



CROP AND WEED SCIENCE NEWS

Published by Crop and Weed Science Society, Department of Agronomy,
Faculty of Agriculture, Bidhan Chandra Krishi Viswavidyalaya,
Mohanpur-741252, Nadia, West Bengal, India



2015

The International Year of Soils

The 68th UN General Assembly declared 2015 the International Year of Soils (IYS). The IYS 2015 aims to increase awareness and understanding of the importance of soil for food security and essential ecosystem functions.

Soils are fundamental to life on Earth but human pressures on soil resources are reaching critical limits. Careful soil management is one essential element of sustainable agriculture and also provides a valuable lever for climate regulation and a pathway for safeguarding ecosystem services and biodiversity.

Soils result from complex actions and interactions of processes in time and space and hence are themselves diverse in form and properties and the level of ecosystem services they provide. The balance between the supporting and provisioning services for plant production and the regulating services the soil provides for water quality and availability and for atmospheric greenhouse gas composition is a particular concern.

Soils are a key reservoir of global biodiversity, which ranges from micro-organisms to flora and fauna. This biodiversity plays a fundamental role in supporting soil functions, ecological balance and services associated with soils.

The maintenance or enhancement of soil resources is essential if humanity's overarching need for food, fodder, fibre, water, and energy security is to be met. Knowledge of the actual state of physical, chemical and biological properties, their role in soil functions, and the effect of change – both natural and human-induced – on them is essential to achieve sustainability.

The implementation of soil management decisions is typically made locally and occurs within widely differing socio-economic contexts. The development of specific measures appropriate for adoption by local decision-makers often requires multi-level, interdisciplinary initiatives by many stakeholders. A strong commitment to including local and indigenous knowledge is critical.

As an institute we encourage participation and development of multi-level, interdisciplinary educational and capacity-building initiatives which foster the adoption of sustainable soil management. Research programmes that will provide sound scientific backing for development and implementation of sustainable soil management relevant to end-users are the call of the day. Regulations to limit the accumulation of contaminants beyond established levels to safeguard human health and well-being are to be implemented.

Above all the incorporation of the principles and practices of sustainable soil management into policy guidance and legislation at all levels of government is most important.

Prof P Bandopadhyay and Prof K Brahmachari
(Editors)

Recommendations from the CWSS symposium 2014

- There has been a clarion call for a substantial and sustainable intensification of crop productivity not only to ensure food self-sufficiency but also to ensure food security. Genetically modified crops are poised to make their presence felt in the cropping arena because they offer a viable option for meeting the growing demand for food, preserving the environment and mitigation of food security for future generations concerned.
- Projected figures for Maize in 2020 for India using ARIMA model forecasts 24.20 million tonnes production from an area of 8.30 million ha with average forecasted yield of 2543.81 kg/ha. Andhra Pradesh will be the major producing state with a production of 3873 thousand tons from an area of 1022 thousand hectares with productivity of 4189 kg./ha in year 2020. These projections will help in formation of good policies with respect to relative production, price structure as well as consumption of maize in the country.
- Studies using ARIMA models hold concern for tea. Projected figures for 2020 in West Bengal forecasts tea production of 318992 thousand kg from 120345 hectares of plantation with average productivity of around 2625 kg/ha which is quite low from highest productive countries in the world. Relative humidity and fertilizer are the two major factors of production identified.



PROF P C Bhowmik from USA receiving CWSS LIFE TIME AWARD 2014

- The ICT initiatives in North-eastern region call for need-based approaches in development, like post-harvest management, better market infrastructure with appropriate and timely market information and entrepreneurship development.
- The government should augment its investment and expenditure in the farm sector to contain occupational migration which is very high with the youth in the

countryside and those who are still practicing agriculture opting for other profitable part time enterprises. The only remedy to the crisis is to do all that is possible to make agriculture a profitable enterprise and attract the farmers to continue the crop production activities.



