WEED news

January-March, 2011 Vol. 11, No. (1)

Director's Message

The period of this news letter witnessed a number of important events, apart from our regular research activities. Directorate's Foundation Day was glorified in the presence of Sh. Rakesh Singh, Member of Parliament, Jabalpur, Dr. N.K. Tyagi, Member, ASRB, New Delhi and Dr. A.K. Singh, Deputy Director General (NRM), ICAR. Kisan Mela-cum-Kisan Sangoshthi - 2011 was organized in this occasion. It was our institute's maiden attempt to conduct the ICAR Zonal Sports Tournament 2011 (Central Zone). Our endeavor was appreciated by participants from all institutes and guests. It, in fact, has united all the participant institutes in a common platform. The Annual Group Meeting of All India Coordinated Research Project on Weed Control was conducted at Anand Agricultural University, Anand (Gujarat). During this meet, scientists deliberated about some key aspects of weed management like weed management in rain fed agriculture, problem of weedy rice, effect of climate change on crop weed competition, quarantine weeds, management of aquatic weeds, etc.

All-together a busy-go-round schedule was within this period. We tried to make our research purposeful. We tried to make other events also successful. This issue is framing all of them.

ICAR-Sports

The ICAR Zonal Sports Tournament 2011 (Central Zone) was organized with much fan-fare by DWSR, Jabalpur during February 15 – 19, 2011. Five hundred and seventy six participants and officials from 15 ICAR institutes (Central Zone) participated in the tournament. The biggest contingent was from IARI, New Delhi with 96 members.

The tournament was inaugurated by the Chief Guest, Dr. Gautam Kalloo, Vice Chancellor, JNKVV, Jabalpur and presided over by Dr. Jay G. Varshney, Director, DWSR, Jabalpur. The Organizing Secretary, Dr. VP Singh of DWSR accorded warm welcome to the Chief Guest and Chairman of the function. Dr. Kalloo hoisted the ICAR flag which was followed by attractive flag march on the melodious tune of Seema Suraksha Bal Band, Jabalpur.

Ms. S. Nenu, IISS, Bhopal was awarded best athlete (Women) and Mr. Vinod, and Mr Ramesh Rai from IARI, New Delhi; and Dr. P.K Das, NRCPB, New Delhi were adjudged as the outstanding athletes of the tournament.

Kisan Mela

Directorate of Weed Science Research, Jabalpur organized a Kisan Mela - cum - Kisan Sangoshthi - 2011 on the occasion of its Foundation Day. Sh. Rakesh Singh, Member of Parliament, Jabalpur was the Chief Guest and Dr. N.K. Tyagi, Member, ASRB, New Delhi was the Guest of Honour on the occasion. Dr. A.K. Singh, Deputy Director General (NRM) presided over the function. During the inaugural function, Sh. Rakesh Singh explained the importance of proper communication between farmers and scientists. Farmers are facing problems due to lack of communication and are not able to reap proper benefits of the technologies being generated from time to time. Organizing Kisan Mela is the right approach for better communication between the researchers and end users. Further appreciated the regular efforts made by DWSR for updating the technical know-how amongst the farming community.

Around 10,000 farmers visited the Kisan Mela and used this opportunity to understand various aspects of agriculture from the 56 different stalls put up by various developmental/ research organizations, State Department of Agriculture, Horticulture, Forestry, industries of pesticide, fertilizer, seed and implements, NGOs,

etc. A Kisan Sangoshthi and field visit were also arranged in which Scientists/SMS interacted with the farmers, discussed and clarified the queries about emerging subjects related to agricultural problems including weed management. On the occasion, Technical Extension Calendar and DWSR At a Glance were also released by the dignitaries. Twenty five progressive farmers belonging to different villages of M.P. were also felicitated during the Kisan Mela. The programme was coordinated by Dr. P.K. Singh, Principal Scientist (Agril Ext) of the Directorate.

AICRP-WC: Annual Group Meeting

The Annual Group Meeting of All India Coordinated Research Project on Weed Control, was held on 28th Feb. – 1st March, 2011 at Anand Agricultural University, Anand (Gujarat).

At the outset of the meeting, Dr. S.K. Dixit, Dean, College of Agriculture, AAU, Anand welcomed all the dignitaries on the dais, delegates from different AICRP-Weed Control centers, university staff, industries, and press media. Further briefed the activities of AICRP-WC since its inception. Dr. R.H. Patel, Director Research Services, AAU, Anand presented the research activities of the university and AICRP-WC at

Anand. Dr. Jay G. Varshney, Director, DWSR delivered a key note address. He emphasized over the future challenges such as weed management in rainfed agriculture, growing menace of weedy rice, effect of climate change on crop weed competition, quarantine weeds, management of aquatic weeds, etc. Further advised to involve more and more scientists to work on herbicide residue and persistence, nano-herbicides and weed utilization. Dr. R.P. Dubey, In-Charge, AICRP Scheme presented the research highlights and the recommendations of various coordinating centres.

After the presentation, two publications, viz., Annual Report of AICRP-WC and Report of TNAU, Coimbatore along with soft copy on tillage system were released by Hon'ble Vice Chancellor, AAU and Dr. Varshney, respectively. Dr. AM Shekh, Hon'ble Vice Chancellor delivered the presidential address, where emphasized over the food security and agricultural growth of the country. Further added to accord greater emphasis on using improved agricultural practices to manage yield loss due to weeds, which would support the agriculture growth and ultimately the national food security. Also appreciated the work of Ludhiana on climatic change.

