CFT), free length theory (FLT), Nomoto and Van dael ideal mixing relation and compared with measured values at different temperatures and predict the molecular interactions. In the continuation of previously published work

[5] this paper is concerned with the theoretical evaluation of ultrasonic velocity and excess acoustical parameters for binary liquid mixture of 2-butanol with dodecane by aforementioned liquid state models such as collision factor theory [6-7] based on space filling factor, Jacobson's Free length theory [8] which relates intermolecular free length and ultrasonic velocity, Nomoto relation [9] based on linear dependence of *molar sound velocity and ideal volume of mixing* and Van dael [10] ideal mixing relation based on adiabatic compressibility, volume fraction and ratio of specific heat. The theoretical evaluated values of ultrasonic velocity were compared and tested with the measured work of J. Peleteria [11]. Excess isentropic compressibility (β_s^E) and Excess acoustic impedance (Z^E) were also calculated by theoretically evaluated ultrasonic velocity at different temperatures. Extent of molecular interaction was determined by ideal mixing relation over the entire composition range from temperature 288.15-318.15K. Average absolute % deviation (AAPD) computed for all the mentioned liquid state models was the criteria of the success of results. The main aim of this work was to evaluate the ultrasonic velocity and their excess acoustical parameters with the help of above-mentioned liquid state models for weakly interacting liquids and predict the molecular interactions of binary liquid components at different temperatures.

II. MODELING

A. Collision Factor theory (CFT)

Schaaf's [6] derived a relation between ultrasonic velocity and space filling factor using collision factor and U_{∞} in pure liquid is given below:

$$U = \left(\frac{B}{V_m}\right) U_{\infty} S \quad (1)$$

Where $\left(\frac{B}{V_m}\right)$ is space filling factor and V_m is molar volume.

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Research Article

POST HARVEST LOSSES OF OIL SEEDS, PULSES AND CEREALS

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Abstract: The total loss owing to poor post-harvest processing of agricultural products in India when valued in conditions of financial reflects a remarkable loss in the economy. Post-harvest losses of rice, wheat, sugarcane, pulses, oil seed, vegetables, fruits and root crops due to insufficient processing and preservation reached to 4.96 MMT in 1989-2017. These losses were valued in US\$ 503 million. Post harvest losses of food grains refer to different losses produced by a variety of factors. These losses include harvesting, collection, threshing, cleaning, drying, packing, transportation and storage losses. Food grains include cereals, pulses and oilseeds. It is estimated that total losses in post harvested rice operation range between 6-24% even through agricultural technology is claimed to have substantial development. Ministry of food processing estimated that Rs 23,000 crores has been lost by estimating of minimum 10% post harvest losses in cereals, pulses and oilseeds. The study in post harvest losses of food grains in Etawah district of Uttar Pradesh was conducted enquiry and observation method. The study also covered the prediction of perception gap of post harvest losses. Two villages were selected purposely in all eight blocks for study. The crops like Paddy, Millet, Sorghum, Maize, Groundnut, Pigeon pea, Sesame, Wheat, Gram, Pea, Lentil, Toriya (Lahi), Mustard, black gram and Green gram were identified as per survey of blocks. Detailed information and data of post harvest losses were collected in prescribed forms generated by Central Institute of Post Harvest Engineering and Technology, Ludhiana. The recorded data of all prescribed performs of enquiry and observation method were analyzed. Post harvest losses of various operations like harvesting, collection, threshing/sieving, cleaning/winnowing, drying, packing, transportation and storage of all fifteen crops were obtained. Post harvest total losses of different crops like Paddy, Millet, Sorghum, Maize, Groundnut, Pigeon pea, Sesame, Wheat, Gram, Pea, Lentil, Toriya (Lahi), Mustard, Black gram and Green gram were found 14.95%, 10.08%, 8.99%, 11.77%, 11.61%, 8.6%, 14.55%, 17.18%, 14.08%, 13.43%, 9.79%, 8.71%, 7.98%, 11.21% and 11.62% respectively in enquiry method. Maximum 15.80% and minimum 6.41% post harvest losses were found in crops Sesame and paddy respectively in enquiry method whereas in observation method, maximum 17.18% and minimum 7.98% losses were found in crops wheat and mustard respectively. Perception gap was obtained maximum (7.11%) in wheat crop whereas minimum perception gap was found 0.38% in Black gram.