Prof R.K. Ghosh from BCKV receiving CWSS GOLD MEDAL AWARD 2014

- A constructive livelihood process whatsoever basically keeps integrating resource, time, cost and technology while a coercive livelihood keeps depleting the resource base and creates a discord with the surrounding ecosystem. This multidimensional interaction means and implies that livelihood planning needs to consider not only the enterprise it deals with but also the ecology it confronts with.
- The variable annual income, management orientation and risk orientation contribute positively and significantly in characterizing the Entrepreneurship Development and Management Index (EDMI) of the entrepreneurs. The five factors namely economic and social competency, family and farm interaction, educational exposure, capacity orientation and personal trait as identified can explain the variations embedded with the Entrepreneurship Development and Management Index (EDMI).
- In the North Eastern Hill Regions medium duration indigenous rice under aerobic ecosystems in rainfed upland conditions *Ronga shyee* with the highest grain yield (20.07q/ha) followed by *Masah* (19.63q/ha) and *Jamaghu* (18.89q/ha) under single dose of NPK (60:30:30) new options for the farmers.
- Soil + compost + cocopeat (1:1:1) + GA -150 ppm growing medium was found superior for early and higher germination percentage, better shoot growth, better growth of tap root, secondary root production and chlorophyll content of seedling for papaya under North Indian conditions.
- Passion fruit (*Passiflora edulis*), a native of tropical America (Brazil), is a high value and export oriented crop. Commercialized in the Deccan and North East states; propagation materials can boost the area expansion. Seeds sown in shade-net conditions (40.00%) have better emergence owing to congenial temperature and humidity supported by increase in enzyme activity.
- Dill (*Anethum sowa*) is a spice crop belonging to the family *Apiaceae* have culinary, antioxidant and medicinal properties. As a introductory crop for West Bengal, it performs better as a monocrop. The identified varieties suitable for the state are SSK, AD-1 and AD-22. Berries of *Berberis lycium* Royle proved to be an unexplored source of anthocyanin in delphinidin-3-glucoside (43.7%)

and cyanidin-3-glucoside (40.1%) apart from phenolics like chlorogenic acid, coumaric acid, syringic acid, caffeic acid, vanillic acid and quercetin as recorded in methanolic extract.

- Ber fruits treated with edible coatings for shelf life upto 16 days recorded best result with guar gum (2%) showing minimum physiological loss of weight (22.88%), retaining the highest TSS (6.67°brix), total sugar (5.17%), reducing sugar (1.74%) and ascorbic acid content (78.83 mg/100 g of fruits).
- Pre harvest spray of growth regulators improved the quality and of baby corn extended shelf life by 2 days at room temperature. Pre-harvest spray of GA 40 ppm followed by cycocel 3 @ 1000 ppm was proved to be promising in reducing the PLW (Physiological Loss in weight), spoilage per cent, better retention of TSS, reducing sugars, titrable acidity, ascorbic acid and crude protein content. The GA 40 ppm retains better appearance, taste, crispness and colour.
- In North Bengal the integrated pond management with duck, fish and vegetables is an excellent approach for sustainable production, income generation and employment opportunity of the resource poor rural farmers with a mixed enterprise in Fish culture + Cross breed duckery @ 300/ha + round the year dyke vegetables on trellis and on ground.
- Taro (*Colocasia esculenta* (L.) Schott) is one of the oldest carbohydrate rich cultivated crop grown for its edible corms and leaves. Taro varieties generally contain 1-4.5% protein (on a dry weight basis). Characterization of tuber storage protein gene in edible taro found that the gene has important role in defending *Phytophthora colocasiae* which causes leaf blight in taro.



Prof P Bandopadhyaya, BCKV receiving CWSS FELLOW AWARD 2014

- Regarding selection of Green gram the useful traits may be no. of pods/plant, pod length and no. of seeds/pod in saline tracts and no. of pods/plant, harvest index, biological yield in non-saline tracts.
- For Sunflower cultivation in West Bengal single irrigation at disk formation stage (60 DAS) supported highest seed yields at NAZ and RLZ while in OAZ it requires two/three irrigations to support highest yield with N, P₂O₅ and K₂O (@ 80, 40 & 40 kg/ha) and Boron @ 1.5 kg/ha along with bacterial fertilizers.



