



ISWS News Letter

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News

Kisan Mela- organised in DWSR

The Directorate of Weed Science Research, Jabalpur organized a Kisan Mela-cum-Kisan Sangoshthi - 2012 on the occasion of its Foundation Day. Dr. Gautam Kallu, Vice Chancellor of Jawaharlal Nehru Agricultural University, Jabalpur was the Chief Guest, and Dr. A.K. Singh, Deputy Director General (NRM), ICAR presided over the function. Dr. A.R.G. Ranganatha, Director, DWSR welcomed the invited guests and farmers. On the occasion, Technical Extension Calendar was released by the dignitaries. Twenty five progressive farmers belonging to different villages of M.P. were also felicitated during the Kisan Mela.

During the inaugural function, Dr. Kallu emphasized on the shifting of traditional farming to modern one. To him farmers should learn the modern system of farming in order to minimize the crop losses due to several factors. Farmers should optimize the use of seeds, fertilizers, pesticides, and water. He appreciated the ongoing research programmes taken up by the Directorate, and suggested the farming community to learn the modern weed



Dr. G. Kallu inaugurating Kisan Mela

management techniques to enhance the crop productivity. Dr. A.K. Singh, advised the farming community to go



Farmers visiting stall



Discussion among stakeholders

in for a safer weed management by harnessing modern technologies like the application of low-dose herbicides and ensure optimum utilization of resources in their farms. Dr. Singh emphasised the importance of proper communication between farmers and scientists, and requested the farmers to be in touch with the Directorate. He informed about different programmes to be taken up in XII Five Year Plan for agricultural development. Dr. A.R.G. Ranganatha explained the research and extension activities of the Directorate and 22 centers spread all over the country. Dr. P.K. Singh, Programme Coordinator, proposed vote of thanks.

Kisan Mela was visited by more than 5000 farmers, who used the opportunity to know the technologies displayed through 42 stalls put up by different research and development organizations, State Department of Agriculture, Horticulture, Forestry, industries of pesticide, fertilizers, seeds and implements, Banks, NGOs, etc. A Kisan Sangoshthi and field visit were also arranged, in which, scientists/SMS interacted

with the farmers, discussed and clarified the queries related to agricultural problems including weed management.

On the occasion of Kisan Mela, a simultaneous session on interface meeting between



Farmers attending field demonstration

the stakeholders including farmers, industries and researchers was convened on January 23, 2012. Scientists of DWSR, Zonal Project Directorate, KVKS, IFFCO, NGOs, representatives from the industries, and forty progressive farmers participated in the meet. Farmers raised genuine problems, which were discussed critically under the Chairmanship of Dr. A.K. Singh, DDG (NRM). It was decided that the issues raised in the meet should be suitably incorporated in the research programmes being formulated for the XII Plan.

AICRP-WC: Biennial Conference

Biennial Workshop of All India Coordinated Research Project on Weed Control (AICRP-WC) was convened at Kerala Agricultural University, Thrissur on 17-18 April, 2012. In the inaugural session, Dr. C.T. Abraham Associate Dean, KAU, Thrissur and Principal Investigator, AICRP Weed Control at Thrissur centre welcomed the dignitaries and participants to the biennial workshop. Dr. P.V. Balachandran, Director of Extension, KAU in his presidential address highlighted the problems posed by aquatic weeds and weedy rice in the lowlands of Kerala state. Inaugurating the workshop, Dr. T.R. Gopalakrishnan, Director of Research, KAU emphasized the importance of herbicides in the context of scarcity of labour. Dr. A.R. Sharma, Director, DWSR presented an outline of the areas of importance in weed management research in the light of several discussions held at the top level in ICAR. During this session, dignitaries released some publications, viz. the Annual Report of AICRP-WC (2011-12); consolidated reports on 'Long-Term Tillage and Long-Term Herbicidal Weed Management in Different Cropping Systems, and Farm Trial and