Keywords: Food grains, Harvesting, Post harvest losses, Substantial and Oilseeds

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Introduction

Post-harvest system encompasses the delivery of crop from the time and place of harvest to the time and place of consumption with minimum loss and maximum efficiency and return for all involved [1]. The quantitative and qualitative losses happen in horticultural crops between harvest and consumption. Qualitative losses such as loss in edibility, nutritional quality, caloric value, and consumer acceptability of the products, are much more complicated to assess than quantitative losses. Standards of quality and consumer preferences and purchasing power vary significantly among countries and cultures. For example, elimination of defects from a given commodity before marketing is much less rigorous in developing countries than in developed countries. Agriculture contributes 25% in manufacturing domestic products and provides livelihoods to more than 76% of the people. Majority of the rural people earn their livelihood through agriculture [2]. Post harvest losses of food grains (Cereals, Pulses and oilseeds) include harvesting, collection, threshing, cleaning, drying, packing, transportation and storage losses. Due to using old and outdated method of these operations of food grains, we lose a huge amount of production. It is estimated that 10% of food grains produced in India are lost in processing and storage [3].

Insects-pests are one of the most important factors responsible for losses in agricultural production at various stages. Living organisms and the environment interact to bring about spoilage of stored products. It is estimated that 5-10% of the world production is damaged by insects during storage. Post harvest losses in durable commodities are around 10% whereas in perishable it is to around 40% which result in economic losses to the tune of Rs. 50,000 crores a year [4].

The post harvest losses are enormous for the farm wealth. About 10% food grains and 25-40% fruits and vegetables are wasted as the food produced is not processed in the catchment areas. This happens due to huge shortage of processing facilities in catchment areas. In the agricultural production about 35% is edible portion and 67% is the by product or waste, which has greater value for feed and industry uses.

The better post harvest management as well as value addition can reduce the enormous losses [5]. Therefore, the study was undertaken to find out the post harvest losses of food grains in Etawah district by enquiry and observation method. The study also covered the prediction of perception gap of post harvest losses.

प्राचार्य

जनता कालेज
बकेवर (इटावा)

Research Article

STUDY OF CORRELATION AND PATHCOEFFICIENT ANALYSIS IN RADISH (*RAPHANUS SATIVUS* L.) UNDER PARTIAL SHADE CONDITION OF ORCHARD

16

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Abstract: Genotypic and phenotypic correlation coefficients and path coefficient analysis were carried out in radish using Twenty-five diverse genotypes. Both the quantitative and qualitative characters magnitudes of genotypic correlation coefficient were higher than their corresponding phenotypic correlation coefficient, suggesting therefore a strong genetic influence on different pair of characters. Root weight was found to be significantly and positively associated with plant height, leaf weight, leaf length, root thickness and root length at phenotypic and genotypic levels. On the other hand, negative and significant correlation was found with leaf: root length ratio at phenotypic level only. Therefore, these characters should be taken into considerable, while making selection for improvement of root yield. Path coefficient analysis revealed that plant height, leaf weight, leaf length and leaf: root weight ratio has direct positive effect at phenotypic and genotypic levels on root weight, which indicating these are the main contributors; root weight. Root thickness has high direct positive effect towards root weight, whereas, root thickness has less direct effects on root weight.

Keywords: Genotypic and phenotypic Correlation coefficients, Coefficient analysis

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Introduction

Radish is an important root vegetable due to high yielding and early maturing nature. The leafy tops are very rich in minerals particularly calcium and iron. Radish is a good appetizer and considered to be useful for patients suffering from bile and gastro-dysma, liver and gall bladder trouble and jaundice. The nature and degree of association between yield and its components claims distinct importance and will assist the breeder to ascertain the actual yield components and furnish an effective basis of phenotypic selection. Path coefficient analysis provide the intrinsic nature of observation associated between yield and its associated yield. Path analysis facilitates the partitioning of correlation coefficient into the direct and indirect effects on yield and other significant characters. Therefore, the present investigation was undertaken to find out the relationship among the components responsible for yield and the direct and indirect influence of such component characters towards the production of root yield [1-4].

Materials and Methods

The present investigation was carried out in the orchard of Department of Horticulture, P.G. College, Bakewar, Etawah during rabi season in the year 2021-22. Twenty five diverse genotypes were raised in the environment. The trial was laid out in randomized block design with four replications.

Observations were recorded on ten randomly selected representative plants from each genotype on root yield and other qualitative and quantitative characters. The genotypic and phenotypic correlation coefficients were calculated by using the method given by Fehrer and Biyas (1961) and path coefficient analysis was observed by method of Dewdney (1961) [5].

