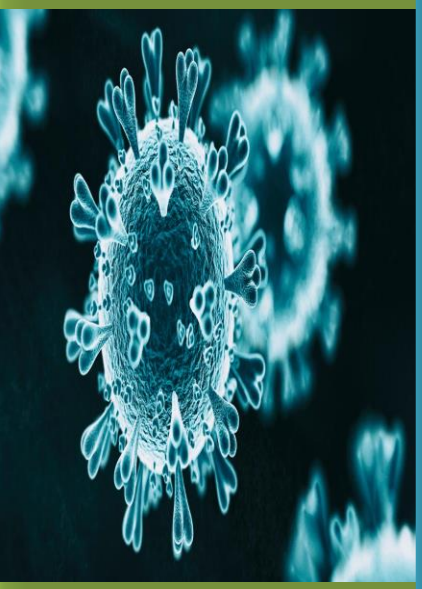
International Webinar

On

Post-COVID-19 Research Advancement in the arena of Agricultural, Environmental and Life Sciences

June 15 & 16, 2020



e-SOUVENIR

Editors

Dr. Ram Pyare
Dr. Ravindra Kumar
Sh. Abhishek Singh
Er. Sudheer Kumar

Organized by

RESEARCH AND EDUCATION DEVELOPMENT SOCIETY (REGD)
MEERUT (U.P.), INDIA

IN ASSOCIATION WITH

C.C.R. (P.G.) COLLEGE, MUZAFFARNAGAR (U.P.), INDIA

www.agriwaysjournal.com

Organizing Committee

Chief Patron:

Prof. N. K. Taneja

Vice Chancellor, C.C.S. University, Meerut, India

Patron:

Prof. Naresh Malik,

Principal, C.C.R. (PG) College, Muzaffarnagar, U.P., India

Organizing Secretary:

Dr S.K. Singh,

Head (Ag. Botany), C.C.R. (PG) College, Muzaffarnagar, U.P, India

Co- Organizing Secretary:

Dr. Ravindra Kumar, Asst Prof.,M.G.C. Fatehgarh Sahib, Punjab, India

Dr. Anil Sankhanwar, Scientist, GBPUAT, Pantnagar, U.K., India

Sh.Abhishek Singh, Asst Prof, CCR. (PG) College, Muzaffarnagar,UP, India

Convener:

Dr. Ram Pyaye, Professor, CSAUA&T, Kanpur, UP, India

Co-Conveners:

Er. Sudheer Kumar, Asst Prof., C.C.R. (PG) College, Muzaffarnagar, UP, India

Dr. Joni Kumar, Asst Prof., C.C.R. (PG) College, Muzaffarnagar, UP, India

Editorial Board

Contents

35	REDS027	Ved Prakash, N.K. Pruthi, Viresh Singh and J. Singh	Effect of continuous application of Organic manure and Inorganic fertilizers on yield and quality attributes of Sugarcane in Western Uttar Pradesh.	20
36	REDS034	Shalza Malik	*Parthenium* in sustainable development	20
37	REDS038	Saurabh Padamshali, Sonalika Kolhekar and Jayalaxmi Ganguli	Feeding efficiency of the larval predator, *Rhynocoris marginatus* Fabricius (Hemiptera: Reduviidae) on *Corcyra cephalonica* Stainton (Lepidoptera: Pyralidae) larvae under In vitro condition	21
38	REDS048	Vijay Kumar and Reema Singh	Recent Trends of Farming and its Harmful Effects on Human Health and Environment	21
39	REDS050	Joni Kumar*, Yogandar Sain, Sushil Kumar, Sushil Kumar, 41Sachin Kumar and MP Gautam	Climate smart agriculture for food security and sustainable development	22
40	REDS053	Jaydev Haldar and Dr. K.K. Singh	Extremes of farmers leading to excessive production of maize in district Kanker, Chhattisgarh	22
41	REDS059	Vivek Bhagat	Organic Farming: Future Perspective in Agriculture	23
42	REDS070	V K Tripathi	Jaivik Fruit Culture: Need of the day	23
43	REDS074	Sen Dipak Kumar Kaluram	Effect of different sucrose level , initial pH, light intensity and growing media on *invitro* shoot multiplication of fig var. Poona fig	23
44	REDS075	Jujhar Singh and Divya Jyoti Thakur	Economic upliftment of low income farmers through exotic vegetable production	24
Theme:IV				**25**
45	REDS042	Sachin Kumar, Joni Kumar and Sushil Kumar	Impact of climate change on pollinators	26
46	REDS049	BadalVerma ,Amit Kumar Jha and K.K. Agrawal	Monitoring and evaluation of climate resilience for agricultural development- A review of currently available tools	26
47	REDS062	Sunil Kumar	Conservation Agriculture for Climate Change Mitigation	27
48	REDS066	Radha Koranga	Role of entomopathogens in Integrated Pest Management	27
49	REDS067	Jitendra Singh Gurjar	Influence of poultry manure on growth and yield of Kharif onion (*Allium cepa* L.)	28
50	REDS068	Arti Keshav	A Review on- Effect of Anti-transpirants on Plants	28
51	REDS072	Neelam Kureel & Viresh Singh	Evaluation of promising genotypes against shoot borer and top borer in sugarcane	29
Theme:V				**30**

Note: The view expressed by the authors in abstracts are their own. The editor don't have own legal responsibility or liability for view of authors, omission, error or plagiarism etc.

Theme:I

Agricultural Productivity, Plant Growth and Plant Stress Management; Post-harvest Technology & Agricultural Marketing

REDS 003

Heterosis analysis in F_1 hybrids of bread wheat for early maturity and grain yield

*Simranjeet Kaur, Monika, Prabhdeep Singh and Ravindra Kumar
Department of Agriculture, Mata Gujri College, Fatehgarh Sahib, Punjab
*Email ID: simranjeet.k8727@gmail.com

ABSTRACT

Bread wheat (*Triticum aestivum* L.) is the most promising cereal food crop concerning production, utilization, nutritive value, storage space qualities, adaptation and transaction. Various high yielding varieties develop by heterosis breeding program in bread wheat. The present study was conducted at Experimental Farm, Mata Gujri College, Fatehgarh Sahib, Punjab, from 2018 to 2020 using a 6x6 half diallel mating design. In the present study significant heterobeltiosis for early maturity was exhibited by the hybrids CPAN 3004 x PBW 65, HD 1981 x PBW 65, HD 1981 x PBW 343, PBW 343 x CPAN 3004, CPAN 3004 x PBW 65, HD 1981 x PBW 154, PBW 343 x Raj 2184, Raj 2184 x PBW 65 while CPAN 3004 x PBW 65, HD 1981 x PBW 65 hybrids over standard check in desirable direction. Out of 15 cross combinations, 5 cross combinations (PBW 343 x PBW 65, RAJ 2184 x PBW 65, PBW 343 x RAJ 2184, CPAN 3004 x RAJ 2184, HD 1981 x PBW 154) show significant positive heterobeltiosis and two cross combinations (HD 1981 x PBW 154 and PBW 343 x PBW 65) show significant positive heterosis over the standard check for grain yield. These cross combinations can be utilized further in crop improvement programme in search of new hybrid cultivars.

*****

REDS 005

Role of Plasticulrure in mitigation of climate extremes in Fruit crop production

G Siva Koteswara Rao*,V N P Sivarama Krishna, D Srikanth, B Srinivasulu, Anil Sharma.
Department of Fruit Science, Dr. Y. S. R. Horticultural University, Andhra Pradesh. India
E-mail: sivakoteswaraogarata@gmail.com

ABSTRACT

Plastic has many valuable applications in high-tech Horticulture. India is the second largest producer of fruit in the world but the productivity and quality were inferior due to the influence of biotic and abiotic factors which will also hinder the export potentiality. The yield, quality, off season cultivation and export potentiality of fruit crops can be promoted by greenhouse fruit cultivation. Recently, colored shade netting designed specifically for manipulating plant development and growth has become available. These nets can be used outdoors as well as in greenhouses For qualitative and quantitative fruit production, plastics can be used for various purpose i.e. mulching, cladding materials for protective structures, photoselective nets, pressurized irrigation, soil solarization, propagation, sleeving and packaging. By using plastics in fruit culture not only increase production but also minimize the pest, diseases and weed population and extend shelf life of fruits as well as saving fertilizers and water, minimize the use of herbicides and pesticides as compared to conventional methods. The use of plasticulture in the production of fruit crops helps to mitigate the extreme fluctuations in weather, especially temperature, rainfall, snow and wind, which occurs in any part of the country and extends the cropping season in temperate areas

Key Words: Plastic, photoselective nets, soil solarisation, pressurized irrigation

*****

REDS 019

Effect of seed weed extract on productivity of Paddy

Ram Pyare, Harshita Sharma, Dhananjai Singh and V.K. Verma
Department of Agronomy, C.S. Azad University of Agriculture & Technology, Kanpur.
E-mail: rampyare2012@rediffmail.com

ABSTRACT

A field experiment was conducted at Students' Instructional Farm (SIF), C.S. Azad University of Agriculture & Technology, Kanpur during *Kharif* season of 2018-19 with *Ascophyllum nodosum* (seaweed) extract and recommended dose of NPK (120:60:60) to assess the productivity enhancement of rice. The experiment comprising of ten treatments was laid out in a Randomized Block Design with three replications. The application of the recommended dose of fertilizer along with two applications of *Ascophyllum nodosum* extract @ 10 kg/ha at final land preparation time and 25 days after transplanting promoted grain yield (54.84 q/ha)as compared to all remaining treatments. This treatment was at par to RDF + *Ascophyllum nodosum* extract @ 10 kg/ha at 25 DAT (53.57 q/ha), RDF + *Ascophyllum nodosum* extract @ 10 kg/ha at FLP, 25 & 45 DAT (54.67 q/ha) and RDF + *Ascophyllum nodosum* extract @ 10 kg/ha at FLP, 25, 45, 65 DAT (54.69 q/ha). On the basis of above field experiment, it can be concluded that RDF + two applications of *Ascophyllum nodosum* extract @10 kg/ha at final land preparation time and 25 days after transplanting were found superior over all the treatments and can be recommended for testing in more locations as well as farmers fields.

*****

REDS 020

Production performance of wheat based on intercropping with row ratio under inner wheel pattern

Ram Pyare, Shivani Singh, Amit Kumar, V.K. Verma, Dhananjai Singh and Harshita Sharma
Department of Agronomy, C.S.A. University of Ag. & Technology, Kanpur-208002

ABSTRACT

The experiment was conducted during two year *Rabi* seasons of 2015-16 and 2016-17 at the Students Instructional Farm of Chandra Shekhar Azad University of Agriculture & Technology, Kanpur-208002 (UP), India to find out the suitable intercropping with row ratio in an inner wheel pattern. The comprised of ten treatments (4 sole crops and 6 intercropping) was laid out in Randomized Block Design replicated thrice treatment combination was a sole crop of wheat, mustard, linseed and chickpea and intercropping treatments as wheat + Mustard (1:1), Wheat + Mustard (2:1), wheat + Linseed (1:1), wheat + Linseed (2:1), wheat + chickpea (1:1) and wheat +chickpea (1:2). The result showed that the grain and straw yield of wheat was significantly higher in intercropping of wheat + chickpea (2:1) under inner wheel pattern followed by wheat + chickpea (1:1) whereas, a sole crop of wheat was produced significantly higher compared to all other treatments during both the years, respectively. In case of intercrop like mustard, linseed, and chickpea, the sole crops produced significantly higher grain and straw yield that 1:1 row ratio and 2:1 row-ratio of intercropping treatments, respectively but significantly increased among intercropping of row ratio (1:1) of wheat + mustard, wheat + linseed and wheat + chickpea, which was moreover intercropping of row ratio (2:1) of wheat + mustard, wheat + linseed and wheat + chickpea in both the year, respectively.

*****

REDS 024

Genetic variability, heritability and genetic advance in chickpea (*Cicer arietinum* L.) sown on different dates.

Ajay Kumar Yadav, S K Chaubey[1], Arun Kumar[2], Ram Pyare[3] and Ganesh Prasad
Department of Botany, S.D.J. Post Graduate College Chandeshwar Azamgarh, UP, India.
[1]National PG College, Barahalganj, Gorakhpur (UP), India.
[2]Director, Planning, BAU, Sobour, Bhagalpur, Bihar, India.
[3]Department of Agronomy, CSAUA&T, Kanpur-208002 (UP).

ABSTRACT

A field experiment was conducted during Rabi season of 2006-07 and 2007-08 at Agricultural Research Farm of Shri Durga Ji Post Graduate College Chandeshwar, Azamgarh with a view at genetic Variability, heritability and genetic advance for yield and its components were conducted in sixty advance lines of chickpea. High heritability with the low genetic advance of seeds /pod, primary branches/plant, days to maturity, protein content, and root nodule/plant indicated the influence of dominant and epistemic genes for these traits. High heritability of days flowering, 100 seed weight, pods/plant, protein content and biological yield high variability of pcv and Gcv (phenotypic and genotypic coefficient of variance) root nodules/plant, secondary branches/plant, pods and biological yield these characters. High heritability coupled with a high genetic advance in pooled data was recorded for 100 seed weight, pods/plant, seeds/pod and biological yield/plant. Pulse crops are highly valuable grain legumes that are widely used as food, fodder and feed.

*****

REDS 032

Fruit development of greenhouse cucumber cultivars (*Cucumis sativus* L.)

Surya Prakash, S.K. Chaubey[1], Pankaj Tripathi[2], V.P. Dwivedi[3] and DK Singh
Udai Pratap College, Varanasi (UP), India.
[1]National P.G. College, Barhalganj, Gorakhpur (UP), India.
[2]Dy. Director, Agriculture Banda (UP)
[3]S.D.J. PG College, Chandeshwar, Azamgarh (UP).

ABSTRACT

The present study was conducted at Experimental Farm of Indian Institute of Vegetable Research, Varanasi, U.P. during two consecutive years 2007 and 2008 on growth, flowering behavior and fruit development of greenhouse cucumber (*Cucumis sativus* L). The farm soil is sandy loam in texture having 6.6 to 7.4pH The experiment consisted 12 cucumber varieties such as CH-20, Prasad-10, CH-24, Pusa Sanyog, SPP-44, NH-150, Patna, Rachi-3, Poin settle, Green long, Swarna Ageti and SPP-56 with 3 replication in randomized Block Design. Results showed that the fruit size of cucumber was significant developed at initial stages i.e. from 7th to 14th and 21st days after anthesis. Whereas, on latter stages from 21th, 28th and 42th days there was no siginficant difference among the diameter of fruit in different cucumber varieties. Diameter of fruit during 2007 and 2008 at 7th to 35th days after anthesis were measured 1.33 – 6.58 cm. Variety Prasad-10 is a short duration cultivar and gives early flowering on lower nodes in both the year.

*****

REDS 036

Agronomic presentation in the Indian Economy

Sharun Kumar Bhenwal[2], Tanu Shiri[1], Sourabh Jain[3], Govind Singh[2], Rashmi[2] and Akash Kumar[2]
[1]Department of Genetics and Plant Breeding, CCS University, Meerut-250004, UP
[2]Department of Bioscience, Vinayak Vidyapeeth Modipuram, Meerut-250110, UP
[3]Department of Biosciences, Shri Ram College, Muzaffarnagar-251001, UP
Email*:* sharunkb1411@gmail.com

ABSTRACT

Agronomic presentation is a vibrant subject for administrators and academics in India as our primary culture is agriculture. Agriculture marketing is a process that requires a decision to produce a saleable form commodity and involves every aspect of a market structure. The public and private sector operate the market system. It includes all kinds of activities that add value to agricultural products as they eventually reach the consumption stage. In our country, strengthening agriculture is critical to face the challenges of rural poverty, unemployment and proper use of natural resources. Agronomic presentation is a state subject; hence the Government of India has an important role in laying down the groundwork in improving the marketing system by encouraging cooperative marketing, the establishment of regulated markets which makes the grading and storage quite essential. The main objectives of this study are to identify the arrival of the Agricultural Produce Marketing Committee (APMC) market. This would help in finding out the perceptions of the farmers about the performance of APMC which could further identify the problems in the marketing of agriculture products at the market level.