Impact analysis of Weed Management Under Different Cropping Systems' by Dr. C. Chinnusamy *et al.* of TNAU, Coimbatore; and the technical bulletin in Telugu on "Weed-Management in Different crops" by Dr. M. Madhavi and Dr. T. Ram Prakash, ANGRAU, Hyderabad. In three technical sessions and a plenary session 97 scientists and experts from different organisations took part to yield some important recommendations. Dr. Pushpalatha, Registrar of KAU and the Chairperson of the plenary session appreciated the work being undertaken in AICRP-WC and suggested to harness the beneficial qualities of weeds. Dr. A.R. Sharma emphasized the importance of technology transfer and hoped that scientists of all the disciplines working in the project should devote at least 25% of their time for extension activities. Scientists of the project, viz. Dr. T.V. Ramchandra Prasad, Dr. S.S. Mishra, Dr. O.L. Sharma, and Dr. K.S. Yadav were given warm farewell as they will be attaining superannuation during 2012. At the end, Dr. R.P. Dubey, In-charge AICRP-WC, proposed the vote of thanks.

ISWS: Biennial Conference

Agriculture, Biodiversity and Environment Indian Society of Weed Science in collaboration with Kerala Agricultural University, Thrissur and Directorate of Weed Science Research, Jabalpur organized a two days conference at KAU Thrissur, Kerala on 19-20 April, 2012. Dr. Sushil Kumar, Secretary, Indian Society of Weed Science organized an excellent program that was attended by more than 200

weed scientists, students and industry persons. There were three dozen lead papers



on different aspects of weed management, other than poster papers. Dr. R. D. Gautam, IARI New Delhi was invited for the first Prof. Mahesh K Upadhyay (Canada) lecture on non-chemical weed management with special reference to Parthenium hysterophorus. The Society honoured Dr. Samunder Singh (HAU Hisar) and Dr. A.N. Rao (Hyderabad) for ISWS Gold Medal Award for the year 2010-11 and 2011-12, respectively. To promote weed science in India, Drs. D.R. Arya (Monsanto, Mumbai), R.C. Gowda (UAS Bangalore), Rohitasav Singh (GPUA&T Pantnagar), R.P. Dubey (DWSR, Jabalpur), I.C. Barua (AAU, Jorhat), T.K. Das (IARI New Delhi), C.T. Abraham (KAU, Thrissur), A.K. Pandey (Bhopal) and Prasanta C. Bhowmik (Massachusetts Univ. Amherst, USA) were honoured with ISWS fellow awards. Society also honoured Dr. H.S. Gill (Ludhiana) and V.S. Rao (USA) with ISWS life time achievement award and Dr. R.K. Ghosh (Mohanpur) and A.S. Rao (Guntur) with ISWS recognition award and Dr. Puja Ray (S. Africa) with Young Scientist Award.

Dr. A.R. Sharma (Jabalpur) and Dr. Ashok Yadav (Haryana) discussed the role of resource conservation technology on weeds and soil



properties along with future challenges and strategies to overcome them in wheat and direct seeded rice. Dr. C.R. Chinnamuthu (Tamilnadu) discussed the work being carried out in his lab on nano-herbicides - a new tool for future weed management. Drs. S.S. Punia (Haryana), M.S. Bhullar (Punjab), A.P. Singh (Chhatisgarh), C. Chinnusamy (Tamilnadu), Ramesh Babu (Karnataka), Suresh Kumar (Himachal), Anil Kumar (Jammu & Kashmir), Rohistashav Singh (Uttarakhand), R.B. Patel (Gujarat), S.S. Tomar (Madhya Pradesh) and M. Madhavi (Andhra Pradesh) discussed the problems of weeds in their respective states and available control measures.

Dr. A.N. Rao (Hyderabad) presented a review on weed management in rice with emphasis on weed ecology to effectively control weeds in rice. Dr. A.S. Rao (Guntur) found that pendimethalin when applied in chillies had no residual effect on succeeding sorghum.