Prof K. Brahmachari, BCKV receiving CWSS FELLOW AWARD 2014

- Formulation and shelf-life of yeast based bio-control agent to encounter with excessive use of pesticides, alternative using of bacterial, filamentous fungi and unicellular fungi (Yeast) offers a stable liquid formulation with high self life, bio-activity and bio-control efficacy. Moreover, the molasses urea based media was found the best and its use for the liquid formulation of yeast cells would not limit the economic costs for industrial production.
- Evaluation of prevalent cropping systems in Arsenic endemic areas concluded that potato - green gram - elephant's foot yam is a better choice for the farmers, with greater yield potential and reasonable return per rupee investment and less arsenic uptake.
- Early genotypes can only break the jinx in hybridization programme for improvement of wheat in the country and the strategy of breeding should use it in planning and execution of future breeding programme in wheat.
- The maximum productivity of lentil would be achieved when the maximum and minimum temperature during 100% flowering ranged from 24.6 to 28.6 and 10.1 to 10.9 C respectively.
- Variability in grain yield, quality and some agronomic traits in bread wheat and triticale show that plant height, days to heading, days to flowering, 1000 grain weight, number of grains/spike and yield/plant were associated with high heritability coupled with high genetic advance. This suggested that the characters are predominantly controlled by additive gene effect and direct selection on the basis of phenotypic data may respond positively to desired direction.
- Diurnal variation in transmission of PAR within wheat and mustard canopies under intercropping system showed that minimum transmission was recorded under sole wheat as compared to intercropping situation, whereas the trend was reversed in mustard. Reduction in transmission with advance of crop growth was observed in both the crops. Association between sunlit leaf area index and transmittance of radiation was higher in intercropped wheat as compared to sole crop.
- Application of pendimethalin at the lower rate augmented phenol oxidase and peroxidase activities of the soil to the extent of 13.8 and 10.4%, and an enhancement to the range of 5.1 to

6.2% for arylsulphatase and 4.4 to 4.9% for phosphatase activities while the activity of dehydrogenase enzyme was more stimulatory (35.7%) at the lower rate of the herbicide.

- Application of Pendimethalin 38.7 CS @ 1.0 kg a.i./ha (PE) + Quizalofop Ethyl 5% EC @ 37.5 g a.i./ha or Propaquizofop 10% EC @ 62 g a.i./ha or Fenoxoprop Ethyl 9.3% w/w @ 37.5 g a.i./ha at 20 DAS (POE) was more effective for getting higher returns and better weed control in kharif sunflower
- For reducing weed infestation in System of Rice Intensification (SRI) botanicals like Aqueous extracts of *Parthenium*, *Calotropis* & *Tectona* leaves @ 5 ml/litre of water + surfactant Tween 20 at 1 DAT + 2 MW (BC + MW) showed promise.
- Maximum alternariablight control disease control and highest yield was recorded in the seed treatment with Metalaxyl 35% (6 g/Kg seed) followed by first spray of Mancozeb 75% WP @ 2.5 g/lit. of water at 45 DAS and second spray of Trifloxystrobin 25% + Tebuconazole 50% @ 1g/lit. of water at 60 DAS.
- Lactation is affected by negative effects of heat stress and higher peak yield in lactation was observed during winter season as compared to rainy and summer season indicating winter environment comfortable to Murrah buffaloes. It is also advocated that as far as possible dry climate should be maintained in buffalo byres during rainy season and direct exposure of buffaloes to summer heat should be avoided in order to get more production from buffaloes.
- Use of animal power in thresher and chaff cutter in rotary mode may save time in threshing compared to traditional bullock treading, though less efficient and costly from electrically powered devices.



Mr Manas Kumar Roy receiving FARMER'S RECOGNITION AWARD 2014

The Society for Application of Statistics in Agriculture and Allied Sciences (SASAA)

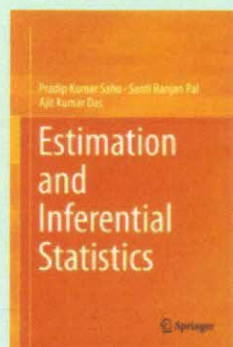
The role of statistical data analysis has been proved as an indispensable tool/ technique to provide systemic procedure for data from various field of studies, not only from agriculture and allied fields but also from social, medical, biological and other scientific fields. The formation of the Society for Application of Statistics in Agriculture and Allied Sciences (SASAA) was in the above direction. With its head quarter at the Department of Agricultural Statistics, BCKV, the Society with in a very short span from July 2014 has shown its existence by organizing a National level Workshop Cum Training