Keywords: Agronomic, APMC and Marketing.

*****

REDS 051

Effects of abiotic stress on plant volatiles mediated interaction between host plant and natural enemies

Joni Kumar*[1], Yogandar Sain[2], Sushil Kumar[3], Sachin Kumar[4] Sushil Kumar[5], and MP Gautam[5]
[1]Department of Entomology, CCR PG College, Muzaffarnagar, UP
[2]Department of Entomology, JVC Baraut, Baghpat, UP
[3]Department of Entomology, G.B. Pant University of Agriculture & Technology, UK
[4]CSA University of Agriculture & Technology, Kanpur, UP
[5]Department of Entomology, SVBP University of Agriculture & Technology, Modipuram Meerut, UP
*E-mail id: jonikumar68@gmail.com

ABSTRACT

Plant odours present a true picture of the plant health i.e., indicating whether it is under any kind of physiological stress. The plants are known to emit some or other volatile compounds in response to feeding damage caused by insects. These volatile compounds are recognized by natural enemies and they are attracted to the emitting plants thereby providing additional survival support by attacking the herbivore insect. The natural enemies of the herbivore insects are capable of recognizing the subtle changes in the concentration of certain volatile organic compounds (VOCs) emitted by the host plants when damaged by insects or any other mechanical damages in other words these VOCs help the natural enemies to locate prey/host insects. The release of VOCs triggered by feeding damage caused by herbivores is known as herbivore–induced plant volatiles (HIPVs). The emission rates of these volatile compounds are affected by non-living factors such as climate, temperature, drought, flood, cold and heat. These non-living factors are known as abiotic stress. They have a strong impact on the metabolism pathways of plant which responsible for the production of volatile compounds. Temperature directly affects the activity of the plant enzyme and vapour pressure of compounds. The elevated CO_2 concentration stimulates the production of salicylic acid which may improve the sensing and signaling ability of plants but reduced the emission of plant volatiles. The effects of these abiotic stresses reduced the searching behaviour of natural enemies, consequently disrupt the trophic interactions.

Keywords: Abiotic stress, plant volatiles, trophic interactions, natural enemies

*****

.

REDS 054

A SNP discovery method to assess variant allele probability from next-generation sequencing data

Shubham
Department of Genetics, Dyal Singh College, Karnal (132001), Haryana.
E-mail:- bhattishubham25@gmail.com

ABSTRACT

Accurate identification of genetic variants from next-generation sequencing (NGS) data is essential for immediate large-scale genomic endeavors such as the 1000 Genomes Project and is crucial for further genetic analysis based on the discoveries. The key challenge in single nucleotide polymorphism (SNP) discovery is to distinguish true individual variants (occurring at a low frequency) from sequencing errors (often occurring at frequencies orders of magnitude higher). Therefore, knowledge of the error probabilities of base calls is essential. We have developed Atlas-SNP2, a computational tool that detects and accounts for systematic sequencing errors caused by context related variables in a logistic regression model learned from training data sets. Subsequently, it estimates the posterior error probability for each substitution through a Bayesian formula that integrates prior knowledge of the overall sequencing error probability and the estimated SNP rate with the results from the logistic regression model for the posterior error probability for each substitution through a Bayesian formula that integrates prior knowledge of the overall sequencing error probability and the estimated SNP rate with the results from the logistic regression model for the given substitutions. The estimated posterior SNP probability can be used to distinguish true SNPs from sequencing errors. Validation results show that Atlas-SNP2 achieves a false-positive rate of lower than 10%, with a∼ 5% or lower false-negative rate.

Keywords: Endeavors, NGS, genome, SNP, Sequencing, Logistics regression, Frequency.

*****

REDS 060

Developing abiotic stress tolerance plant through molecular approaches

Abhishek Singh[1] and S.K. Singh[2]
[1]Assistant Professor, [2]Associate Professor
Department of Agriculture Botany
C.C.R.(PG) College Muzaffarnagar – 251001, UP, India
*Corresponding Author: abhishek6886@gmail.com

ABSTRACT

It is well known that abiotic stresses are a major cause of two-dimensional losses i.e. area and production in the world. Abiotic stresses includes high temperature, low water availability, salinity and mineral toxicity and deficiency, representing major restrictions to the yield and quality of crops. To develop abiotic stress tolerant plants through conventional breeding methodology have relied entirely on phenotypic selection in target environments. However, with the commencement of marker assisted selection (MAS) techniques, molecular markers have been established as the potential tool of choice for MAS in breeding for important traits including abiotic stress tolerance. Different abiotic stresses have marked primary effects on plants, while all of them have a common denominator in the form of production of reactive oxygen species (ROS). ROS may cause damage to proteins, lipids, carbohydrates and DNA which ultimately results in plant death. The antioxidant defense machinery protects plants against such oxidative stress damages. Plants possess an efficient enzymatic (superoxide dismutase, catalase, ascorbate peroxidase, glutathione reductase, monodehydroascorbate reductase, dehydroascorbate reductase, glutathione peroxidase, guaiacol peroxidase, and glutathioneS- transferase and non-enzymatic (ascorbic acid, ASH; glutathione, GSH; phenolic compounds, alkaloids, non-protein amino acids and a-tocopherols). Antioxidant defense molecules regulate the cascades of uncontrolled oxidation reactions and protect plant cells from oxidative damage. A large number of experiments have been conducted with transgenic model plants overproducing these antioxidant enzymes. By constitutively expressing Mn-SOD into chloroplast and mitochondria observed reduced cellular damage in response to induction of oxidative stress.

Keywords: Abiotic Stress, Antioxidant, Molecular marker, ROS.

*****

Theme:II

Nutritional aspects of Animal, Plant, Human and Soils as preventive measures against COVID-19

REDS 004

Antiviral properties of some medicinal plants of northern -east Uttar Pradesh

D. C. Vishwakarma
Department of Botany
Digvijay Nath P.G. College Gorakhpur
Email: dcv1178@gmail.com

ABSTRACT

Medicinal plants are a natural harbor of many life-saving drugs. A large number of angiosperms and other groups of plants are known to have antiviral properties. In the present study, Sohagibarwa wildlife sanctuary of Northern-East Uttar Pradesh is selected. Tribals usually depend upon commonly occurring plants in this region due to a shortage of physicians and medical experts. The medicinal values of some of the common plants are very well known and are in an effective application for many centuries. Some of them are can be effectively used in the treatment against Viral diseases. This communication deals with the study of such plants in this region.

*****

REDS 013

Post-COVID 19 pandemic Scenario on Indian Fruit and Vegetable Post Harvest Management Systems

Prashant Joshi[1*], Upendra Kulkarni, Shyam Munje
Dr.Panjabrao Deshmukh Krishi Vidhyapeeth, Akola (M.S)-444104
1, 2, 3: Senior Scientist(s),College of Horticulture,Dr.PDKV,Akola-444104,Maharashtra
Email: psjoshihort@gmail.com

ABSTRACT

India is the fruit and vegetable basket of the world. It grows a variety of fruits and vegetables and has a huge production of both fruits and vegetables. India is the second largest producer of both fruits and vegetables in the world after China, the largest producer of ginger and okra amongst vegetables and ranks second in production of potatoes, onions, cauliflowers, brinjal, cabbages, etc. Amongst fruits, the country ranks first in the production of Bananas (25.7%), Papayas (43.6%) and Mangoes (40.4%). Grapes, Pomegranates, Mangoes, Bananas, Oranges account for a larger portion of fruits exported from the country while onions, mixed vegetables, potatoes, tomatoes, and green chilies contribute largely to the vegetable export basket. The major destinations for Indian fruits and vegetables are Bangladesh, UAE, Netherlands, Middle East countries and Nepal, Malaysia, UK, Sri Lanka. After the arrival and attack of COVID 19 pandemic in India from the first week of March 2020, It has a lot of negative impact in the post-harvest transportation and retail marketing and trade of fruits and vegetables. But in the long term point of view, we take the lesson and strengthen our production, management as well as post-harvest management practices by adopting food safety measures for benefits of the fruit and vegetable growers as well as consumers of across the world.

Key Words: India, COVID 19, post-harvest management, fruit, vegetables

REDS 014

Economic effects of coronavirus disease 2019 (COVID-19) outbreak on the Indian economy

Tanu Shiri[1]*, S.K. Singh[2], Deeksha Sharma[3] and Sourabh Jain[4]
[1]Department of Genetics and Plant Breeding, C.C.S. University Campus, Meerut-250004, UP
[2]Department of Genetics and Plant Breeding, C.C.R. (PG) College, Muzaffarnagar-251001, UP
[3]ICAR- National Dairy Research Institute, Karnal-132001, Haryana
[4]Department of Bioscience, Shri Ram College Muzaffarnagar-251001, UP
Email: tanushri240@gmail.com

ABSTRACT
The outbreak of the coronavirus disease 2019 (COVID-19) pandemic is an unprecedented shock to the Indian economy. The economy was previously in a parlous state before Covid-19 struck. With the prolonged country-wide lockdown, global economic downturn and associated disruption of demand and supply chains, the economy is likely to face a protracted period of slowdown. The magnitude of the economic impact will depend upon the duration and severity of the health crisis, the duration of the lockdown and the manner, in which the situation unfolds once the lockdown is lifted. We studied that describe the state of the Indian economy in the pre-COVID-19 period, assess the potential impact of the shock on various segments of the economy, analyze the policies that have been announced so far by the central government and the Reserve Bank of India to ameliorate the economic shock and put forward a set of policy recommendations for specific sectors.

Keywords: COVID-19 pandemic, Central government, Economy.

*****

REDS 018

Addressing COVID-19 impacts on agriculture and strategy for small & marginal farmers in this pandemic

Ram Pyare and Harshita Sharma
Department of Agronomy, C.S. Azad University of Agriculture & Technology, Kanpur, UP (India).
Email: rampyare2012@rediffmail.com

ABSTRACT
COVID-19 is an unprecedented challenge for India; its large population and the economy's dependence on informal labor make lockdowns and other social distancing measures hugely disruptive. The central and state governments have recognized the challenge and responded aggressively—but this response should be just the beginning. India must be prepared to scale it up as events unfold, easing the economic impacts through even greater public program support and policies that keep markets functioning. Our survival is dependent on agriculture and a good harvest depends on quality seeds delivered to farmers by the seed sector, both public and private. The preparation of seeds happens between March and May. It begins from the farmers' fields, where after harvest; they do drying, winnowing, selection, and send seeds to processing plants. From there they are sent to labs for testing and finally are packaged for supply to the farmers. During this all process there are many kinds of strategies they need to follow for their product to sell, but due to this pandemic, they are suffering from numerous selling problems. The Centre and State governments have done a great job to allay the fear and quickly announced exemptions for the agriculture sector seeds, labours, and farm related activities; also. The Indian Council of Agricultural Research (ICAR) has issued state-wise guidelines for farmers to be followed during the lockdown period. The advisory mentions specific practices during harvest and threshing of various *Rabi* (winter sown) crops as well as post-harvest, storage and marketing of the farm produce. It is imperative that good seeds and other farm inputs reach farmers in time for the *Kharif* season. Although farming has been declared an essential service and agriculture markets are exempted from the lockdown, a shuttered economy has left farmers facing huge challenges. The supply chain has been badly hit -- buses and train services have been suspended and trucks face hurdles in moving across state borders due to strict checks small-scale farmers are vulnerable as they are hindered from working on their land/accessing markets to sell their products or buy seeds and other essential inputs; there is a need that we should help small and marginal farmers for selling their product during this situation. To ensure food supplies are frequent and involvement of direct procurement of a diverse food basket from more localized areas and farmers within the different districts as well as the village is needed. Lastly, it is extremely vital that those involved in the supply chain logistics are provided an adequate amount of safety kits and protective gear to be able to ensure safe, orderly distribution of supplies at less risk of virus transmission to those employed in these operations.
Keywords: Pandemic impact, Small-marginal farmer, retailer and distributor, mobile vans.

*****

REDS 037

Environment adjustable husbandry: influences and selections for adaptations

Rashmi[2],Tanu Shiri[1], Sourabh Jain[3], Akash Kumar[2], Govind Singh[2]and Sharun Kumar Bhenwal[2]
[1]Department of Genetics and Plant Breeding, CCS University, Meerut-250004, UP
[2]Department of Bioscience, Vinayak Vidyapeeth Modipuram, Meerut-250110, UP
[3]Department of Biosciences, Shri Ram College, Muzaffarnagar-251001, UP
Email: thakurrashmisoam@gmail.com

ABSTRACT
The climate is real and any change in it can impact the agricultural states overwhelmingly. These changing climatic conditions have impacted the weather event and increased the frequency and intensity of various kinds of climatic disasters. Climate change is in fact is one of the main reasons for the rise in annual surface temperature, sea levels, drought and flood frequencies. It impacts agriculture directly as well as indirectly which mainly includes the quality and quantity of agricultural production, water availability, reproduction of cereals, milk production, pest disease outbreak, etc. Climate resilient agriculture (CRA) refers to the ability of a system to bounce back to its original form if some distortion is being done by some certain climatic hazards. The primary purpose of CRA is to ensure food security, build resilience in the system and mainly increase the adaptation capabilities of farming communities so that they can cope up with any type of climatic change vagaries. Various technological interventions have been executed in several parts of the world but the primary options involve rainwater harvesting, crop residue management. Moreover, the introduction of drought, flood, salinity, heat, etc. types of stress tolerant varieties also helps significantly. Custom hiring of farm implements, a staggered nursery for rice, seed, etc. could be done. However, precise weather observations, weather based advisory services and real time crop insurance scheme should be considered in order to move forward the farmer and researchers should shift their approach from CRA to climate smart agriculture (CSA).

*****

REDS 040

Post-pandemic era: a novel economic view

*Alan C. Antony and Christy George
*Assistant Professor (Contract; Agriculture Technology), Dept. of B. VocProgrammes, SD College, Kanjirappalli, M.G. University, Kerala, India-686512
Email: alanhort202@gmail.com

ABSTRACT
An outbreak of Coronavirus disease (COVID) 19 has caused concerns globally. The Indian economic outlook by the pandemic challenges all spheres of life. The pandemic has raised food insecurity in a terrified manner. At the same time, loss of income and remittances is reducing farming activities. Farmers, now days face large losses, as buyers have become limited and traders stop engaging. Travel restrictions and migration of laborers are likely to withdraw the progress of the farming community. Likely, reduced accesses to animal feeds, diminished slaughterhouse capacity are major threats faced by the livestock sector. Various policies that could be adopted to overcome these crisis include crop diversification with a focus on high value crops (shift from cereals to horticultural and livestock)production. Strengthening of Agri-extension services, providing farmer-credit facilities, emphasis on post-harvest management, exploit online marketing platforms, promoting farm mechanization are some suggestions to cop up the current circumstances. Government of India has now increased its focus on nutrition security and thus raising farmer's income. Designing the agricultural policies in the post-COVID 19 scenario, we must consider the changing consumer behavior and should contain suitable incentives.
Keywords: COVID 19, Farmers, Crop diversification, Nutrition security, India

*****

REDS 041

Impact of World Lockdown due to Corona Virus Disease (Covid-19) on the Insect Pests

Sushil Kumar[1], Joni Kumar[2] and Sachin Kumar[3]
[1]Department of Entomology, G.B. Pant University of Agriculture & Technology, Pantnagar-263145 (U.K.)
[2]Assistant Professor, Department of Entomology, CCR (PG) College Muzaffarnagar, U.P.
[3]Department of Entomology, Chandra Shekhar Azad University of Agriculture & Technology, Kanpur U.P.