The following impact points emerged based on lead and oral papers:

Labour shortage is being felt at all levels in weeding and there is a greater need to increase chemical weed control in different crops to raise quantity and quality of agriculture produce, adoption of herbicide tolerant crops and IWM.

Herbicide resistance in *Phalaris minor* is causing a big drain on resources in wheat in N-W India and as of today there is no effective herbicide to efficiently manage all the resistant populations. Sequential use of PRE and POE or two applications of POE herbicides in rotations have been found to lower the menace of resistance onslaught.

Though residues of most recommended herbicides were found below MRL in the produce;

some herbicides were detected in well water and need careful use near water bodies and in sandy soils to lower their leaching hazards. Majority of herbicides are degraded by the time crop is harvested, but some herbicides have the potential to persist and damage succeeding sensitive crops and need precautionary measures.

The knowledge of IT should be utilized in agriculture, especially in weed management.

Physical, mechanical and chemical methods of aquatic weeds are either less effective or fraught with harmful effects; designing of water bodies (other than natural) can reduce aquatic weed establishment and integration with biological methods using host-specific insects and pathogens have provided sustainable management of aquatic water bodies.

Effect of climate change is being felt in agriculture, but the impact on weed growth and their control using herbicides will be crucial as lower herbicide efficacy against several weed species including *Phalaris minor* was observed under artificially raised temperature and CO₂ levels.

Salvinia molesta was successfully controlled by *Cyrtobagous salviniae* weevil in Kerala.

Gibbago trianthemae, *Alternaria alternata* and *A. eichhorniae* are the potential bioagents for the control of *Trianthema portulacastrum* and *Eichhornia crassipes*.

After the spectacular success of *Opuntia vulgaris* control by *Dactylopius ceylonicus* in 1921 several other biological agents were successfully tried against *Eichhornia crassipes*, *Chromolaena odorata*, *Mikania micrantha*, *Parthenium hysterophorus* and *Salvinia molesta*.

40 Fungal pathogens *Alternaria alternata*, *A. eichhorniae*, *Acremonium zonatum*, *Bipolaris hawaiiensis* and *Fusarium* spp. were found promising but were not a substitute for herbicides. These can be used in combination with other methods as under control conditions *Neochetina* spp. and *Eccritotarsus catarinensis* were found complimentary against water hyacinth.

Cochliobolus sp, when used as a member of a consortia with other pathogens (*Fusarium*, *Curvularia* and *Alternaria* sp), was found very aggressive in killing water hyacinth population within two weeks of inoculums. *Fusarium* sp, though effective, had lower spread to new ramets and poor efficacy against non-injured

plants. *Neochetina* beetles released 10 days before fungal treatment acted as facilitator for the fungal pathogens to enter the plants and kill them.

Wild rice is becoming a menace in Kerala and several other Indian States; no selective herbicidal control measure is available. Morphological and physiological similarities make hand weeding of weedy rice incomplete and ineffective. Field sanitation and exhausting soil seed bank is the only option as of today, but biotechnological approaches hold promise.

Organic farming is practiced in <5% area in India, where weeds pose a big problem. Preventive measures and manipulation of agronomic practices can lower the losses due to weed infestation.

Dr. AR Sharma has taken the charge of DWSR

Dr. A.R. Sharma joined DWSR as the Director on 12.3.2012. Born on 13.4.1960 to a farming family in Hamirpur district of Himachal Pradesh, Dr. Sharma obtained B.Sc. Agri. (1981) from HPKV, Palampur; M.Sc. Agronomy (1983) from PAU, Ludhiana; and Ph.D. (1988) from IIT, Kharagpur. He proved his academic excellence by securing first rank throughout his schooling and higher education. He served as Scientist (1987-1996) at CRRI, Cuttack; Agronomist at PAU, Ludhiana (1996-1998); Senior Scientist at CSWCRTI, Dehradun (1998-2001); and Principal Scientist (2001-2011) and Professor (2010-2012) at IARI, New Delhi. Dr. Sharma made outstanding research contributions, and specialized in diversified field of resource management including nutrient management, tillage and weed management, and conservation agriculture.