Results and Discussion

In general, the estimate genotypic correlation coefficient was higher than the corresponding correlation coefficient (Table 1). This indicates a significant inherent association between different characters and study of phenotypic value lessened by the significant influence of environment thereby suggesting the usefulness of genotypic estimate. Similar findings were reported by Singh et al. (1977) [7]. Root yield being dependent character is highly influenced by environment, which required considerable breeding value for improvement. Root weight was found to be significantly and positively associated with plant height, leaf weight, leaf length, root thickness and root size at phenotypic and genotypic levels [8-10]. On the other hand, negative and significant correlation was found with Leaf: Root length ratio and leaf: root weight ratio at phenotypic level only. Therefore, these characters should be taken into consideration, while making selection for improvement of root yield. Leaf: root weight ratio showed significant and positive correlation with all the characters except leaf: root length, root size and root shape at both the levels. Leaf: root length ratio showed significant positive correlation with all the characters except leaf: root weight, root length and root size at genotypic level, while significant correlation observed at both the levels. Similar trend was observed in radish by Singh et al. (2002) and Singh et al., (2002).

Path analysis signifies the method of partitioning of correlation coefficient into direct and indirect effects and measure the relative contribution of each factor individually. Plant height, leaf length, leaf weight, leaf: root weight ratio has direct positive effect on root yield at phenotypic and genotypic level, which indicating these are the main contributors. Root size has high direct positive effect on root yield, whereas, root thickness had less direct effect on root weight.

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Influence of biopriming and organic manures on growth, seed yield and quality of black wheat (*Triticum aestivum* L.)

Priyansh Rahangdale, Ashok Kumar, Rajeev Kumar, Anil Kumar, Ajay Kumar, Dharmendra Kumar, Chaman Singh, Dashrath Singh, Sanjiv Kumar, AK Bharti and Sanjeev Kumar

Abstract

To study the influence of biopriming and organic manures on growth, seed yield and quality of black wheat (*Triticum aestivum* L.), results revealed that the application of 50% Poultry manure + 50% Vermicompost + Priming with water showed significantly maximum plant height (107.86 cm), number of tillers per plant (21.33), spike length (14.22 cm), number of spikelets per spike (18.48), number of seeds per spike (42.17), seed yield per plant (7.35 g.), seed yield (28.78 q ha⁻¹), 1000 seed weight (40.76g), germination percentage (97.35%), root length (23.47cm), shoot length (14.56 cm.) and seed vigour index (3702.22), respectively in comparisons to other treatments. While lower plant height, number of tillers per plant, spike length, number of spikelets per spike, number of seeds per spike, seed yield per plant, seed yield, 1000 seed weight, germination percentage, root length, shoot length and seed vigour index (21.33, 14.22 cm, 18.48, 42.17, 7.35 g, 28.78 q ha⁻¹, 40.76g, 97.35%, 23.47cm, 14.56 cm and 3702.22, respectively) was recorded in 100% Poultry manure + Priming with *Trichoderma viride*.

Keywords: black wheat, biopriming and organic manures

Introduction

Cereals play an important role in healthy diet among all the food grains. It is used as a form of bread, noodles and biscuits. It is a good source of starch, proteins, minerals and dietary fibre and is major contributor towards daily caloric requirements of most of the consuming population. Further enhancement in its nutritional value is expected to increase consumer demands regarding health, nutrition and convenience.

The wheat is named 'Nabi MG' is available in black, blue and purple colour and much more nutritious than common wheat. The pigment anthocyanin is generally available 5 to 15 passes per million in common wheat, while black wheat contain 40 to 140 passes per million in black wheat. It provides health benefits like fruits like blueberry. Anthocyanins removes free radicals from the body and prevents heart, cancer, diabetes, obesity, and other diseases. The amount of zinc is also found in higher quantity in this wheat.