ABSTRACT

The world lockdown showed both positive and negative impacts on insect pests. In many countries of the world, the lockdown was enforced from the mid of the march of 2020. This period from the mid of the march where most of growing field crops were attaining full maturity and are ready to harvest. The farmers faced problems like shortage of labor and harvesters for harvesting crops than the insect pests. At the harvesting stage, only a few insects were noticed, the control measures like application chemical pesticides are not recommended due to the residue problem. In the case of the seasonal vegetable crops and horticultural crops suffered pest outbreaks because during initial (21days) lockdown due to restrictions on the movement these crops remain unattended. The necessary cultural practices like weed removal are not carried where they act as alternate hosts for insect pests. The major plant protection measures include pesticide spraying operations were not carried due to restrictions imposed under lockdown. However in periods of the extended lockdown, the government allowed the farmers to perform their agricultural operations and it exempted the restrictions on the agriculture inputs providing services such as fertilizers, seeds, pesticides and fungicides during the lockdown. During the post lockdown period, a shortage of agricultural inputs like chemical pesticides and fertilizers may occur because some of them have to be imported from foreign countries.

*****

REDS 043

Neuronal stimulation in the brain can reduce and enhance appetite

Govind Singh[1], Tanu Shiri[2], S.K. Singh[3], Akash Kumar[1], Rashmi[1]and Sharun Kumar Bhenwal[1]
[1]Department of Bioscience, Vinayak Vidyapeeth Modipuram, Meerut-250110, UP
[2]Department of Genetics and Plant Breeding, C.C.S. University Campus, Meerut-250004, U.P.
[3]Department of Genetics and Plant Breeding, CCR (PG) College, Muzaffarnagar-251001, U.P.
Email: hariomrajpoot931@gmail.com

ABSTRACT

Optogenetic stimulation of tannites leads to increased appetite. Tanycytes are glial cells, which communicate with neurons in the brain to detect that appetite increases when tannites are selectively stimulated. It has been previously discovered that tannites found in part of the brain - cells that control energy levels - detect nutrients in food and expose the brain directly to the food we eat. Tanycytes do this through the response to amino acids found in foods, through the same receptors that sense the taste of amino acids found in the taste buds of the tongue. Tenicites produce acute hyperphagia through activation of the arcuate neuronal network. They are able to feel or "taste" the nutrients in the cerebrospinal fluid within the ventricle. The amount of nutrients in this fluid depends on how much has been eaten. To selectively express a light sensitive ion channel, the researchers were able to very vigorously activate them and point out that this activated nearby neurons. By observing the identity of activated neurons, the researchers found that tannites can trigger two distinct pathways involved in the control of feeding. One route is associated with an increased drive to feed, while the other route is connected to a reduced drive for feed and greater energy expenditure. Tanycytes respond to nutrients that indicate the effect of feeling full, so we expect that when tanycytes are stimulated you will eat less, but surprisingly we found that you actually eat more. We have established a connection between tannites and food intake, but we still do not fully understand how they will contribute to controlling body weight in the long term. The nervous system that controls hunger has been studied for decades. Our studies have added an unexpected new player to this neural circuit. Our important finding is that tenesites have an active role in increasing appetite. In the future, these cells may become potential targets for reducing or increasing food intake for medical purposes.

Keywords: Tanycyte cells, Optogenetic, Cerebrospinal fluid, Hypothalamic activation.

*****

REDS 044

Spectral analysis of ambient air particulate matter using wavelet transforms

Anil Kumar
Associate Professor, Department of Physics
Hindu College, Moradabad, Uttar Pradesh, INDIA
Email: akumarmbd@gmail.com

ABSTRACT

Particulate matter (PM) represents the solid or liquid particles that are airborne and transported and dispersed in the atmosphere. The interest of researchers in PM is mainly due to its negative impacts on human health and environmental change. Wavelet transforms have advantages over Fourier transforms and window Fourier transforms for representing functions that have discontinuities and sharp peaks, and for accurately deconstructing and reconstructing finite, non-periodic and/or non-stationary signals. The wavelet transforms provide a new tool in the emerging field of data analysis for Physicists, Engineers, and environmentalists. It represents an efficient computational algorithm under the interest of a broad community. We have discussed the effect of lockdown (From March 25 to June 08, 2020) on the quantity of PM2.5 in the environment of Anand Vihar, Delhi comparing with last year using Haar wavelet transform, level-1.

*****

REDS 046

Nictoflorin against COVID-19

Alisha Malik
Email: *alisha.techie@gmail.com*

ABSTRACT

COVID-19 has become a pandemic all over the world. In India, most of the folks are relying upon the traditional Indian medicine to combat with COVID-19. Studies have reported that the inhibition potential of *Nictoflorin*, an extract of *Nyctanthes arbor-tristis* (Harsingar) against COVID-19 protease enzyme, is very encouraging. The COVID-19 protease enzyme plays an essential role in mediating viral replication and transcription. The binding affinity (-9.18 kcal/mol.), log *P* (0.07) and log *S* (-2.29) values of *Nictoflorin* indicate that the compound can be easily absorbed and diffuse across the cell membranes due to their high organic (lipid) permeability, emerging as one of the most powerful inhibitors of COVID-19 protease. The inhibition potential of this plant extract is found to be larger than those of chloroquine and hydroxychloroquine. These findings become very interesting towards the expansion of our horizons in the development of an antidote for this malady from medicinal and wild plant species having no apparent side-effects.

****

REDS 047

COVID-19: Some Preventive Measures

Swati Chaurasia
Dept of Botany, Mahamaya Govt. Degree College, Kaushambi
Email: swati17j@gmail.com

ABSTRACT

Survival of the fittest theory, given by Darwin is very much relevant today in this COVID-19 situation. The one who adapts himself to the current situation survives. We all know that no vaccines or medicines for treatment are available for the disease so far. So prevention is better than cure. For prevention, we need to strengthen our immune system and thus build the first line of defense against the deadly virus. Besides following some hygiene standards like washing hands, using alcohol sanitizer, wearing masks and avoiding touching eyes and mouth with hands, few measures that have been prescribed to strengthen immunity to fight this pandemic are good sleep, regular exercise/yoga, reduce/manage stress, stay hydrated and have a balanced diet. The modulation of the immune system by various medicinal plant products has also become a subject for scientific investigations currently worldwide. Some of the herbal plants mentioned in our Ayurveda as immunomodulators are *Allium sativum*, *Panax ginseng, Withania somnifera, Tinospora cordifolia, Curcuma longa, Ocimum sanctum, Zingiber officinale, Phyllanthus niruri, Glycyrrhyza glabra,* etc. The Poster presentation focuses on the above said aspects.

*****

REDS 052

Impact of COVID-19 on sugarcane crop in INDIA

Archana and Viresh Singh
Division of Plant Physiology, Sugarcane Research Centre Muzaffarnagar (U.P.), India
Email: drarchanakumar14@gmail.com

ABSTRACT

The Indian sugar industry, a significant player in the Indian economy, has faced many challenges in the course of its journey. The coronavirus pandemic COVID-19 has severely affected the lives of the people but with that, it has caused a lot of damage to agricultural crops that were to be harvested in this season. One of the main crops to be noticed is sugarcane. With varying sowing and harvesting period of sugarcane, the countrywide lockdown announced on 25th March to combat the spread of the COVID-19 pandemic coincided with planting, production and harvesting stages of sugarcane across different production hubs in the country. While farmers have been affected due to lack of availability and access to labour and agriculture inputs, Sugar mills countered issues due to reduced demand for sugar in both domestic and international markets along with a shortage of labour and other for carrying out crushing and distribution operations. The most visible impact of the COVID-19 crisis is on demand for sugar. Institutional consumption in India normally constitutes 65 % of the total domestic sugar sales. India is the major exporter of sugar to Global food & Beverage companies like Pepsi, CocaCola, Nestle, etc. for their global operations in the USA, Europe, and other countries. Lockdown measures in these countries have also affected the demand for F&B products. Exports have been affected by both lower demand from the export destinations and limited port operation in India. The impact of lockdown due to Covid-19 has led to challenges in harvesting and milling in the largest producing state, Uttar Pradesh. Since sugarcane is predominantly harvested manually, labour requirement during harvesting period peaks. The last phase of harvesting in UP was the one that got most affected. At present, the sugarcane industry is estimating a loss of about 2million tons due to problems related to harvesting during the lockdown. In some parts of UP farmers were planning to plant sugarcane after harvesting of wheat crop. However, rains followed by delayed harvesting of wheat resulted in delaying of the sowing of sugarcane. During the lockdown period, some farmers, because of unavailability of planting material, shortage of labour combined with fear of getting infected with coronavirus have left stayed away from planting sugarcane. Farmers who had either planted new crops or having the ratoon crops (re-growth of sugarcane) were supposed to apply fertilizers, pesticides, fungicide, and other crop protection material in their crops. However, partial closure of Agri input stores have made availability and accessibility of these materials difficult for the farmers. In some cases, available pesticides were either of inferior quality or were sold. The pandemic has severely affected the harvesting and further processes of producing sugar even though it is declared as an essential commodity. The delayed processes have led to a huge loss to the farmers as well the economy of India as it being a major producer of the sugar in the world.

*****

REDS 058

Nutritional aspects of plants as a booster to immunity

Kapali Garg
Mata Gujri College, Fatehgarh Sahib, Punjabi University, Patiala
Email: kapaligarg1@gmail.com

ABSTRACT

COVID 19 pandemic has led to the potential rise in food insecurity. Special efforts are being made to provide affordable and nutritious food to the consumers despite disruption in domestic food supply chains. Nutritious and healthy food is very important in survival against COVID 19 like diseases as it helps in improving immunity and decrease risk to diseases. Nutritious food includes Sprouts, pulses sprouts are nutrient dense and are rich in minerals, enzymes and antioxidants. Sprouts contain Health maintaining nutrients like glucosinolates, phenolic acid, and brassica plant contain selenium containing components and soybeans contain isoflavones. They contain folate which boost haemoglobin levels. Decreased levels of folic acid can reduce cell mediated immunity in case of megaloblastic anaemia. A decrease in the level of vitamins can lead to a high risk of infection. Sprouts also add fiber to the diet. Broccoli sprouts have a great impact in boosting immunity, detoxification, action against allergies, and inflammation. Sprouts also contain vitamin C that secretes WBCs to fight against viruses and vitamin A that strengthen our immune system. Sprouts are affordable and easy to prepare by soaking seeds (pulses) in water and then germinating them. Type of sprouts that can be consumed to boost immunity is Mung bean sprouts, Red lentil sprouts, Alfalfa sprouts, and Chickpea sprouts. Healthy food like fresh fruits, vegetables, legumes (lentils, beans), grains (maize) and also fermented food and probiotic food (soybean) play an important role in maintaining our health. Sterilization or washing of every food before consumption must be done to avoid contamination. Hence, as a preventive measure against COVID 19, intake of (8-10 cups) water, healthy food and nutritious food is necessary.

*****

REDS 061

Seasonal incidence of Semilooper, *Trichoplusiani* on black gram

Yogandar Sain[1], Joni Kumar[2], M.P. Gautam[3], Sushil Kumar[4]and Sachin Kumar[5]
[1]Department of Entomology, Janta Vedic Collage, Baraut(Bhagpat)-250611,
[2]Department of Entomology, CCR (PG) College Muzaffarnager-251001
[3,4]Department of Entomology, S.V.P. University of Agriculture and Technology, Meerut, 250110
[5]Department of Entomology, C.S.A. University of Agriculture and Technology, Kanpur-208002
E-mail: yogandar1860@gmail.com

ABSTRACT

Pulses in India have long been considered as the poor man's only source of protein. India is reportedly the largest pulse growing country in the world both in terms of area as well as production covering 43.30 percent of land area under pulses with 33.15 percent production. A field experiment was conducted in randomized block design with three replications of seven treatments during *kharif* season 2018-19 at the entomological research block of the crop research centre, SardarVallabhbhai Patel University of Agriculture & Technology, Meerut (U.P.). The first appearance of *Trichoplusiani* was noticed during 35th standard week of 2018 and 2019 (Sep. 1 to Sep. 7) followed a gradual increase and attained peak population during 38th standard week (Sep. 22 to Sep. 28) after which the was found to declined markedly in the following weeks (39th to 43rd standard week) and the lowest population was recorded during 44th week (Oct. 28 to Nov. 3). A correlation between different weather parameters and the population of *Trichoplusiani* revealed that there was significant positive correlation with maximum temperature (r = 0.807**) minimum temperature (r = 0.716**), average temperature (r = 0.776**), wind velocity (r = 0.609**) and rainfall (r = 0.232*) while both minimum and average relative humidity showed non-significant negative correlation with pest populations.

Keywords: Seasonal incidence, semilooper, *Trichoplusiani*, correlation, black gram

*****

REDS 065

Impacts of COVID-19 on production of livestock

Om Prakash,
Department of Animal husbandry & Dairying, Amar Singh (PG) College, Lakhaoti, Bulandshahr (UP)

ABSTRACT

The COVID-19 effects on the livestock sector are still largely unquantified and yet to be fully felt. Formal assessments have not yet been possible, but current observations reveal disruptions to livestock value chains. Lessons from past epidemics indicate these disruptions are likely to grow, along with their dire, socio-economic consequences. Fortunately, actions can be taken to protect this sector and its activities, services and products upon which the world relies. The animal husbandry industry in India has been largely impacted by the effect of coronavirus. A big sharp fall in the demand for chicken and meat has been recorded, since the outbreak, as there have been various rumors amongst the peoples that the virus can spread through the animal's meat and chicken. However, the Centers for Disease Control & Prevention declared that coronavirus is known to be transmitted via direct contacts to humans, and not via livestock or aqua animals. Government organizations have set guidelines in order to prevent the pandemic. The primary factors that were responsible for the livestock sector growth before the pandemic were the increased consumption of meat, beef, chicken and other kinds of seafood such as prawns globally. People's lifestyles changing along with the preferences towards the luxury food items were also the prime factors for the market growth before the pandemic.

*****

REDS 071

Challenges in agriculture post COVID

Shashi Bala Singh,
Deptt. Of Geography, D.G.P.G. College, Kanpur

ABSTRACT

During COVID-19 pandemic challenging times, how does Indian Agriculture respond and to the crisis and how do government measures affect 140 million farm households across the country and thereafter impact the economy of a very important country of developing world. The poor section of society is always the hardest hit in any disaster or pandemic situation. With about 85% of Indian farm households being small and marginal farmers and a significant part of the population being landless farm laborers, welfare measures to contain any damage from COVID-19 are going to help them with sincere implementation. We assess the immediate challenges that COVID-19 has posed to the farm sector and suggest mitigation measures to ensure a sustainable food system in the post-crisis period continuing restrictions on movements of people and vehicular traffic, concerns have been raised regarding negative implications of the covid-19 pandemic on the farm economy. This is the peak of Rabi season in India, crops like wheat, gram lentil, mustered, etc. are at the harvestable stage or almost reaching maturity. The migration of workers from a few parts to their native place has also triggered panic buttons, as they are crucial for both harvesting operations and post-harvest handling of products in storage and marketing centers. In rural and urban areas availability of food grains, fruits, vegetables, and other essential items to the consumers has also been hit, which is the most critical challenge for government machinery during the lockdown period.