His 150 research publications in highly rated journals, and awards including Jawaharlal Nehru Award of ICAR for best Ph.D. thesis, KRIBHCO Award for Outstanding Research, Pran Vohra Award for Young Scientist from Indian Science Congress Association, Hooker Award of IARI, and some more prove his dexterity and prudence in agronomic research and management. He was conferred the prestigious 'Fellowship' of the National Academy of Agricultural Sciences in 2004. Dr. Sharma has established himself as a sincere dedicated researcher and teacher, and won appreciation from the Directors at all institutions he served. DWSR family assures full support in his endeavours, and wishes him a successful tenure as Director

Dr. Samunder Singh- new Secretary of International Weed Science Society

Dr. Samunder Singh, Senior Weed Scientist of Agronomy Department, CCS HAU, Hisar was elected **Secretary of International Weed Science Society**. Dr. Singh is the **first Indian to be elected as Secretary of International Weed Science Society**. He will be **Secretary and Newsletter editor** of International Weed Science Society for the next four years and will work for the success of the 7th International Weed Science Congress to be held in Prague, Czech Republic in April 2016. Dr. Singh contributed as a member of the Scientific Program Committee of the 6th



International Weed Science congress - Dynamic Weeds, Diverse Solutions. For the last two years he was working with other international scientists for the success of this congress which was attended by 600 persons from around the globe. He was instrumental in publishing the first circular of the congress, acted as main Topic Organizer and **Chaired Session on Integrated Weed Management in Plantation Crops** in the above congress, other than presenting **invited oral paper**. Dr. Singh also acted as a **moderator** for the session '**Future Challenges in Agriculture and its Impact on Weed Science**' and **presented the results of discussion on 'future research' in weed science in the panel discussion**. He was greatly appreciated for his contribution as **Newsletter Editor** of the International Weed Science Society and was **honoured for his outstanding service** by the Society in the Award function held on 21.06.2012.

Research Notes

Roundup herbicide eliminates frogs and toads - a new study

Glyphosate can cause extremely high rates of mortality to amphibians that could lead to population declines. In a recent publication, Dr. Rick A. Rilyea, Department of Biological Sciences, University of Pittsburgh, Pittsburgh, Pennsylvania, revealed the effect of glyphosate containing formulation, Roundup, on amphibians. Three species of North American tadpoles in outdoor pond mesocosms that contained different types of soil were exposed towards Roundup applied as a direct overspray. After three weeks, Roundup killed 96-100% of larval amphibians. Three species of juvenile (post-

metamorphic) anurans were then exposed to a direct overspray of Roundup in laboratory containers. After one day, Roundup killed 68-86% of juvenile amphibians. The elimination of 96-100% of tadpoles in the water, combined with the elimination of 68-86% of juvenile frogs and toads on land, could have a major negative impact on amphibian populations. The current study suggests that applying Roundup formulations containing the POEA surfactant to amphibian habitats has the potential to cause substantial mortality in many amphibian species.