Research Note

Effect of herbicides steroidal lactones of Ashwagandha

Chemical weed management in medicinal plants is a challenging field to manage weed without affecting quality of medicinal plants in terms of principal chemical constituents as well as residue of herbicides. Thus, effect of chemical weed management on quality of medical plant Ashwangandha (*Withania somnifera* Dunal) was evaluated. Ashwagandha is widely used in ayurvedic medicine, the traditional medical system of India. The biologically active chemical constituents of Aswangandha are alkaloids (isopelletierine, anaferine), steroidal lactones (withanolides, withaferins), saponins containing an additional acyl group (sitoindoside VII and VIII) and withanolides with a glucose at carbon 27 (sitoindoside IX and X). Thus effect of herbicides on steroidal lactone (withanoloides) of Aswagandha in terms of quantitative and qualitative analysis in root, seed and leaves was evaluated. Mature root, fruits (seeds) and leaves samples were collected where fluchloralin and fenoxaprop were applied at 800 and 70 g a.i./ha to control weeds. Nine withanolides from leaves and roots were identified through TLC.

It was found that herbicides, fluchloralin and fenoxaprop reduced withanolide content significantly. Among the control treatments, withanolide contents were higher in organic control as compared to organic + inorganic and straw mulches source of nutrition. Residues of fluchloralin and fenoxaprop were detected in roots, straw and fruits of Ashwagandha. Residues of fenoxaprop and fluchloralin were found less in those treatments where herbicides were applied along with organic treatment as compared to inorganic and organic+inorganic materials. In fenoxaprop + organic treatment, residues were found 0.001, 0.025 and 0.068µg/g respectively in root, straw and mature fruits of ashwagandha, however higher amount of residue of fluchloralin were detected from roots, straw and fruits as

compared to fenoxaprop. Care should be taken in applying herbicides in medicinal plants as it may affect active compound of medicinal use and organic manure (FYM) may be added to enhance herbicides dissipation.

- Shobha Sondhia, Sandhaya Singh and Anil Dixit

Water hyacinth: Biological control

Chemical and mechanical removal of water hyacinth (*Eichhornia crassipes*) is very expensive and sometimes ineffective too. Therefore, biological control is gaining importance to deal with this weed. In DWSR, organisms like *Alternaria alternata, Curvularia lunata* and *Fusarium oxysporum* were tested and among them *F. oxysporum* was found more efficient than the other two foliar fungi and killed the plants in 15 days after inoculation, facilitated with artificial injury. However, *Fusarium* was not very efficient in causing disease in non-injured plants. The fungus was tested for their efficiency when combined with the insect pest, *Neochetina*. There was rapid wilting and death of the plants when the beetles were applied about 10 days in advance of the application of the fungus. This shows that the beetles, if applied prior to the fungus application, played the role of facilitator for the fungi to enter the plants and kill them rapidly. Further the crude fractions of *Fusarium* were found to cause the same symptoms as in the case of the fungus, however there was no complete wilting of the plants.

- C. Kannan

Fig.1. *Neochetina* **beetles followed by application of** *Fusarium oxysporum* **after 10 days in water hyacinth**

Fig.2. *Fusarium oxysporum* **followed by application of** *Neochetina* **beetles after 10 days in water hyacinth**

Personalia

CWSS Fellow-2011

Dr. Anil Dixit, Principal Scientist, Agronomy has been awarded prestigious CWSS Fellowship for the year 2011 by Crop and Weed Science Society, Bidhan Chandra Krishi Viswavidyalaya, West Bengal. He has been conferred this award during the Society's international symposium on "System intensification towards food and environmental security" held on Feb. 24-27, 2011 at Kalyani, WB for his outstanding contribution in weed science research at national arena.

International training

Dr. Shobha Sondhia, Sr. Scientist (DWSR Jabalpur) has undertaken the international training under HRD programme of NAIP (ICAR) during 18th November, 2010 - 20th February, 2011 in the field of 'Biomolecules' at Natural Product Utilization Research Unit, USDA-ARS, National Center for Natural Products Research, University of Mississippi, USA.

New recruitment

Dr. K. K. Krishnani, Sr. Scientist from Central Institute of Brackish Water Aquaculture, Chennai joined DWSR on 06.01.2011 as Principal Scientist (Organic Chemistry) on direct selection.

Dr. Raghvendra Singh, from Defence Institute for Bio-energy Research, DRDO, Haldwani joined DWSR on 24.02.2011 as Sr. Scientist (Agronomy) on direct selection.

Sh. Nemichand Kurmi and Sh. Mohanlal Dubey joined DWSR on 01.01.2011 as SSS.

Published by : Dr. Ranganatha, Director, DWSR
Editor : Dr. Partha P. Choudhury, Sr. Scientist **Technical support :** Dr. M.S. Raghuwanshi, Mr. Sandeep Dhagat
Address : Directorate of Weed Science Research, Maharajpur, Jabalpur-482 004 (M.P.),
Phones: +91-761-2353001, 2353101, 2353138, 2353934 **Fax :**+91-761-2353129
E-mail: dirdwsr@icar.org.in **Website :** http://www.nrcws.org