*****

REDS 073

Nutritional aspect for human in COVID - 19

[1]Alice Singh and [2]S.P.Singh,
[1]Food Processing and Technology, Gautam Buddha University
[2]IIFSR, Modipuram, Meerut

ABSTRACT

Coronavirus has a devastating impact on people with underlying health conditions like diabetes, hypertension, and heart disease. A plant-based diet can help reduce the effects of the virus on 'at-risk' people. There's an abundance of macronutrients, micronutrients and antioxidants in Plant-based foods, which help in keeping your cells strong and healthy to fight off any potential viral infections. **List of Healthiest Plant-based foods Superfood Greens** – It's no secret that most people don't eat enough vegetables. Greens such as Chlorella, Spirulina, Spinach, etc are typically high in vitamins A and C, which help support immune function. The antioxidant and anti-inflammatory actions of plant compounds in greens powder may help reduce your risk of chronic diseases. **Plant Protein** – Plant Protein plays a major role in the body's immune response. They activate cells that help fight off infections in the body. Good plant sources of dietary protein are: legumes, beans, peas, and nuts **Zinc and Magnesium -** Zinc present in pumpkin seeds, sesame seeds, and hemp seeds is a potent nutrient that supports immunity, and it is called 'a gatekeeper of immune function'. Magnesium affects the ability to boost one's mood naturally by increasing serotonin production. **Vitamin C and D -** Vitamin C is found in oranges, bell peppers, broccoli, melons and strawberries. Vitamin D allows for conditions of equilibrium in terms of physical and mental health. **Omega 3's Omega 3 has three types -** DHA, EPA and ALA. It plays a beneficial role in reducing inflammation inside the body. Its mainly found in soyabean ,walnut, and seeds such as chia and flax seeds. COVID-19 has been impacting every sector of the world, starting from education to healthcare and industries. Well-being is essential during these testing times. By adhering to the suggestions given above, you can become a healthy human being who is less susceptible to this dangerous virus.

*****

Theme:III

Sustainable Development, Organic Farming, Conservation farming & Hill farming

REDS 001

Most suitable rooting media for rooting success and survivability of marcottage at Fruit Research Station, Imalia, JNKVV, Jabalpur

Intjar Singh Dawar and Dr. T. R. Sharma
Horticulture (Fruit Science), Department of Horticulture, JNKVV- College of Agriculture, Jabalpur (M.P.) - 482004
Email: intjardawar2012@gmail.com

ABSTRACT

The present investigation entitled "Effect of different Growing Media on Rooting and Survival of Marcottage in Pomegranate (*Punica granatum* L.) cv. Bhagwa" was conducted at Fruit Research Station, Imalia, Department of Horticulture, College of Agriculture, J.N.K.V.V., Jabalpur (M.P.) during the year 2018- 2019. The experiment was laid out in a Factorial Randomized Block Design with three replications. To study the effect of different types of rooting media (i.e. Soil, Soil + Vermicompost, Soil + Vermicompost + Azotobacter, Soil + Vermicompost + Azospirillum, Soil + Vermicompost + Pseudomonas) The success percentage of layers at 60 and 90 days after transplanting was recorded Data showed that the maximum success percentage of layers 73.33 noted under M4 (Soil + Vermicompost + Azospirillum) at 60 days, respectively and it was significantly superior over rest of the soil media. The minimum success percentage of 60.00 was recorded under M1 (only soil) at 60 days after transplanting and non-significant at 90 days respectively. The data regarding survival percentage as influenced by different growing media containing bio-inoculants and concentrations of IBA and Soil media led down non-significant effect on survival percentage of marcottage.

*****

REDS 002

Effect of Rate and Time of Brassica Seed Meal (BSM) Application on Weed Management in Wheat

Manish Chandra and M. K. Singh
Department of Agronomy, Institute of Agricultural Sciences,
Banaras Hindu University, Varanasi, 221005 (U.P.)
Email: manishbhu3756@gmail.com

ABSTRACT

Wheat (*TriticumaestivumL.*) is a crop of global significance and grown in diversified environments. It's a staple food of millions of people in the world. A field experiment was conducted during winter seasons of 2015-16 at Agricultural Research Farm, Banaras Hindu University, Varanasi to study the effect of rate and time of brassica seed meal application on weed management in wheat on associated weeds, crop growth and yield of wheat. During the investigation it was observed that the experimental field was infested with 11-winter (*rabi*) season weeds, 2 of which were annual monocot and 9-annual dicot weed species. Keeping in this view experiment was conducted in Factorial Randomized Complete Block Design (RCBD) with three replications having two factors. First factor comprised of four rate of Brassica seed meal (1.0 $t.ha^{-1}$, 1.5 $t.ha^{-1}$, 2.0 $t.ha^{-1}$ and 2.5 $t.ha^{-1}$) whereas, the second factor consist of four time of applications *viz*; 7, 14, 21 and 28 BSW, and two control (weedy check and weed free), respectively. Results showed that both rate and time (2.0 $t.ha^{-1}$and 21 days BSW) respectively, the lower weed infestation as compare to rest of treatment. However, the highest growth attributes (plant height, dry matter accumulation, number of tiller, LAIand yield (grain yield, straw yield, biological yield, and harvest index) was recorded under 2.0 $t.ha^{-1}$ and time 21 days BSW. Lowest yield recorded underrate at 1.0 $t.ha^{-1}$ and time 21 days BSW. Among treatment, rate and time (2.0 $t.ha^{-1}$ and 21 days BSW) showed effectively suppress the predominant weeds (BLW, grasses and sedges) and enhanced the nitrogen uptake efficiency and total nutrient uptake by crop than other weeds. Further, the experimental finding showed that as uncontrolled weed growth reduced the wheat yield by 41.00 to 54.73 percent.

Keywords: Weed, rate and time of BSM, N uptake, LAI and yield.

*****

REDS 007

Production of bioethanol from chitin (a polysaccharide) and its environmental impacts

[1]Hari Om Sharma, [2]Sangeta Saini, [3]Mukesh Chand, [4]Pradeep Kumar,
[1]Dept. of Chemistry, CCR (PG) College, Muzaffarnagar
[2,3]Dept. of Chemistry, DAV (PG) College, Muzaffarnagar
[4]Dept. of Chemistry, HVM (PG) College, Raisi, Haridwar

ABSTRACT

Bioethanol is widely used in biofuels worldwide. Widespread use of fossil fuels has led to increase in pollution and global greenhouse gases emission make it necessary to develop the alternative renewable sources of energy which are environmentally friendly, non-toxic, biodegradable, and do not contain by-products in comparison to the fossil fuels. In recent years bioethanol production is mainly carried out by the yeast fermentation process of the plant row materials including high polysaccharide content. The production of biofuels (bioethanol) from waste material such as crustacean shell's waste containing chitin shows energetic, economic, and environmental advantages in comparison to the bioethanol from starch and sugar. In this technology chitosan which is a deacetylated form of chitin is used as the sole of nutrients for lipid and fatty acid-rich fungi and produces bioethanol in a profitable, sustainable, and environmentally friendly manner. Chitosan is biodegradable and non-toxic. Chitosan (poly- β-1, 4- glucosamine) is a modified and natural carbohydrate polymer formed by deacetylation of chitin (poly- β-1, 4- N-acetyl –D-glucosamine).

Keywords: chitinase, chitin, biofuels, crustacean shell waste.

*****

REDS 012

Studies on comparative efficacy of botanicals and biochars for management of root and stem rot of cucumber caused by *Fusarium oxysporum* f. sp. *radiciscucumerinum*

Suresh kumar[1*], Dr. N.L. Meena[2], Rohith M[3]. , Poonam Yadav
Department of Plant Pathology, Rajasthan College of Agriculture, MPUAT, Udaipur
Email: drskg8888@gmail.com

ABSTRACT

The present study was undertaken in cucumber root and stem rot disease caused by *Fusariumoxysporum*f.sp.*radiciscucumerinum* leading to rotting of stem, roots. The studies were aimed; Occurrence and pathogenicity of *Fusariumoxysporum*f.sp. *radiciscucumerinum* in field and polyhouse condition and develop management strategy through botanicals and biochars. The disease samples of cucumber were collected from the severely affected field of RCA Horticulture farm and RCA Polyhouse during *Kharif*2017-18 when crop was one month old. Eight Botanicals as water and ether extract such as *Ipomeacarnea, Calotropis gigantea, Allium cepa, Daturastromonium, Catharanthusroseus, Azadirachtaindica, Curcuma longa* and *Piper nigrum* were evaluated *in vitro* against mycelia growth of *F. oxysporum* f.sp. *radiciscucumerinum* at three concentrations *viz.*, 10, 20 and 30 percent by poison food technique. Among the above botanicals water and ether extracts of *A. indica* found to have maximum percent growth inhibition of the pathogen, 77.77% and 82.22 % with water and ether extracts, respectively. The biochar treatments were used to evaluate their influence on the growth parameters like germination shoot and root length. The biochar combination Eucalyptus wood (EW) + Citrus wood (CW) + Greenhouse waste (GHW) showed maximum germination 100%, shoot length 7.73 cm and root length 12.10 cm. In order to device the efficient management strategy of the disease root and stem rot of cucumber under pot conditions seven treatments of biochar such as Eucalyptuswood (EW), Citrus wood (CW), Greenhouse waste (GHW), Eucalyptus wood (EW) + Citrus wood (CW), Eucalyptus wood (EW) + Green house waste (GHW), Citrus wood (CW) + Green house waste (GHW) and Eucalyptus wood (EW) + Citrus wood (CW) + Green house waste (GHW)were evaluated against of *F. oxysporum* f.sp. *radiciscucumerinum* at four concentrations *viz.*, 1, 2, 3 and 4 per cent by per cent mortality. Among the above mentioned treatments, the lowest mortality rate of 4.17% was recorded with Eucalyptus wood (EW) + Citrus wood (CW) + Green house waste (GHW) at 3% concentration.

The results obtained suggested that botanicals and biochars are good inhibitors of the disease *in vitro* and *in vivo*, respectively and thus can be recommended for the management of root and stem rot of cucumber in the field. The use of biochars would help the farmers get better yield and profit by reducing the cost of the fungicide and also the biochars improve the soil quality by maintaining the pH and EC of the soil.

Keywords: *Fusarium oxysporum* f.sp. *radiciscucumerinum; Biochars; Botanicals; Growth parameters; Root and stem rot; Plant Mortality*.

*****

REDS 016

Agnihotra: Homa Organic Farming

Lalani Sayroj Rahimbhai
Department of Agronomy, College of Agriculture, Junagadh Agricultural University
Email: lalanisayroz@gmail.com

ABSTRACT

The intensive chemical agriculture that has been followed after the successful green revolution in our country is causing heavy pollution of our soil, food, drinking water and air. Agni means fire, Hotra means healing. It's written in the Vedas that "HEAL THE ATMOSPHERE AND IT WILL HEAL YOU". The most significant aspect of Agnihotra is that it combines the energies of five elements sun, space, air, water and earth to produce subtle changes in the living organisms and helps to restore the biorhythm. Agnihotra can be referred as a non-conventional approach as it reduces microbial count and toxic gases in air and improves atmospheric quality. It increases plant growth, yield and quality parameter. Application of Agnihotra ash and biosol improve soil quality by increasing beneficial soil microorganism. It lowers the incidence of pest and diseases as well as heals the atmosphere by preventing it from minimizing the use of chemical fertilizer which are toxic for human, plant and livestock health. Agnihotra ash also works to purify water and make it suitable for agricultural use. So perform Agnihotra daily with any good organic practice will improve the effect of that practice on the farm.

*****

REDS 025

Assessment of maize –wheat cropping system under different doses of fertilizer with soil conditioners

Piush Singh, P.C. Singh, S.K. Chaubey[1], Ajit Singh, Arun Kumar[2], V.P. Dwivedi, Ram Pyare[3] and J.K. Tiwari
Department of Agronomy, Shri Durga Ji P.G. College, Chandeshwar, Azamgarh
[1]Department of Agronomy, National PG College, Barhalganj, Gorakhpur (UP).
[2]Director, Planning, BAU, Sabour, Bhagalpur, Bihar, India.
[3]Department of Agronomy, C.S.A.U.A.&T., Kanpur-202002(UP).

ABSTRACT

The present experiments were carried out in tow consecutive year of *Kharif* and *Rabi* season of 2003-04 and 2004-05 at Agriculture Research Farm of Shri Durga Ji Post Graduate College Chandeshwar Azamgarh under afflicted Veer Bahadur Singh Purvanchal University, Jaunpur (UP) to find out the production potential of maize-wheat cropping system under different fertilizer doses with soil conditions. The results revealed that the wheat grain equivalent yield was maximum of 79.86 q/ha with FYM application while gypsum reduced 75.29 q/ha minimum equivalent yield of 72.50 q/ha was recorded in control treatment. The gross income of Rs. 63159 and Rs. 63878 /ha and net profit of Rs. 28246 and Rs. 29017/ha were significantly more obtained with FYM from maize-wheat system during both year, respectively while, gypsum gave gross income of Rs. 59199 and 60653/ha and net profit Rs. 26479 and Rs. 27933/ha during respective years. In case of fertilizer, significantly maximum equivalent yield of 80.85 and 82.07 q/ha was obtained at 125% fertilizer during first and second year, respectively. The highest gross income of Rs. 63798 and Rs. 64854/ha was achieved with 125% fertilizer while maximum net profit of Rs. 28901 and Rs. 29682/ha was obtained with 100% RDF during the first and second years. Therefore, the application of FYM @ 5 ton/ha along with 100% RDF proved to be the most economic combination of the system as it gave 84.74 and 85.97 q/ha wheat grain equivalent yield and earned a maximum net profit of Rs. 30676 and Rs. 31026/ha during both years, respectively.

*****

REDS 026

Quality improvement in wheat grain with zinc and iron by Agronomic biofortification

Videsh Kumar Verma, Girish Goyal, Ram Pyare and Dhananjai Singh
Department of Agronomy, C.S. Azad University of Agriculture & Technology, Kanpur.
Email: videshkumarverma@gmail.com

ABSTRACT

An experiment was conducted during two consecutive *Rabi* reasons of 2015-16 and 2016-17 at Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, Uttar Pradesh, India, situated at 125.9 meter altitude 26.4148 North latitude and 80.2321 East longitude. Nutrient management was used as a strategy in our quest to enrich the wheat grain with two essential nutritive element viz., Zinc (Zn) and Iron (Fe). The experiment comprised three wheat varieties viz., PBW 550, DBW 17 and K402, two farm yard manure (FYM) levels viz. zero (FYMo) and 10 t/ha (FYM-10 tonne/hectare) applied at soil preparation, further, whereas Nitrogen (N), phosphorus (P_2O_5) and potash (K_2O) at 150:60:40 kg/ha, were kept common and applied as basal, as well as top dressed, the zinc sulfate ($ZnSO_4$) and ferrus sulfate ($FeSO_4$) were used as supplementing agents, so as to achieve the objective of augmenting the proposed Zinc and Iron content in wheat grain. The $ZnSO_4$ at 25 kg/ha was added as basal and the $FeSO_4$ was applied as one percent foliar spray either at tillering stage (TS) or at flag leaf stage (FLS). The variety K402 consistently performed better both in terms of grain yield, and Zn and Fe content in grain. The addition of FYM exhibited a positive impact. Application of $ZnSO_4$ (as basal) and $FeSO_4$ (at the tillering stage)recorded significantly (at 5% level of significance) higher grain yield viz. 4435.17 and 4691.70 kg/ha, along with significantly superior Zn viz. 45.68 and 46.94 ppm content, respectively during the corresponding two years of study. The interaction effect of varieties, FYM and Nutrient Management treatments was however statistically non-significant.