Programme on Statistical Tools for Research Data Analysis during 16-22 March 2015. During the programme experts from IISER, Kolkata, ISI, Kolkata, Calcutta University, Kalyani University, ICAR Institutes, IEST, Shibpur and BCKV trained the trainee, mostly College and University teachers from different States and Central Institutes all over the country. The workshop was inaugurated by the Vice Chancellor, BCKV. Next year the Society is planning to hold a National Seminar on Recent Advances in Statistical Tools for Agriculture and Allied Field during 3-5 March 2016 at BCKV.

Estimation and Inferential Statistics

A book authored by Pradip Kumar Sahu, Santi Ranjan Pal and Ajit Kumar Das of the Department of Agricultural Statistics, Bidhan Chandra Krishi Viswavidyalaya has been published during 2015 from Springer publishers.



This book focuses on the meaning of statistical inference and estimation. Statistical inference is concerned with the problems of estimation of population parameters and testing hypotheses. Primarily aimed at undergraduate and postgraduate students of statistics, the book is also

useful to professionals and researchers in statistical, medical, social and other disciplines. It discusses current methodological techniques used in statistics and related interdisciplinary areas. Every concept is supported with relevant research examples to help readers to find the most suitable application. Statistical tools have been presented by using real-life examples, removing the "fear factor" usually associated with this complex subject. The book will help readers to discover diverse perspectives of statistical theory followed by relevant worked-out examples. Keeping in mind the needs of readers, as well as constantly changing scenarios, the material is presented in an easy-to-understand form.

The AICRP News

AICRP on Vegetable Crops organized three farmers' training programmes among the tribal communities at Birbhum, Burdwan and Nadia districts under Tribal Sub Plan project. One YMV resistant line of okra (BCO-1) and one bush type cowpea line (BCCP-5) which is highly tolerant against cowpea mosaic virus are in the advance stage of identification in the group meeting of AICRP.

Dr soumitra Chatterjee, Asstt Professor in Agril Economics under AICRP and IFS presented an oral paper entitled "Extent of technological change in paddy cultivation over eastern region of India during last four decades" for the 29th International Conference of agricultural Economics (ICAE 2015), Milan, Italy, 8-14 August, 2015.

Prof Krishna Karmakar has presented problem of mites in rice at the International Conference of Acarology held at Kyoto, Japan during 14-18 July, 2014. One patent on mass production, packaging, transportation and field release of paddy mite, *Neoseiulus longispinosus* (Evans) has been finally submitted. Rice is threatened by sheath mite or panicle mite of rice causing 30-90% yield loss during kharif season in susceptible cv like Minikit, Jaya etc. New rice lines have been developed in BCKV tolerant to sheath mite with good yield performance (6-6.5 t/ha) named as BCKV Rice 1 & 6.

AICRP on Potato developed late blight forecasting model for potato in WB and developed effective spray schedule for management of late blight of potato in WB.

AICRP on Meteorology received Best Centre Award for dissemination of Agromet advisory serces, awarded by ICAR on 07/11/2014 at Central research institute for Dry land Agriculture, Hyderabad.

Under AICRP on Forage Crops and Utilization Bidhan Rice Bean – 3 variety with high green forage yield is going to be released for NE regions through the Central Variety Release Committee.

AINP on Pesticide Residues laboratory is NABL accredited as per ISO/IEC 17025 : 2005 in the field of chemical testing (Accreditation year 2010).

Celebration of International Soil Day by Hooghly KVK, BCKV



Prof Ratikanta Ghosh, Department of Agronomy, BCKV, has been selected as an author of the Chapter 10 (Use and Misuse of Parthenium) of a Book on 'Parthenium' published by CAB



Chief Editor : Dr K Brahmachari, Dept of Agronomy, BCKV, Mohanpur, Nadia, WB

Published by the Secretary, **Crop and Weed Science Society**, Dept of Agronomy, BCKV, Mohanpur, Nadia, WB, India
Printed at : Bishnupriya, Kalyani, Nadia, West Bengal