



CROP AND WEED SCIENCE NEWS

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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 ecosystems 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 fosters 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 viable option for meeting the growing demand for food, preserving the environment and mitigation of food security for future generation concerned.
- Projected figures for Maize in 2020 for the India using ARIMA model forecasts 24.20 millions 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 hectare 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 with ARIMA models holds concern for tea. Projected figures for 2020 in West Bengal forecasts tea production of 318992 thousand kg from 120345 hectare 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 are 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.