*****

REDS 027

Effect of continuous application of Organic manure and Inorganic fertilizers on yield and quality attributes of Sugarcane in Western Uttar Pradesh.

Ved Prakash, N.K. Pruthi, Viresh Singh and J. Singh
Division of Soil Chemistry,
Sugarcane Research Center Muzaffarnagar-251001

ABSTRACT

A Field experiment was conducted at sugarcane Research Center, Muzaffarnagar for three consecutive years viz (2017-18, 2018-19, 2019-20) to explore the effectiveness of FYM, G.N. Cake, Urea and their (1:1), (1:1:1) integration with inorganic N on the growth, yield and quality as well as soil/plant status of nutrients in the soil. The result revealed that FYM along with G.N. Cake in combination with Inorganic N ratio of FYM+G.N.Cake+Urea (1:1:1) proved better closely followed by G.N.Cake (1:1) ratio significantly. As regards shoot population, NMC, yield and sucrose percent in juice over other treatment without remarkable alteration in cane juice.

Keywords: Continuous application, Organic manure, Inorganic fertilizers, Cane yield and quality.

*****

REDS 034

Parthenium in sustainable development

Shalza Malik
Email: shalza.malik14@gmail.com

ABSTRACT

Can a highly invasive weed, like *Parthenium*, become commercially or economically beneficial to the world?" *Parthenium* grows over a wide range of soils. It also has low nutrient requirements. We all are well aware of the plant's adverse effect on the crop yield due to allelopathy and invasiveness, and also about its being allergic to humans over prolonged exposure. It has become so widespread that its complete eradication is practically not possible. The main reason for its invasion is the family to which it belongs, i.e., Asteraceae which is the most advanced family of angiosperms producing a large number of small, lightweight seeds that facilitate its long distance dispersal. But recently, extensive research on the weed have discovered its positive aspect such as it can be used in the phytoextraction of heavy metals, in the treatment of skin inflammation, rheumatic pain, urinary tract infections, malaria and many more. Each species on Earth is born with its uniqueness and importance. *Parthenium* is one such species. Unveiling the utility of the plant might somehow help the world to recognize its importance, not as a weed, but as a plant of utilization, either in the pharmacological field or any other.

*****

REDS 038

Feeding efficiency of the larval predator, *Rhynocoris marginatus* Fabricius (Hemiptera: Reduviidae) on *Corcyra cephalonica* Stainton (Lepidoptera: Pyralidae) larvae under *In vitro* condition

Saurabh Padamshali, Sonalika Kolhekar and Jayalaxmi Ganguli
Department of Entomology, Indira Gandhi Krishi Vishwavidyalaya, Krishak Nagar, Raipur (Chhattisgarh) 492012.
*Corresponding Email: saurabhpadamshali@gmail.com

ABSTRACT

Natural enemies like reduviid predators could be used in insect pest management particularly to manage many polyphagous lepidopteran larvae which are serious pests on a number of agricultural crops. They are less specific in their choice of prey and kill more prey than they need to satiate themselves.. Keeping this in mind an experiment was conducted in the Biocontrol laboratory, Indira Gandhi Krishi Vishwavidyalaya, Raipur (Chhattisgarh) during 2018-19 to check the feeding potential of the reduviid larval predator, *Rhynocoris marginatus* on the factitious host *Corcyra cephalonica* Stainton larvae reared on crushed rice cereal under *in vitro* condition. It was found that the average feeding potential of first instar was 5.67 larvae/ bug, while 2nd instar nymph showed predation of 8.33 larvae/ bug. Third instar nymph showed better predatory activity than the two early instars (18.67 larvae/ bug). In the fourth instar, the mean consumption was estimated to be (27.00 larvae/ bug), whereas in fifth instar (43.67 larvae/ bug) and adults devoured a maximum number of 82.00 larvae/ bug. Hence, *R. marginatus* can be used as a promising bioagent for management of different lepidopteran insect-pests in all the crops which will ultimately help in sustainable crop production.

Keywords: Reduviid, larval predators, *Rhynocoris marginatus*, feeding potential.

*****

REDS 048

Recent Trends of Farming and its Harmful Effects on Human Health and Environment

Vijay Kumar, Reema Singh and S.K. Singh
Department of Genetics & Plant Breeding, C.CR. (PG) College, Muzaffarnagar,
U.P. India
Email id: **vijayram9092@gmail.com**

ABSTRACT

Agriculture has been considered as a way of life. Ever increasing population places greater demands on agriculture to increase production, to match the increasing demands for food supply. Plants require several soil nutrients like nitrogen, phosphorus and sulphur for their growth. Soil nutrient levels can decrease over time when crop plants are harvested, as nutrients are not returned to the soil. Hence, these essential nutrients need to be compensated either through the natural process of decomposition, when plants die and decay, and the nutrients extracted from the soil return to the soil or by the easy means of adding fertilizers. The use of fertilizers, especially, the chemical fertilizers has brought in blessings on humanity, which helped contain hunger and death in different corners of the world. Though chemical fertilizers increase crop production; their overuse has hardened the soil, decreased fertility, strengthened pesticides, polluted air and water, and released greenhouse gases, thereby bringing hazards to human health and the environment as well. In their larger threat to the environment, animals and human health; chemical fertilizers will ultimately end up leaking into our water bodies; ponds, streams, groundwater, etc. and contaminate water supply as a result of which humans, as well as animals, may suffer numerous short term and long term hazardous chemical effects on their health and body. In reply to this, organic fertilizers will be the right solution without which gardening and growing healthy and natural food and crops could be possible.

Keywords: Fertilizer, Plant, Animal, Environment, Organic

*****

REDS 050

Climate smart agriculture for food security and sustainable development

Joni Kumar*[1], Yogandar Sain[2], Sushil Kumar[3], Sushil Kumar[4], Sachin Kumar[5] and MP Gautam[3]
[1]Department of Entomology, CCR PG College, Muzaffarnagar, UP
[2]Department of Entomology, JVC Baraut, Baghpat, UP
[3]Department of Entomology, SVBP University of Agriculture & Technology, Modipuram Meerut, UP
[4]Department of Entomology, G.B. Pant University of Agriculture & Technology, UK
[5]CSA University of Agriculture & Technology, Kanpur, UP
*E-mail id: jonikumar68@gmail.com

ABSTRACT

The majority of Indian farmers depend on agriculture for food security and their survival. Climate change is a key threat to food security and livelihood. Climate change has already caused significant impacts on agriculture and allied sectors. The global increase in temperature and intermittent rainfall affects the productivity of agriculture and it also declines livestock production. Food security along with poverty is the biggest challenge for the government at present. The effect of this changing climate can be minimized through the adoption of climate smart agriculture. Climate smart agriculture is an integrated approach to several sectors of agriculture. It is not the only emphasis the sustainable agriculture but also focuses on the productivity of agriculture. In response to climate change such as high temperature and heat stress, climate smart agriculture recommends the variety which can tolerate the high temperature and heat. It also recommends other practices such as water management, mulching, plantation of trees at the boundary and appropriate space for household cattle. Despite their multiple advantages, there is a lack of understanding among farmers. Thus, farmers need to understand the advantages of climate smart agriculture to combat the food security and to maintain the sustainability of agriculture land.

Keywords: Climate smart agriculture, climate change, food security, sustainable development.

*****

REDS 053

Extremes of farmers leading to excessive production of maize in district Kanker, Chhattisgarh

Jaydev Haldar[1*] and Dr. K.K. Singh[2]
[1]M.Sc. (Ag.) Extension Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, Satna (M.P.)
[2]Professor (Technology Transfer), Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, Satna (M.P.)
*corresponding author: *jaydevh3@gmail.com*

ABSTRACT

Chhattisgarh, the 26th state of the Indian Union, came into existence on November 1, 2000. Maize is produced in both Kharif and Ravi seasons in Chhattisgarh, the second most important crop in terms of area and production after paddy. Especially farmers of hybrid maize grow with competition from each other in Pakhanjore tehsil located in Kanker district of Chhattisgarh, which has a complete package of practices. Since this part of the state receives suitable rainfall, hybrids are popular and highly productive, having better adaptability to stress environments. Private sector companies play an important role in supplying hybrid seeds to farmers. The Government of Chhattisgarh also initiated various special programs to increase the production and productivity of maize in the state. The agriculture department is involved in the rapid increase in the production and popularity of maize crop among farmers in Chhattisgarh. Farmers use maize in the production of chemical pesticides like weeds and chemical weeds, due to which the production is abundant but the fields of those farmers are becoming vastly barren. Which farmers are still unable to understand, so it is necessary to improve these activities of farming.

*****

REDS 059

Title: Organic Farming: Future Perspective in Agriculture

Vivek Bhagat* and Arti Keshav
Department of Agriculture, Mata Gujri College, Fatehgarh Sahib, Punjab, India
Email: *vivek25bb@gmail.com*

ABSTRACT

After the green revolution farmers are continuously using synthetic fertilizers, herbicides, pesticides, etc. these inputs are helpful to increase crop production per unit area. But these inputs cause unsustainability, poor soil health, much weed, pest, and disease infestation. Instead of these, it is responsible for affecting human health, natural resources and agriculture itself. To overcome these kinds of crises, organic farming is one of the better solutions which is helpful to maintain soil health, sustainability and other natural resources as well as provides protection to our ecology because organic farming strictly avoid the use of synthetic inputs. It is totally based on the organic inputs such as animal manure, crop residue and other farm inputs resulted in quality food provides to the consumer as well as the farmers get more profit through organic farming.

Keywords: Organic farming, Sustainability, Human health, Natural resources.

*****

REDS 070

Jaivic Fruit Culture: Need of the Day

V. K. Tripathi and D. R. Singh*
Department of Horticulture
*Vice-Chancellor,
C.S. Azad University of Agriculture & Technology, Kanpur-208 002
Email: drvktripathicsa@gmail.com

ABSTRACT

Jaivik Krishi is a holistic way of farming; which results in the production of high quality produce which is free from various harmful residue of insecticide, pesticide, etc. along with an important aim of conserving the natural resources, fertile soil, clean water and rich biodiversity in nature. In this system of cultivation, we avoid or largely exclude the use of synthetic fertilizers, pesticides, insecticide and livestock feed additives. It is mostly based on the system relies on crop rotations, crop residues, off-farm organic wastes, use of bio-enhancers along with biological and cultural pest-disease control measures with a view to sustain soil productivity and tilth, to supply optimum plant nutrients along with control of various insect-pests, diseases and weeds. All chemical inputs are replaced with organic inputs and biologically active formulations which are mostly available or formulated on the farm. Production of jaivik fruits is a task, not of simple nature. The existing various jaivik practices like homa farming, biodynamic farming, composting, mulching, green manuring, use of bioformulations and bioagents need to be properly undertaken so as to form a set of package for individual fruit culture to harness highest quality and earn the premium prize. Organic certification is yet another important aspect of jaivik fruit production.

*****

REDS 074

Effect of different sucrose level, initial pH, light intensity and growing media on *invitro* shoot multiplication of fig var. Poona fig

Sen, D.K.[1] and Kuldeep sevak[2]
[1] Senior research fellow, [2] Technical officer, Regional research Station, Bhachau- Kutch, S. D.Agri University

ABSTRACT

The present investigation on "Micropropagation in fig var. Poona Fig" was carried out at the Department of Plant Molecular Biology and Biotechnology, ASPEE College of Horticulture and Forestry, Navsari Agricultural University, Navsari, Gujarat, during the year 2013-2015. It is reported that Sucrose at 30 gm/l in medium was found to be optimum for getting maximum number of multiplication shoots (4.56 shoots/ culture) and average length of shoots (3.13 cm). Among the different level of pH tested, pH 5.8 recorded maximum number of shoots (4.20 shoots/ culture) and maximum length of shoot (3.60 cm). Light intensity at 3000 lux was found to be most suitable for maximum growth and regeneration of shoots. Coco peat potting mixture was found better for maximum survival of plantlets (90.25 %) of *in vitro* raised fig plantlets.

*****

REDS 075

Economic upliftment of low income farmer through exotic vegetable production

Jujhar Singh[1] and Divya Jyoti Thakur[2]
[1]Assistant Professor in Department of Agriculture, Mata Gujri College, Fatehgarh Sahib, Punjab.
Email: jujhar220@yahoo.com
[2]Assistant Professor in Department of Business Management and Commerce, IEC University, Baddi Solan H.P.
Email: divya.minhas1331@gmail.com

ABSTRACT

Farming is the main occupation of people of Punjab. So the economy depends on farming. Wheat and rice cycle are main points of consideration whose productivity decreases year by year due to uncertainty of weather conditions. Due to fluctuation of humidity and temperature, the crop quality and quantity both have affected. This repeated cycle needs more pesticides and fertilizers which lead to low profitability every year. These fertilizers and pesticides leech to groundwater causes problems. Thus one of the alternatives to solve the problem is to grow exotic vegetables. As these have high prices and less insect and pest damage due to new areas of cultivation. Due to the repeat cultivation of rice and wheat, causing many problems related to soil, water, and also air. Due to the heavy use of fertilizers for the cultivation of rice and wheat, soil health deteriorates every year and the amount of fertilizes used for crop production increase every year. The use of pesticide and insecticides are also increased every year because insects and pests develop resistance to particular insecticide or pesticide or its particular amount dose. These insecticide and pesticide are very costly. Due to high costs, the cost of cultivation increase every year but the rate of produce is not increase with increased rate of crop production. These insecticide, herbicides, pesticides or even fertilizes used for crop production leached in the soil and in many areas of Punjab causes a serious problem. Water requirement for the production of rice is very high. Due to the large area under rice cultivation in Punjab, the large amount of water exhausted from the underground water. Every year high amount of water used for the rice production causes lowering the water table in maximum regions of Punjab. Out of 138 zones, 113 come under dark zones which mean water table goes down to dangerous levels. After production of these crops the common practice is to burn the residue of these crops (straw). Due to which large amount of harmful gases produced in the air causes air pollution. Even few days back the SMOG produced in Delhi and nearby region is headache to government. The population was strongly affected by this type of pollution. Even government has taken appropriate step to cope up with this problem but it cannot be eliminated completely because the other ways to clear these residues and preparing land to cultivation increases cost of cultivation. These above mentioned reasons forced us to change these methods of farming and cropping pattern used. In our college, we grow broccoli, pak-choi, lettuces, iceberg lettuces, red cabbage and sweet corn in organic way which give high returns and need fewer amounts of water and fertilizer as compared to wheat and rice. These crops are highly demanded these days. Many multinational companies like dominos, mac donalds, subways and some local fast food shops require these vegetables for preparation of burger, pizza, many kinds of freshly prepared salads, sandwiches etc. These vegetables have high nutritional value and very useful for good health. After harvesting these vegetable no residues are left behind and fields for next season crop are prepared easily. These crops are newly introduced in Punjab due to this very less pest and insect's attacks are observed in these crops which indicate that these crops need fewer amounts of insecticides and pesticides spray. The organic production of these vegetables fetches high income. For organic production, Neematicides are used for insects and pest control and vermin-compost are used as fertilizers which decrease the cost of production and increase the economic returns. At last we conclude that the production of exotic vegetable not only increase farmers income but also helps to save the environment from the depletion of soil health, lowering water table and air pollution.