India stands second among wheat producing countries with respect to area and production. Wheat was grown over an area of 29.14 million ha. with production of 102.19 MT with an average productivity of 3507 kg per ha Anonymous 2019 [1]. In Uttar Pradesh, wheat is grown over an area 9.54 million hectares with production of 32.75 million tonnes and with an average productivity of 3432 kg per ha which is much lower than national average (Anonymous, 2020) [2]. Organic agriculture is a production techniques which largely excludes or completely avoids the use of synthetically compounded pesticides, fertilizers, growth regulators, preservatives and livestock feed additives, organic agriculture practices, thus rely upon recycling of crop residues, animal manures, off-farm organic residues and wastes, biofertilizers exploitation of native soil fertility, non-pesticidal methods of pest control and weed management. Seed priming is a technique to reduce emergence time, better allometric (changes in growth of plant parts over time) attributes and provide requisite stand in many horticultural and field crops. Many prehydration or priming treatments have been employed to increase the speed and synchrony of seed germination (Bradford, 1986). Seed priming resulting in faster development, earlier flowering and maturity and higher yields in barley. (Abdulrahmani *et al.*, 2007). Harris *et al.* (1999) demonstrated that on-farm seed priming (soaking seeds overnight in water) markedly improved establishment and early vigour of upland rice, maize and chickpea, resulting in faster development, earlier flowering and maturity and higher yields.

Race, Culture and Identity in The Play of Ntozake Shange

• Sadhana Singh Yadav
•• M. K. Yadav
••• Arun Kumar Yadav

Abstract- *The paper discussed black feminist discourse of race, culture and Identity in Ntozake Shange's play who has considered black people were treated offensively. In Africa and America, racism spread around the country especially in the south. They did not have full rights as the white citizens. Due to these facts, many black writers responded with a set of literary works and used their skills in writing to reflect on their life. Thus, they have reached on artistic level and produced creative works. Africa- America literature involves poetry and slave narratives, the Civil Rights and Black Arts Movements played great roles in the development of African American writing. Nowadays, African American literature constitutes a basis in the literature United State. This study is an attempt to give a clear view to the reader on how African -American literature developed and changed throughout time*

Keywords- *black feminist; race; culture; Identity.*

Afro-American Literature- The African-American literary tradition implies the culture and tradition of suppressed people. The suppressed and opposed people of African-American Race and society are placed in the literary writings of the writers. The writers exhibit the plights and pathos of the people with their artistic and creative expressions in the form of plays, poems, fictions and stories. The creations are well recognized in the intellectual scenario of the world.

1. Literature it produced in United State by writers of African descents such as Philes Wheatley
2. Literature is dominated by autobiographical narratives and reached the peak by slave narrative.
3. The race of American - African, their culture, racism, slavery and social equality.
4. Explore the issues of freedom and equality of blacks.

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Effect of Chemosterilants on Fecundity and Fertility of *Diacrisia obliqua*

• Lalit Gupta

Abstract- *Diacrisia obliqua* Walker (Lepidoptera: Arctiidae) is a known Pest of various economic crops. It causes a huge loss to farmers. Farmers have been using chemical pesticides to control this pest since a long time. But chemical pesticides are hazardous to environment and ecosystem in many ways. (Gupta, L. 2016) Chemosterilants have received much attention of entomologists as they are safer to environment and they decrease the birth rate of insects without disturbing the ecosystem. (Saxena et al., 2001) Tepa (a chemosterilant) was administered by Leaf Dip Method (LDM) and Topical Method (TM). It was found that Tepa causes a drastic reduction in fecundity and fertility from lowest concentration (0.05%) to highest concentration (1.0%). It was also noted that Tepa gives better results under LDM.

Keywords- *Diacrisia*, Tepa, Leaf Dip Method, Topical Method, Pest

Introduction- *Diacrisia obliqua* is a harmful polyphagous pest causing remarkable damage to several crops. Farmers have been using chemical pesticides to control *Diacrisia*. But Chemical pesticides are injurious to human & pet animals. They also cause development of resistance. They cause environmental pollution. So chemosterilants have received much attention and appreciation by entomologists. They decrease the pest population by decreasing the birth rate, without polluting the environment.

Material & Method- Present work was started in July 2021 at the laboratory of Janta College, Bakewar. Male & female moths were captured from plants to carry out the experiment in laboratory. They were kept carefully. These insects ensured the regular availability of insects by reproduction. Adults were kept in glass chimneys but the larva were kept in large petridishes of 10 cm diameter. When the larvae were full grown, they were transferred to a pneumatic trough. 10-15 cm thick soil was kept in troughs on their bottom for larvae to pupate.

Tepa is a commercially available chemosterilant which has been tested against many pests. Tepa is chemically Tris (1-aziridinyl) phosphazene oxide. Investigator used 0.05, 0.25, 0.50, 0.75 and 1.00% concentration of the test chemical in the study to find results. To increase the stickiness, we added 2% skimmed milk powder to it and we used two methods to test the effect of Tepa on insects.

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