(Ecological Applications, 15(4), 2005, pp. 1118-1124)

Tinospora tuberculata- source of allelochemicals

Dr. Piyatida Pukclai and Dr. Hisashi Kato-Noguchi of Department of Applied Biological Science, Faculty of Agriculture, Kagawa University, Japan have screened the medicinal plant *Tinospora tuberculata* Beumee as allelopathic potential. The aqueous methanol extracts of the medicinal plant, *Tinospora tuberculata* Beumee, inhibited the growth of roots and shoots of cress (*Lepidium sativum* L.), lettuce (*Lactuca sativa* L.), alfalfa

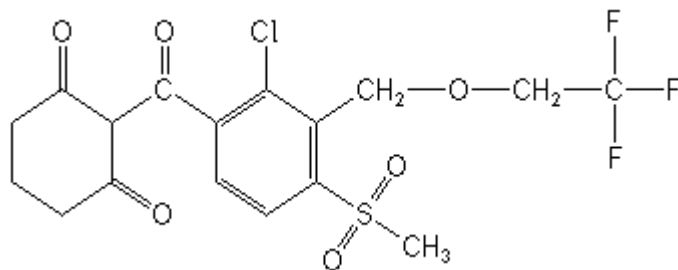
(*Medicago sativa* L.), timothy (*Phleum pratense* L.), Italian ryegrass (*Lolium multiflorum* Lam.), ryegrass (*Lolium rigidum* Gaud.), crabgrass (*Digitaria sanguinalis* L.), buckwheat (*Eriogonum compositum* Douglas ex Benth.), Chinese sprangletop (*Leptochloa chinensis* [L.] Nees.), jungle rice (*Echinochloa colona* [L.] Link.), barnyard grass (*Echinochloa crusgalli* [L.] Beauv.), and sand fescue (*Festuca myuros* L.) at the concentration greater than 0.03 g dry weight equivalent extract/mL.

(Journal of Plant Biology Research 2012, 1(1): 19-28)

Know your herbicide

Tembotrione - a triketone herbicide

Tembotrione is a new triketone herbicide for the selective post-emergence control of mono- and dicotyledonous weeds in corn, including field corn, seed corn, sweet corn, and popcorn. Tembotrione acts by inhibiting the enzyme 4-hydroxyphenylpyruvate dioxygenase (HPPD) and bleaches sensitive plants. At a use rate of 75-100 g a.i./ha of tembotrione a wide range of grass and broadleaved weeds are controlled. Tembotrione stays active in the soil throughout the growing season, offering residual control of grass and broadleaf weeds up until corn canopy closure. The compound is formulated with a safener isoxadifen-ethyl.



2-[2-chloro-4-mesyl-3-[(2,2,2 trifluoroethoxy)methyl]benzoyl]cyclohexane-1,3-dione

(www.bayercropscience.us/products/herbicides)

Future Events

Global Resistance Challenge 2013

[The Australian Herbicide Resistance Initiative](#), based at The University of Western Australia will host the conference **Global Resistance Challenge 2013**. Scientists who wishes to discover the latest advances in herbicide resistance are welcome to **Perth** during **February 18-21, 2013**. The **Global Resistance Challenge 2013** conference offers a multidisciplinary forum focused on all aspects of herbicide resistance in crops and weeds and their impact on global food production. Scientific sessions will range from the molecular basis of herbicide resistance evolution through agro-ecology and agronomy to on-farm resistance management. The conference will provide a stage for young and established private and public sector researchers, crop consultants and others to present their work in front of a welcoming international audience in the beautiful portside city of **Fremantle, Perth, Western Australia**.

(<http://www.herbicideresistanceconference.com.au/>)

ARRW Golden Jubilee Symposium

Association of Rice Research Workers (**ARRW**) is going to celebrate its Golden Jubilee Symposium on 'Sustainable Rice Production and Livelihood Security: Challenges and Opportunity' during **March 02 - 05, 2013** at **Central Rice Research Institute, Cuttack**. The proposed themes are:

Genetic improvement for enhancement of yield, quality and stress tolerance; Sustainable production through resource management and conservation agriculture; Environmental factors in relation to rice physiology and climate resilience; Mechanisation, post harvest technology and value addition; and Socio-economic issues and livelihood security.

The ISWS Newsletter is an electronic quarterly publication to foster better communication and give information to our members and others in the country interested in weed science. Information for publication in the ISWS Newsletter may be sent to the Editor at the following address:

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