Keywords: Cultivation, Exotic Crop-Production, Nutrition

*****

Theme:IV

Climate Smart Agriculture, Climate Resilient Agriculture, Apiculture, Sericulture, Bamboo trade & Bankable Forestry

REDS 010

Drying Characteristics of Mango Stone

R. D. Bisen[1], S. P. Divekar[2], N. J. Thakor[3] and S. P. Sonawane[4]
Email: vickyd.bisen@gmail.com

ABSTRACT

Mango (*Mangifera indica* L.*)* fruit belongs to the family of *Anacardiaceae* and it is grown in many parts of the world, particularly in tropical countries. Over 1000 mango varieties are available worldwide. Presently, mango is cultivated on an area of approximately 3.7 million ha worldwide. India produced 18431.33 MT of mangos from 2515.97 thousand ha area. India is the largest producer of mango in the world, contributing to nearly 46% of the total world production. Mango stone is a single oblong fibrous seed. Mango seed consists of a hard seed coat enclosing the kernel. Inside the seed coat 1-2 mm thick is a thin lining covering a single embryo, 4-7 cm long and 3-4 cm wide. The seed represents about 10 to 25 percent of the whole fruit weight. The kernel inside the seed represents about 45 to 75 percent of the seed and about 20 percent of the whole fruit. Mango kernel is a soft and nutritive element of mango stone. Mango kernel is good source of polyphenols, phytosterols, campesterol, sitosterol and tocopherols as well as it may be used as an ingredient for functional food. The fat of the kernel is used in cosmetic materials. The kernel has useful protein and antioxidants properties. Depending on the variety, mango kernel contains 6.0 % protein, 11 % fat, 77 % carbohydrate, 2.0 % crude fiber and 2.0% ash, based on the dry weight basis. In the present study, the average initial moisture content of Alphonso, Kesar and Local Mango stones was 41.66 % (w.b.), 33.33 % (w.b.) and 27.27 % (w.b.). The high moisture content in the stone affects its self-life. To increase its self-life a drying study was undertaken in a mechanical tray dryer. The mango stones are dried at different temperatures of 50 ºC, 60 ºC and 70 ºC. At 50 ºC drying air temperature, the time required for drying of Alphonso, Kesar and Locally available mango stones was 67, 65 and 69 hours respectively. At 60 ºC drying air temperature, it was 58, 60 and 61 hours respectively and at 70 ºC temperature of drying air the time required for drying was 50, 55 and 52 hours for Alphonso, Kesar and Local mango stone respectively.

Keywords: Mango Stone, Mango Kernel, Initial Moisture content, Drying, tray dryer.

****

REDS 042

Impact of climate change on pollinators

Sachin Kumar[1], Joni Kumar[2] and Sushil Kumar[3]
[1]Department of Entomology, Chandra Shekhar Azad University of Agriculture & Technology, Kanpur U.P.
[2]Assistant Professor, Department of Entomology, CCR (PG) College Muzaffarnagar, U.P.
[3]Department of Entomology, G.B. Pant University of Agriculture & Technology, Pantnagar-263145 (U.K.)
Email: sk21417@gmail.com

ABSTRACT

Some of the agricultural crops, most fruits and vegetables production is dependent upon insect pollinators. The most likely effect on pollinators will result from climate change. If the increase of the average global temperature by 1.5-2.5 ° C, then approximately 20-30 percent of known species will be threatened this may lead to extinction. Honey bees and other pollinators are an essential part of agroecosytem and decide the seed set and yield and quality of various crops through pollination. Pollinators are considered keystone species in many situations not only because they support humanity via increased production and food security but also maintain diversity in an ecosystem. Globally, the European honey bee (*Apis mellifera*) being by far the most important species, but climate change may risk of extinction, although it is highly adaptive. Climate change is altering the phenological response of plants and pollinators may find it difficult to alter their foraging activities. Plant responses to global warming, irregular rains and other environmental factors may include altered flowering, nectar and pollen production, which could modify floral resource availability, distribution, visitation quality, reproductive output of pollinators. Similarly, pollinator responses, such as altered foraging activity, body size and life span, could affect patterns of pollen flow and pollination success. The decline in the production of vegetables in India is also attributed to a decline in pollinators. Hence, to ensure high production and food security for all, strategies and policies for conservation, restoration and augmentation of honey bees and other pollinators must be developed and implemented, the real of climate change as latter cannot be slowed down but only impacts can be mitigated.

*****

REDS 049

Monitoring and evaluation of climate resilience for agricultural development- A review of currently available tools

Badal Verma*, Amit Kumar Jha and K.K. Agrawal
Department of Agronomy, College of Agriculture, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur(MP) 482004
Email: Badalv82282@gmail.com

ABSTRACT

Building climate resilience, defined as the ability to anticipate, absorb, accommodate, or recover from climate change in a timely and efficient manner, is becoming a major priority of development across multiple sectors. However, there is still no consensus on how resilience should be assessed despite the release of numerous theoretical papers on the topic. Various measurement frameworks and recommendations have emerged, but their applicability is yet to be critically assessed. Using a comprehensive review and a systematic selection approach, we review resilience assessment tools developed for the context of climate change and agricultural development, and their linkages to theoretical frameworks, with a particular focus on the choice of indicators and the scale and methods of measurement. Fifteen tools originating from diverse organizations were selected and evaluated according to a measurement framework. Our study finds that, while some of the tools remain embedded in classical approaches, by simply adding a resilience lens to previous tools and by recycling indicators, others demonstrate a true attempt to rethink in order to account for resilience dimensions. We conclude that for the use of resilience assessment tools, a major challenge is to ensure that simple and operational tools can address complexity. Full baseline should comprise both quantitative and qualitative data collection, and include more systemic indicators as well as indicators of stability and shocks. Changes should be tracked with regular monitoring and evaluation using simple tools based on key variables that capture short-term adaptive processes and changes in states, at the appropriate system level.

*****

REDS 062

Conservation Agriculture for Climate Change Mitigation: a review

Sunil Kumar, R.A. Yadav, Ram Pyare and M.Z. Siddqui
Department of Agronomy, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, U.P, India- 208002
Email: **sunilkumar181529@gmail.com**

ABSTRACT

Feeding an ever-growing world population without exhausting natural resources is one of the major challenges facing modern agriculture. This challenge is further compounded by climate change related threats. Numerous alternatives to conventional farming are proposed and implemented around the world with mixed results, Conservation Agriculture being one of them. Conservation agriculture is an approach to farming that seeks to increase food security, alleviate poverty, conserve biodiversity and safeguard ecosystem services. Conservation agriculture practices can also contribute to making agricultural systems more resilient to climate change. In many cases, conservation agriculture has been proven to reduce farming systems' greenhouse gas emissions and enhance their role as carbon sinks. The three pillars of conservation agriculture are continuous minimum mechanical soil disturbance by reduce tillage, permanent organic soil cover, diversification of crop species grown in sequence. In most cases, soil organic carbon increased with conservation agriculture, while in others it remained the same. However, it was demonstrated that combining zero tillage with the removal or burning of cover crops was an unsustainable approach that did not improve yields nor increase soil carbon. It is vital to combine all three 'pillars' of conservation agriculture to make conservation agriculture systems sustainable. Conservation agriculture also needs to make economic sense for the farmer. Conservation agriculture is a base for sustainable agricultural production intensification.

******

REDS 066

Role of entomopathogens in Integrated Pest Management

Radha Koranga
Department of Entomology, College of Agriculture, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, India- 263145
Gmail: radhakoranga33@gmail.com

ABSTRACT

Entomopathogens are the microorganisms which are used to control various insect pests of cereals, fruits and vegetable crops. They include viruses, bacteria, nematode, fungi and protozoa. The control of insect pests using these agents is known as microbial control. Several orders including Lepidoptera, Coleoptera, Diptera, Hemiptera and Acarina are found to be affected by these entomopathogens. Pest problems are the main problem of agriculture cropping system from decades. Various synthetic insecticides were developed and used in response to the insect attack since the insecticidal property of DDT was discovered. Insecticides were applied in the field by the growers as a scheduled spray without even the onset of pest. These prophylactic sprays of chemicals raises many environmental hazards, health hazards to humans, killing of natural enemies, pollinators and other beneficial arthropods. The problem of secondary pest outbreak also spurred as a result of an insecticidal application that is applied to kill target pest, has killed the natural enemies of pest also. Lack of diversity in the field and continuous application of same insecticides with high doses has led the insects to develop resistance against the insecticides. In spite of all these, growers continue to apply the chemical spray in the field which increases nothing but the management costs. These are the problems associated with the chemically sprayed agroecosytem. Entomoptahogens have played a significant role in encountering these problems and there is more scope of entomopathogens in the near future. Seeing the negative impacts of insecticides various firms, companies have developed entomopathogenic formulations that can be applied in the field.

*****

REDS 067

Influence of poultry manure on growth and yield of *Kharif* onion (*Allium cepa* L.)

Jitendra Singh Gurjar[1], S.S. Singh[2] and Kamlesh Ahirwar[3]
1 & 2 M.G.C.G.V., Faculty of Agriculture, Chitrakoot, Satna (M.P.)
3. Scientist, Krishi Vigyan Kendra, Nowgong, Chhatarpur (M.P.)
E-mail: Jitugurjar1184@gmail.com

ABSTRACT

Onion [*Allium cepa* L.] commonly known as 'PYAJ' a member of the Amaryllidaceae family is one of the major biennial herb vegetable –cum- condiment, spice plants cultivated in India. The bulbous are of immense medicinal and culinary importance world over. The present investigation entitled "Studies on the effect of planting methods, organic nutrient sources and bio-fertilizers on *kharif* onion (*Allium cepa* L.) in Gwalior area of Madhya Pradesh" was conducted in the field of farmer's field near, College of Agricultural, Gwalior during *kharif* season of the year 2013-14 and 2014-15. The experiment consisted of thirty six treatment combinations laid in split-split-plot design replicated three times. The main plot treatments consisted three different planting methods viz., flat, furrow and ridge. The sub plot treatments were six organic nutrient sources viz., FYM 12.5 t/ha, FYM 25.0 t/ha, VC 2.1 t/ha, VC 4.2 t/ha, PM 2.1 t/ha and PM 4.2 t/ha. The sub-sub plot treatments were two bio-fertilizers viz., PSB 5 kg/ha and Azospirillum 5 kg/ha. The size of net plot was 1.5 m × 1.5 m. The 45 days old seedlings of onion variety Agrifound Dark Red were transplanted between 18-20 August in both the years keeping 30 cm × 15 cm planting geometry. The application of poultry manure @ 4.2 t/ha resulted in significantly the highest values of these growth characters. Application of poultry manure @ 4.2 t/ha resulted in significantly highest bulb diameter (4.647 cm), bulb scale (5.52), bulb weight (68.58 g), bulb yield (142.26 q/ha) and lowest bolting (4.51%) as compared to rest of the treatments of organics.

******

REDS 072

Evaluation of promising genotypes against shoot borer and top borer in sugarcane

Neelam Kureel and Viresh Singh
Scientific officer, Entomology division, Sugarcane research center, Muzaffarnagar,251001 U.P. India
Joint Director, Sugarcane research Center, Muzaffarnagar, 251001 U.P. India
Email: Neel10972@gmail.com

ABSTRACT

An experiment was conducted During two consecutive years 2016-2017 and 2017-18 (spring planting), at the farm of sugarcane research center, Muzaffarnagar, with a view to find out the response of promising sugarcane varieties towards the incidence of shoot borer and top borer. The experiment were conducted in R.B.d., in two replication with seventeen varieties, out of which five varieties (CoS767,COSe 95422, Co 0238, CoJ 64 and CoPant 97222) were taken as standard and rest of twelve varieties were promising. The incidence of shoot borer (*Chilo infuscatellus*, Snellen) revealed less than 11%, which were minimum among them test varieties. The shoot borer percent incidence was found maximum in CoPant 97222 (10.85%), during 2016-17and 2017-18. It was observed less than 10% in fifteen varieties and rest of varieties were marked as 10% incidence of shoot borer (CoLk1 14201 as well as CoPant 97222, during both year, during hot weather top borer (*Sciropophaga nivella*) revealed less than 10%, which were maximum in CoSe 14456 (8.23%), during 2016-17and 2017-18. So on the basis of percent incidence of shoot borer and top borer during pre-monsoon, all the varieties were marked as less susceptible. At last, it was concluded that the shoot borer as well as top borer scouting played an important role in the screening of promising sugarcane varieties.

Keywords: Shoot borer, top borer, promising, sugarcane and scouting

*****

Theme:V

Water reuse, Wastewater Management, Waste recycling for humankind

REDS 035

Agriculture Drought Modelling in South-Saurashtra Agro-climatic Zone of Gujarat

J. G. Hirapara*[1], P. K. Singh[2], Kuldeep Sevak[3]
[1,3] Regional Research Station, Bhachau, Kutch, S.D.A.U, Gujarat., 370140,
Email: Jaydeephirapara95@gmail.com
[2]Department of Soil and Water Engineering, College of Technology and Engineering, MPUAT, Udaipur, 313001,

ABSTRACT

Agricultural drought occurs when soil moisture and rainfall are inadequate during crop growth season to support a healthy crop. The present study had been carried out to characterize agricultural drought in Dry Sub-humid South-Saurashtra Agro-climatic Zone of Gujarat with the help of water deficits, computing different water balance components, the study of drought duration, drought severity and determining suitable frequency distributions for extreme water deficit using 21 years (1997-2017) standard meteorological data. The results revealed that average annual ETo (Reference Evapotranspiration) value in this zone was 1667.84 mm. The highest value of ETo (50.61mm) was observed during 21th (May 21-27) SMW. Drought years were identified and their intensities were assessed by the help of departure of annual aridity indices. During the study period, the Dry Sub-humid South-Saurashtra Agro-climatic zone experienced 4 moderate (19 %), 5 large (24%), 2 severe (9.5 %) and 1 Disastrous (4.76 %) drought years within a period of 21 years. Drought identification study indicated that there was a frequency of one drought year in every two years period. Frequency analysis of weekly maximum water deficit during crop growing season indicated that Log Pearson type –III was the best fit probability distribution for Dry Sub-humid South-Saurashtra Agro-climatic Zone of Gujarat.

*****

REDS 045

Waste water recycling and management for the beneficial of environment besides humankind

Akash Kumar[2], Tanu Shiri[1], S.K. Singh[3], Sourabh Jain[4], Govind Singh[2], Sharun Kumar Bhenwa, and Monika Rajput
[1]Department of Genetics and Plant Breeding, CCS University, Meerut-250004, UP
[2]Department of Bioscience, Vinayak Vidyapeeth Modipuram, Meerut-250110, UP
[3]Department of Genetics and Plant Breeding, CCR (PG)College, Muzaffarnagar-251001, UP
[4]Department of Biosciences, Shri Ram College, Muzaffarnagar-251001, UP
Email: akashkumar8191asr@gmail.com

ABSTRACT

Water is the most valuable thing in the world, which is one of the valuable resources, but now this water is under threat control due to climate change, population growth, volcanoes, eruptions and waste. One of the most surprising attempts to overcome this danger is. Reuse of water. Water can be reused by reuse of water and this water can be reclaimed as water. This re-use water can be used to replenish the agricultural landscape irrigation by using this water can be prevented from polluting and reducing water. Use of clean water to meet domestic, agricultural and industrial and recreational, Greater urban demand. Clear water is continuously declining due to an increase in dry frequency as a result of irregular weather. toilet plating groundwater basin. Considering water concerns, in 2007, the organization American Society of Agronomy (ASA)is closely connected with the Crop Science Society of America (CSSA) and the Soil Science Society of America (SSSA) came up with a collection of various studies and researches which focused on various issues related to its use. The future prospects of recycling and management of wastewater are thus promising, which pose a short-term and long-term threat to the health of mankind. Water is very important for plants, human life and animals. Reuse of waste water is very important to save forests, human life, or water. Due to reuse of water, the amount of physical water can be prevented from decreasing. And human life can be saved. That is why it is very important to reuse water.

Keywords: Population, Agricultural, ASA, CSSA and SSSA.

*****

REDS 063

"Study of genetic variability, heritability, correlation and path coefficient analysis in Indian mustard (*Brassica juncea* (L) Czern & Coss)"

Ajeet Pratap Singh
Department of Genetics and Plant Breeding S.D.J.P.G College Chandeshwar,
Azamgarh, Uttar Pradesh, India

ABSTRACT

An experiment entitled, "Study of genetic variability, heritability, correlation and path coefficient analysis in Indian mustard (Brassica juncea (L) Czern & Coss)" As the material for this study ten (10) Indian mustard varieties/cultures were taken. The pH of the experimental plot ranged from 8 to 8.5. The crop was grown in a Randomized Blok Design using four replications. The data were collected on randomly selected 5 plants for days to flowering, days to maturity, plant height number of primary branches, number of secondary branches, length of the main raceme, number of siliquae on the main raceme, length of siliqua, number of seeds/siliqua, 1000-grain biological yield and grain yield/plant. Significant differences were observed among the cultures regarding all the characters. There were two cultures namely Kranti and RH0118 which produced significantly higher plant was significantly better in Narendra rai (N.D.R-8501). Phenotypic and genotypic coefficient variation was highest for grain yield/ plant and lowest for days to flowering. Heritability in a broadsense was the highest for biological yield followed by grain yield per plant. 1000-grain weight and number of secondary branches, days to flowering and length of the main raceme showed low heritability Genetic advance (in % of mean) was maximum for grain yield/plant and minimum for days to flowering. From the heritability and the genetic per plant and 1000-grain weight were found suitable characters for selection. The correlation coefficient of grain yield/plant were highly significant positive with plant height and length of the main raceme, days to maturity, number of primary branches, number and length of main raceme, days to maturity, number of primary branches, number of secondary branches, length of siliqua, number of seeds/siliqua and 1000 grain weight showed positive correlation but the correlation coefficient were noon-significant and days to flowering showed a negative correlation with grain yield/plant but the correlation coefficient were noon-significant. Path coefficient analysis revealed that biological yield, number of seeds/siliqua and 1000-grain weight are the most Important characters for selection criteria to improve these crops.

*****

REDS 068

A Review on- Effect of Antitranspirants on Plants

Arti Keshav[1*] and.Vivek Bhagat[2]
Department of Agriculture, Mata Gujri College, Fatehgarh Sahib, Punjab, India
Email: artikeshu5@gmail.com,

ABSTRACT

Water is the most common limiting factor for growth and production. In dryland areas, agriculture totally depends upon rainfall and growth of plants not properly done. Mostly, water loss through transpiration. Therefore, to reduce the water loss and preserve the quality of crop the major technique is antitranspirants. These are the integral measures in which chemicals are used to reduce the water loss from leaves of plants. These also reduced the impact of drought which is created by the abiotic conditions such as salinity, high temperature and reduce soil moisture. It also improves the water use efficiency (WUE). Under saline conditions use of antitranspirants is an important practice to improve the yield in stress soil. Reflecting type of antitranspirants used in the agriculture under water scarcity areas. Film type antitranspirants is mechanical barrier which is helpful for reduce the loss of water vapour through stomata. Therefore, antitranspirants are effective for their many ideal properties. But due to some lack of knowledge these are not used by farmers. These are beneficial for plants if we use it with adoption of certain precautions.

Keywords: Antitranspirants, WUE, Saline conditions, Stomata, Yield.

*****

Theme:VI

Soil Water Conservation; Role of Soil Water Interaction in Agriculture; Integrated Nutrient Management and Natural Resource Management

REDS 011

Ideotype breeding for changing climate

Abhishek Singh[1] and S.K. Singh[2]
[1]Assistant Professor, [2]Associate Professor
Department of Agriculture Botany
C.C.R.(PG) College Muzaffarnagar – 251001, UP, India
[*]Corresponding Author: abhishek6886@gmail.com

ABSTRACT

An ideotype may be described as a conceptual model plant which has all such characteristics that are ideal for the given environment, whereas crop ideotype is a plant model, which is expected to yield a greater quantity or quality of grain and other useful product when developing as cultivar (Donald, 1968). The ideotype approach has been used in breeding programs at the International Rice Research Institute (IRRI) and China to improve rice yield potential. First generation new plant type (NPT) lines developed from tropical *japonica* at IRRI did not yield well because of limited biomass production and poor grain filling. Progress has been made in second generation NPT lines developed by crossing elite *indica* with improved tropical *japonica*. Second generation NPT lines out yielded the first generation NPT lines and *indica* check variety. The success of China's super hybrid rice was partially the result of assembling good component of IRRI's NPT design in addition to use of intersubspecific heterosis (Peng *et. al.,* 2008). Engineering the C_4 photosynthetic machinery into rice is regarded as a major strategy to dramatically increase yields because of the high photosynthetic energy conversion efficiency of C_4 photosynthesis (Zhu *et. al.,* 2010). Drought and high temperature are considered as key stress factors with a high potential impact on crop yield that are associated with global warming, focussing on their effects on wheat. Modelling techniques are described which can help to quantify future threats to wheat under climate change and simple component trait that are amenable to genetic analysis are identified (Semenov *et. al.,* 2009). Thus by using ideotype breeding we can create such varieties that can grow well in changing climate.

Keywords*:* Ideotype, indica, japonica, NPT

*****

REDS 017

Assessment of Household Air Quality and Its Impact on Women's Health in Rural Areas of Chambal Region of Madhya Pradesh

Prachi Dixit[1*], Kajal S. Rathore and Shivom Singh[1]
[1]Department of Environmental Science, School of Sciences, ITM University, Gwalior, Madhya Pradesh, India
Department of Biotechnology, Govt. Kamla Raja Girls Post Graduate College, Gwalior, Madhya Pradesh, India
Email: Shivomsingh@itmuniversity.ac.in

ABSTRACT

In rural areas of India, the most important indoor air pollutants are combustion products of solid biomass fuels used by the rural population for cooking. The rural population relies on biomass in the form of wood, dung cake and crop residues for domestic energy. These materials are typically burnt in the traditional cooking stove or chulha. The aim of the study was the quantification of indoor air pollutants concentration by monitoring parameters (SO_2, NO_2 and SPM) were generated from different types of biomass burning for cooking in rural households. Development of specific questionnaire for collecting information through door to door participatory survey. Indoor air sampling was done seasonally in the selected households in four selected villages of Chambal region of Madhya Pradesh by using handy air sampler and gaseous air pollutants sampler followed by standard determination methods. The degree of gaseous pollution level in winter season, concentration were recorded somewhat higher level during monitoring. Average concentration of SO_2, NO_2 and SPM were observed 74.05 $\mu g/m^3$, 78.06 $\mu g/m^3$ and 1125 $\mu g/m^3$ respectively in winter season and 70.17 $\mu g/m^3$, 76.76 $\mu g/m^3$ and 1082 $\mu g/m^3$ respectively in summer season. Results indicated that biomass fuel represents a main energy source for cooking, the wide range of energy sources listed by households for cooking and heating indicates that the probability of household air pollution level in these dwellings likely to be high. It can be concluded based on survey and self reported estimation that there is significant health risk such as bronchitis, TB, asthma, pneumonia, chest pain, lung cancer, dizziness, etc. diseases/symptoms are associated with increased concentration of gaseous pollutants and suspended particulates.

Keywords: Indoor air quality, gaseous pollutants, health risk, chulha, bio-fuels.

*****

REDS 006

Biodiversity conservation and sustainable future

Ram Prakash and Madan Gopal
Email:ramprakashpal1996@gmail.com

ABSTRACT

Biodiversity conservation in future- The tools implement algorithms designed to identify conservation area networks for the representation and persistence of biodiversity features. Budgetary, ethical, and other sociopolitical constraints dictate that the prioritized sites represent biodiversity with minimum impact on human interests. Planning tools are typically also used to satisfy these criteria Furthermore, contemporary food usage is inefficient with one third wasted and a further third used inefficiently to feed livestock and that conventional intensification causes often overlooked environmental costs. A major argument for wildlife friendly farming and agroecological intensification is that crucial ecosystem services are provided by "planned" and "associated" biodiversity, whereas the land sparing concept implies that biodiversity in agroecosystems is functionally Sustainable in future, however, there is a range of obstacles facing the rapid development of these technologies: they are trying to establish themselves in an outdated institutional, market and industrial context. Much of the discourse around urban and global futures tend to be dystopian with visions of environmental and societal collapse, and business as usual forecasts that challenge planning and policymaking for more optimistic urban futures.

*****

REDS 021

Performance of soil conditioners and different levels of fertilizer yield of (*Zea mays* L.)

[1]S.K. Chaubey, Piush Singh, P.C. Singh, Ajit Singh, V.P. Dwivedi, [2]Arun Kumar and [3]Ram Pyare
Department of Agronomy, Shri Durga Ji Post Graduate College, Chandeshwar, Azamgarh (UP).
[1]Department of Agronomy, National P.G. College, Barhalganj, Gorakhpur (UP).
[2]Director Planning, BAU, Sobour, Bhagalpur (Bihar)
[3]Department of Agronomy, CSAUA&T, Kanpur-2 (UP), India.

ABSTRACT

A field experiment was conducted during *Kharif* season of 2003 and 2004 at the agricultural research farm of Shri Durga Ji Post Graduate College Chandeshwar, Azamgarh-276128(UP) with a view to find out the suitable soil conditoners and levels of fertilizer on maize. Results revealed that the application of FYM@ 5t/ha proved to be superior over gypsum as the productivity (35.53, 36.49 q/ha) was higher than gypsum (32.51, 33.02 q/ha and control (31.21, 31.91 q/ha) respective year respectively. The highest productivity of maize was obtained with an application of 125% RDF followed by 100% RDF 36.40, 36.88 q/ha, and 34.87, 34.98 q/ha maize production, respectively.

Keywords: Soil conditioners, fertilizer doses, maize crop.

*****

REDS 022

Effect of varieties and different level of phosphorus on yield, economics and quality of pea (*Pisum sativum* L.)

Beerbhadra Tripathi, S.K. Chaubey, [1]Ram Pyare, [2]Arun Kumar, [3]D.P. Dwivedi
Department of Agronomy, National, P.G. College, Barahalganj, Gorakhpur (UP)
*Department of Agronomy, CSAUA&T, Kanpur-2(UP).
[2]Director Planning, Bihar Agricultural University, Sabour, Bhagalpur (Bihar).
[3]Ex-Principle, S.D.J. P.G. College, Chandeshwar, Azamgarh (UP).

ABSTRACT

The present study was conducted during the *Rabi* season of 2007-08 and 2008-09 at Agricultural Farm of Shri Durga Ji Post Graduate College, Chandeshwar, Azamgarh (UP), India with the objectives to find out suitable variety and a dose of phosphorus to improve the production of pea. The treatments consisted of four varieties (Malviya-2, Aparna, Sapana and Rachana) and dose of Phosphorus (0, 20, 40, 60 and 80 kg/ha) was laid out in Randomized Block Design and replicated three times. The results observed that the Sapana variety gave significantly more produced grain yield over rest varieties in average of two years study. The application of phosphorus @80 kg/ha produced higher gain yield, which is at par with the application of phosphorus @ 60 kg/ha. Therefore, applied Sapana variety along with 100 kg/ha phosphorus proved to be grain yield on the mean basis of two year study, respectively.

*****

REDS 023

Effect of Weed management on productivity and economics of irrigated linseed (*Linum usitatissimum* L.)

Dhananjai Singh, Pradeep Kumar, V.K. Verma and Ram Pyare
Department of Agronomy
C.S. Azad University of Agriculture & Technology, Kanpur
Email: dhananjai.csa@gmail.com

ABSTRACT

A field experiment was conducted during *Rabi* 2018-19 at Oilseed Research Farm, Chandra Shekhar Azad University of Agriculture & Technology, Kanpur to study the effect of herbicides on weed density, weed biomass, seed yield and economics of linseed. The treatments comprised individual application of oxyflurofen @ 125 g ha^{-1}, oxadiargyl @ 80 g ha^{-1}, imazethapyr 10 SL @ 75 g^{-1}, and metsulfuron methyl @ 4 g ha^{-1} and mixture of metribuzin @ 25 g ha^{-1} + oxyflurofen @ 125 g ha^{-1}, pendimethalin 30 EC @ 1.0 kg ha^{-1} + metsulfuron methyl @ 4 g ha^{-1}, clodinofop @ 60 g ha^{-1} + metsulfuron methyl @ 4 g ha^{-1}, hand weeding twice and weedy check. *Cynodan dactylon*, *Cyperus rotundus*, *Chenopodium album* and *Anagalis arvensis* infected the experimental field dominantly. The highest weed control efficiency (64.95%) and lowest weed completion index (11.80%) where observed with post emergence application of clodinofop @ 60 g ha^{-1} + metsulfuson methyl @4 g ha^{-1}. Findings revealed that weedy check reduced the seed yield of linseed by 51.22 per cent over hand weeding twice at 20 and 45 days after sowing (DAS). Results also exhibited that post emergence application of clodinofop @ 60 g ha^{-1} + metsulfuron methyl @ 4 g ha^{-1} registered significantly at par seed yield of 1800 kg ha^{-1}, net monetary return of Rs. 51936 ha^{-1} and benefit cost ratio of 2.78 to the treatment hand weeding twice at 20 and 25 DAS could be an alternative for weed management in irrigated linseed, which recorded seed yield of 1847.00 kg ha^{-1}, net return of Rs. 49923.00 ha^{-1} and benefit cost ratio of 2.47.

*****

REDS 028

Selection parameters and genetic variability analysis in Rice (*Oryza Sativa* L.)

Sonu Kumar[1,2] and M.P. Chauhan[2]
[1]Narendra Deva University of Agriculture and Technology, Narendra Nagar, Kumarganj, Ayodhaya-224229 (U.P.) India
[2]ICAR-Indian Institute of Maize Research, Unit office, New Delhi-110012
Email: nagarsonu72@gmail.com

ABSTRACT

Genetic variability studies provide basic information regarding the genetic properties of the population based on which breeding methods are formulated for further improvement of the crop. The estimates of heritability, coefficients of variability and genetic advance computed for 12 yield contributing traits. Genetic parameters for yield and its correspondent characters in rice were estimated from a trial with four CMS lines, fifteen testers, three checks and sixty crosses evaluated for twelve characters related to yield. In general, the magnitude of phenotypic coefficient of variation (PCV) was higher than the corresponding genotypic coefficient of variation (GCV) for all the traits. High estimates of heritability and genetic advance in broad sense and narrow sense were recorded for all characters *viz.*, spikelet fertility, days to 50% flowering, days to maturity, spikelets per panicle, harvest-index, L/B ratio, 1000-grain weight, plant height, grain yield per plant, biological yield per plant, panicle bearing tillers per plant, panicle length. High heritability coupled with high genetic advance in percent of mean was observed for all the traits.

Key Words: Heritability, variability, genetic advance in rice.

*****

REDS 029

Integrated mabc for foliar fungal disease resistance in groundnut (*Arachis hypogaea* L.)

R. Prabhu[1]*, N. Manivannan[1], A. Mothilal[2] and S.M. Ibrahim[3]
[1]Department of Oilseeds, TNAU, Coimbatore - 641 003, Tamil Nadu, India.
[2]Regional Research Station, TNAU, Vridhachalam - 606 001, Tamil Nadu, India.
[3]Agricultural College and Research Institute, TNAU, Madurai - 625 104, Tamil Nadu, India.
**Corresponding author:* drrprabhuphd@gmail.com

ABSTRACT

Groundnut (*Arachis hypogaea* L.) is an important food and cash crop for resource-poor farmers in Asia and Africa. Yield of groundnut is constrained due to two foliar fungal diseases namely late leaf spot and rust, which are capable of causing considerable yield loss in most areas of the world. The groundnut farming demands a quick response from breeders to develop new cultivars, a process that can be aided by the application of molecular markers. With this background, the present investigation was designed to develop foliar disease resistant lines with good yield potential through marker assisted backcross breeding in groundnut. Crosses were made between foliar disease susceptible genotype, TMV Gn 13 and foliar disease resistant genotype, GPBD 4. Totally, eight SSR markers linked to the late leaf spot and rust resistant QTL *viz.*, GM1009, GM1536, GM1573, GM2009, GM2079, GM2301, IPAHM103 and Seq8D09 were used to screen individuals to determine which plants to be used as male parents in the next cycle of backcrossing. Out of 889 background SSR markers screened, 179 markers (20.13%) were found polymorphic and utilized for progeny screening. Based on the screening data of background analysis, the average contribution of recurrent parent genome in BC_3F_2 generation was calculated as 93.81%. Seeds of positive pyramided line were multiplied and kept ready for sowing for further field screening for foliar diseases and agronomic evaluation.

Keywords: Groundnut, Marker assisted selection, Backcross breeding, Late leaf spot, Rust.

*****

REDS 030

Effect of sowing system and herbicide application on wheat (*Triticium aestivum* L)

[1]Pankaj Tripathi, [2]S.K. Chaubey and [3]V. P. Dwivedi
Associate Prof. State Institute of Agriculture Management Rahman Khera U.P. Lucknow
[1]Associate Prof. State Institute of Agriculture Management Rahman Khera U.P. Lucknow.
[2]Department of Agronomy National P.G. College Barhalganj, Gorakhpur, U.P.
[3]Department of Agronomy S.D.J.P.G College Chandeswar, Azamgarh, U.P. India.

ABSTRACT

An experiment was conducted during rabi season of 2012 and 2013 to study the effect of sowing system (broadcasting, Line sowing, criss-cross sowing and furrow irrigated raised bed system) and weed control practices(un.weeded, Weed free manually, Clodinafop.propargyl@60 g/ha and sulfosulfuron@25 g/ha) on wheat. The experiment was laid out in a complete randomized block design with 4 replications at Agronomy Research farm National P.G. College Barhalganj Gorakhpur, U.P. The growth and yield component if wheat were superior in weed free by manually but cost of cultivation was higher Clodinafop.propargyl@60 g/ha and criss-cross sowing produce higher yield, yield attributes and net profit was also higher than other.

Keywords- broadcasting, criss-cross sowing.

*****

REDS 031

Response of chick-pea (*Cicer arietinum* L) to phosphorus and bio-fertilizer on growth and yield

[1]V. P. Dwivedi, [2]Pankaj Tripathi and [3]S.K. Chaubey
Department of Agronomy, S.D.J.Post Graduate College Chandeshwar, Azamgarh 276128. UP.
[1]Department of Agronomy S.D.J.P.G College Chandeswar, Azamgarh, U.P. India.
[2]Dy. Director Agriculture Banda U.P.
[2] Department of Agronomy National P.G. College Barhalganj, Gorakhpur, U.P. India.

ABSTRACT

Phosphorus and bio-fertilizers are able to enhance the root development, growth, yields and quality of crop plants. In this contest to assess the response of chick-pea to phosphorus and bio-fertilizers on growth and yield. A field experiment was conducted at the Agronomy research farm of S.D.J.P.G College Chandeshwar, Azamgarh, U.P. during rabi season of two consecutive years of 2010-11 and 2011-12. The experiment was laid out in randomized block design having 16 treatments combinations consisted of 4 phosphorus level and 4 seed inoculation with bio-fertilizers(Un-inoculated, Rhizobium, P.S.B and V.A.M). The application of phosphorus at 75 k.g/ha and seed inoculation with P.S.B increased the growth, yield and yield parameters over other combination. Use of optimum fertilizer levels along with bio-fertilizer could able to enhance the performance of crop in terms of growth and yield.

Keywords- phosphorus, bio-fertilizers, *Rhizobium* P.S.B

*****

REDS 033

Efficacy of phosphorus and psb response in different varieties of summer moongbean and its residual effect on fodder sorghum in western Uttar Pradesh

[1]R. P. Singh*, [2]R. Chandra and [3]Bikramaditya
[1]Department of Agronomy, A.S. (P.G.) College, Lakhaoti (Bulandshahar) U.P.
[2]Department of Horticulture, A.S. (P.G.) College, Lakhaoti, Bulandshahar (Uttar Pradesh) INDIA
[3]Department of Agronomy, CSSS PG College, Machhara, Meerut, (Uttar Pradesh) INDIA
Email: rajpalkvkgodda@yahoo.com

ABSTRACT

An experiment is conducted during two consecutive year 2010 and 2011 at Agriculture research Farm, Amar Singh (PG) College, Lakhaoti, Bulandshahr, Uttar Pradesh. The soil of the experimental site was sandy loam with pH (8.10) and EC (0.36 dSm-1) of soil water suspension. Low in organic carbon 3.9 g kg-1.soil and status of soil in available nitrogen, phosphorus and potassium was medium. The experiment was designed in factorial RBD (Random Block Design) keeping three treatments of bold seeded moongbean varieties (Pusa Vishal, Pant Mung-5 and Pusa 9531) in main plots and six treatment (T1 0 kg P2O5 ha-1, T2 0 kg P2O5 ha-1 + 25 kg PSB ha-1, T3 25 kg P2O5 ha-1 T4 25kg P2O5 + 25 kg PSB ha-1, T5 50 kg P2O5 ha-1 and T6 50kg P2O5 ha-1 + 25 kg PSB ha-1) of phosphorus and bio-fertilizer in sub-plots with four replication. The total number of treatment was 18 and number of plots was 72. Results revealed that the different varieties of moongbean to phosphorus up to 50 kg P2O5 ha-1 and inoculation of seed with PSB (25kg ha-1) increased the number of pods plant-1, number of seeds pod-1 grain and straw yield (q ha-1) and uptake of NPK by succeeding fodder Sorghum. The net return also increased with increased levels of phosphorus and inoculation of seed with PSB (25kg ha-1).

*****

REDS 039

Effect of integrated nutrient management on growth, yield, and quality of garlic (*Allium sativum* L.)

Kuldeep K. Sevak, J. G. Hirapara and Deepak Sen
Technical Officer, Agromet Observer and Senior Research Fellow
Regional Research Station, S. D. Agricultural University Bhachau – Kachchh- 370140 (Gujarat)
Email id: Kuldeepevak310@gmail.com

ABSTRACT

The present investigation entitled "Effect of integrated nutrient management on growth, yield and quality of garlic (*Allium sativum* L.)" was undertaken at Horticulture Instructional Farm, C. P. College of Agriculture, S. D. Agricultural University, Sardarkrushinagar in Rabi season 2010-11. The experiment was laid out in Randomized Block Design with four replications and nine treatments viz., T_1 (RDF-100:50:50), T_2 (50% N in form of FYM+ 50% N in form of Inorganic), T_3 (100% N in form of FYM), T_4 (50% N in form of de oil Castor cake+ 50% N in form of Inorganic), T_5 (100% N in form of de oil Castor cake), T_6 (50% Nin form of poultry manure+ 50% N in form of Inorganic), T_7 (100% N in form of poultry manure), T_8 (50% N in form of Vermicompost+ 50% N in form of Inorganic) and T_9 (100%N in form of Vermicompost). At 30, 60, 90 and 120 DAP, the treatment T2 (50% N in form of FYM+ 50% N in form of Inorganic) recorded significantly the highest plant height (38.50, 49.25, 52.25 and 54.25 cm, respectively), number of leaves plant-1 (5.10, 8.10, 10.12 and 11.19, respectively), neck thickness (0.56, 0.66, 0.86 and 1.02 cm, respectively). Similarly, treatment T2 recorded the minimum days to maturity (132.75) and number of cloves bulb-1 (21.75) with maximum diameter of bulb (5.60 cm), average weight of bulb (28.18 g), weight of 100 cloves (86.25 g) and yield plot-1 (6.61 kg) and yield hectare-1 (34425 kg). The maximum TSS (48.50 ºBrix) of bulb and N (261.00 kg ha^{-1}), P (28.50 kg ha^{-1}) and K (252.00 kg ha^{-1}) in soil after harvest were found in treatment T_2 (50% N in form of FYM+ 50% N in form of Inorganic). Therefore it can be suggested to the farmers for judicious use of chemical fertilizers with organic manures which leads to a reduced dosage of inorganic fertilizers and considerably improve soil fertility status.

*****

REDS 056

Response of Mungbean [*Vigna radiate* (L.) Wilczek] Integrated Nutrient Management.

Mahima Goyal and GL Yadav
Department of Agronomy, MJRP College of Agriculture & Research, Achrol, Jaipur (Rajasthan)

ABSTRACT

"Integrated Nutrient Management" was conducted during the summer season of 2019 at College Farm, Department of Agronomy, MJRP College of Agriculture & Research, Achrol, Jaipur, Rajasthan. The soil was clayey in texture having medium to poor drainage, low in available nitrogen, medium in available phosphorus and fairly rich in available potassium with7.8 pH. The experiment was comprising of nine treatments viz., T1(100% RDF), T2(75% RDF), T3(50% RDF), T4(FYM @ 2t per ha), T5(75% RDF +FYM@ 2t per ha), T6(50% RDF + FYM @ 2t per ha), T7(Vermicompost 1.25 t per ha), T8(75% RDF+Vermicompost @ 1.25t per ha) and T9 (50% RDF + Vermicompost @ 1.25t per ha) were tested in randomized block design with three replications. The results revealed that the plant population was not affected due to different treatments. The treatment T8 (75% RDF+Vermicompost @ 1.25t per ha) recorded significantly higher values of all the growth and yield attributes such as plantheight, number of branches, number of leaves, number of seeds per pod, seed yield per plant(g), pod weight per plant. Seed yield of green gram (1016 kg/ha) was recorded significantly higher under T8 (75% RDF+ Vermicompost @1.25t per ha) which was at par with treatment T 1(100% RDF) and T5(75% RDF +FYM @ 2t per ha) and incase of stover yield, T8 (75% RDF + Vermicompost @1.25t per ha) recorded significantly higher stoveryield (2593 kg/ ha) which was at par with treatment T5, T1and T 9. Significantly maximum protein yield was recorded under T8 (75% RDF + Vermicompost @ 1.25t per ha). Economics of various treatments revealed that T8 (75% RDF +Vermicompost @ 1.25 t per ha) recorded the highest net realization of ₹42358 with BCR of 2.91. Thus, it can be concluded that T8 (75% RDF + Vermicompost @1.25t per ha) was found most effective in improving growth and yield attributes, seed and stover yield, protein yield as well as net return and BCR in green gram.

*****

REDS 057

Seasonal incidence of the canthoconid bug, *Eocanthecona furcellata* at Raipur, Chhattisgarh on different crop ecosystems.

Aalok Kumar and J, L. Ganguli
Department of Entomology, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh
E-mail: aalokgupta456@gmail.com

ABSTRACT

Eocanthecona furcellata (Wolff.) (= *Canthecona furcellata*, *Cantheconidea furcellata*) belongs to the genus *Eocanthecona* of subfamily Asopinae of the heteropteran family Pentatomidae. Among the heteropteran bio-control agents, *Eocanthecona furcellata* has gathered much consideration in biological control due to its efficiency to manage various pests. In Integrated Pest Management this predator can be used as a remarkable biological control agent. The investigation was carried out in the region of Chhattisgarh plains and at Biological Control Laboratory, Department of Entomology, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during 2018-19. The study of the seasonal activity of the Canthoconid bug, *Eocanthecona furcellata* shows that the activity of, *E. furcellata* on soybean, groundnut, and maize during kharif season were noticed during the month of August to November. In soybean, the mean maximum number of adults i.e. 0.30 was recorded during 34th and 38th SMW respectively. The population of *E. furcellata* in the case of soybean was highly significant and positively correlated with Min.temp (0.762) RH-1 (0.810), RH-II(0.737). In the case of maize, significantly correlated with Min.temp (0.782) RH-1 (0.792), RH-II(0.671) whereas, significant but negatively correlated Max. temp (-0.713).

*****

REDS 069

Evaluation of some insecticides against fruit borer of ladyfinger

[1]S.R.Singh and [2]S.K Singh
[1]KVK, Hathras, CCR (PG) College, Muzaffarnagar

ABSTRACT

Evaluation of some insecticides Indoxacarb, Deltamrthrin @ 50 g/ha and combination with neem oil, Prophenophos+ Cypermethrin @ 550 g/ha was evaluated along with some insecticides *viz*, diamethoate @400g /ha, cypermethrin 500g/ha and neem product neem gold 5 g/ha against fruit borer of *Earias* species and leaf folder *Sylepta derogate* of ladyfinger. The result revealed that significantly better management of fruit borer and leaf folder were obtained with the application of prophenophos, cypermethrin and prophenophos+ Cypermethrin. The decrease in percent fruit borer infestation with these three treatments ranged from 67.7-77.5. The healthy fruit yield recorded significantly the highest (55-57.0 q/ha) with these three treatments over other treatments and control (45.35 q/ha) the percent increase yield in fruit yield was the highest 23.5% with prophenophos + cypermethrin over control.

*****

REDS076

Effect of Vermicomposting on Mycorrhization in test plants (*Abelmoschus esculentus)*

*Mohd. Irfan and R. K. Gupta
*Department of Botany, Chaman Lal Mahavidhyalya, Landhaura Haridwar-247664 (Uttarakhand)
Laboratory of Environmental Microbiology, Department of Botany, Institute of Science, Banaras Hindu University, Varanasi-221005 (Uttar Pradesh)
Email: irfanclm17@gmail.com

ABSTRACT

Environmental degradation is a major threat confronting the world. The rampant use of chemical fertilizers contributes largely to the deterioration of the environment through depletion of fossil fuels, generation of carbon dioxide (CO_2) and contamination of water resources. It leads to loss of soil fertility due to imbalanced use of fertilizers that has adversely impacted agricultural productivity and has caused soil degradation. Adoption of ecological and sustainable farming practices can only reverse the decline trend in the global productivity and environment protection. Plant nutrients are, therefore, vital components for sustainable agriculture. Increased crop production largely relies on the type of fertilizers used to supplement essential nutrients for plants. Vermicompost has been emerging as an important source in supplementing chemical fertilizer in agriculture, in view of sustainable development. Therefore, it improves the physical, chemical and biological properties of soil and in turn promotes growth of plants. Due to absence of toxic enzymes it is also eco-friendly and has beneficial effects on the biochemical activities of the soil. Vermicompost supplement to soil has also been reported to increase percent mycorrhization in plant and also their growth. Effect of addition of vermicompost in the soil medium on percent root colonization of VAM fungi associated with *A. esculentus* along with its effect on the growth of plant was studied successfully. Present study concludes that the addition of vermicompost in soil improves its quality not only by adding mineral nutrients, but also by increasing microbial activity, which in turn enhances the overall growth of plants. It also indicates that use of vermicompost along with VAM supplement in the field can be better option for efficient growth and productivity of economically important plants. This will ensure both enhanced and sustainable agricultural production and safeguard the environment.

Key words: VAM, *Abelmoschus esculentus*,Vermicompost, Rhizosphere.

*****