



# WEED news



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## From Director's Desk



Many weed species have assumed serious proportions in our country over the last few decades. These include *Phalaris*, *Orobancha*, *Parthenium*, *Mikania*, *Chromolaena*, *Alternanthera*, *Ageratum*, water hyacinth and others, which are threatening not only agricultural productivity but also biodiversity and human health. Of these, *Parthenium* also known as carrot weed or white top (local name *Gajar Ghas*) has been spreading very fast ever since it was first reported in 1950s from Pune, Maharashtra. Its infestation has been reported from all states of India including the Union Territories of Andaman & Nicobar and Minicoy Islands. It is estimated that this dangerous species has spread over 35 million ha, which is >10% of the total geographical area of the country. *Parthenium* is responsible for causing numerous health hazards in human beings and animals due to its toxic constituents, besides loss to agricultural productivity and biodiversity. This weed is spreading so fast due to its high reproductive and dissemination ability that all efforts being made for its containment are falling short. Our Directorate has

been making strenuous efforts on its management and creating awareness among the stakeholders including general public. In 2004, we started a nation-wide campaign known as '*Parthenium* Awareness Week' involving all ICAR institutes, State Agricultural Universities, KVKs, State Department of Agriculture, NGOs, village Panchayats, schools and colleges in this series. The tenth PAW was organized from 16-22 August, 2013 involving about 1000 such institutions for creating awareness about the harmful effects of this weed and its management. It is possible to contain this menace through community efforts and by following integrated approach involving preventive, cultural, mechanical, chemical and biological measures including use of bioagents (Mexican beetles). We appeal to all individuals and organizations to make their surroundings *Parthenium*-free and spread the message of '*Parthenium*-free campus' to all others. We shall be pleased to provide technical knowhow on the management of *Parthenium* including supply of Mexican beetles.



## Research notes

### Organic Weed Management in Kharif Okra-tomato Cropping System

A study was done to see the effect of non-chemical approaches on weed management in okra-tomato cropping system. Okra was grown during rainy season followed by tomato during *Rabi* season 2012.

The lowest weed density and biomass in both crops were recorded under FYM + black polythene mulch. The highest tomato yield was recorded under FYM with black polythene mulch (23.9 t/ha), which was at par with 80% FYM + 50% NPK + herbicide *fb* HW at 45 DAS (22.7 t/ha) as compared to unweeded control (2.59 t/ha). In okra also, lowest weed density and biomass were recorded under FYM + black polythene mulch *fb* FYM + 2 HW. The highest pod yield of okra was recorded under FYM + black polythene (13.84 t/ha), which was about 3 times more than unweeded control (3.84 t/ha).



### Arundo Based Phytoremediation

A study was done to test the efficacy of weed-based phytoremediation for removal of heavy metals from industrial waste water and its impact on crop quality. The phytoremediation system consisted of pre-treatment overhead settling zone and treatment zone having three pairs of sequential tanks (3 x 2 x 0.75 m). The fast growing *Arundo* was planted hydroponically in first pair of tanks and in angular gravel media in surface and sub-surface tanks. The polluted water from the adjacent drain was injected into pre-treatment overhead tanks and after settling of solid particles at bottom, water was directed to sequential



treatment tanks for treatment. Results showed that extensive root system was developed in hydroponically-grown tanks and the plant roots were also entangled with angular gravels in surface and sub-surface tanks. Concentration of Fe, Cd, Pb and NO<sub>3</sub> in treated water was reduced by 68.2, 51.4, 76.9 and 88.4%, compared with untreated drain water, respectively.

## News

### Meeting of Institute Management Committee

A meeting of Institute Management Committee (IMC) was convened on 12 July, 2013 under the chairmanship of Director, DWSR. Other members who attended the meeting were Sh. B.P. Tripathi, Jt. Director, DFWAD, Govt. of M.P., Bhopal; Dr. S.S. Tomar, Director Research Services, JNKVV, Jabalpur; Dr. S.D. Upadhyay, Prof., Deptt. of Plant Physiology, JNKVV, Jabalpur; Dr. Prem Kishore, Chief Editor, Crop Care, & Vice President, Cristal Crop Protection Pvt. Ltd., New Delhi and Dr. Dev Raj Arya, Technology Development Head, Monsanto India Ltd., Mumbai. The Chairman IMC welcomed all the members of IMC and special invitees, and briefed about the historical background, mandate, networking and collaboration, farm facilities, discipline-wise staff strength, major research programmes in XII plan, and contract research/consultancy services of the Directorate. Dr. K.K. Barman, Pr. Scientist (Soil Science) presented the draft of DWSR Vision 2050 and sought inputs from IMC members. Five Programme Leaders, viz. Dr. V.P. Singh, Dr. D.K. Pandey, Dr. Sushil Kumar, Dr. P.P. Choudhary and Dr. P.K. Singh presented the salient research achievements of 2012-13 and future research programme for 2013-14. The members also visited the laboratories and appreciated the work done by the Directorate.



### Training on Weed Management for Students

A training programme was organized on "Microbes and their biotechnological interventions for sustainable agriculture with special reference to biological weed management" sponsored by Madhya Pradesh Biotechnology Council during 22 July to 5 August, 2013. Total 30 students participated from different colleges of Jabalpur participated. The participants were exposed to different aspects of microbes with special reference to their role in biological weed management.



### Nationwide Organization of Parthenium Awareness Week

'Parthenium Awareness' Week was organized from 16-22 August, 2013 throughout the country. The Directorate coordinated this programme and provided published material in the form of charts, posters, leaflets, banners, display boards etc. to all 22 centres of AICRP-Weed Control, ICAR institutes, SAUs, KVKs, State Department of Agriculture

and NGOs. At Jabalpur, the awareness programmes were organized in Panagar, Majholi, Gosalpur, Kundam, Bankhedi and Shahpura localities on different days of the



week. A training-cum-awareness programme was conducted at the Directorate on 19 August, 2013 in which about 56 stakeholders from the city and adjoining districts participated. Mexican beetles were distributed to the farmers for release in *Parthenium* infested areas. The programmes were widely covered by print and electronic media throughout the country.

### Farmer-Scientist Interface at Dindori (MP)

On the request of Agricultural Department, Madhya Pradesh, a Farmer-Scientist Interface Meeting was held on 31 July, 2013 at Krishi Vigyan Kendra, sponsored by ATMA



Project and Farmers Welfare Society. In this meeting, Deputy Director (Agriculture), Block Technology Manager (BTM), Assistant Directors, Sub-divisional Agricultural Officers and the progressive farmers and farmers from tribal belt participated in the meeting. Dr. A.R. Sharma, Dr. P.K. Singh, Dr. V.P. Singh and Dr. R.P. Dubey participated from the Directorate and imparted technical knowhow of weed management. The farmers desired to know herbicides application techniques in minor millets including Kuttu, Kodo millet and finger millet, which are the major crops of the area. *Parthenium* was also a major problem in the area for which management techniques including release of Mexican beetles was suggested.

### Training on Biological Control of Parthenium in Punjab

On the request of Punjab State Council of Science & Technology (PSCST), Dr. Sushil Kumar imparted training on biological control of *Parthenium* to farmers and scientists during 1-2 August, 2013 in the programmes held at Patiyala and Punjab Agricultural University (PAU), respectively organized by PSCST in collaboration with PAU. At this occasion, bioagents *Zygogramma bicolorata* were distributed to farmers free of cost.

### Programme on Parthenium Management at Jhansi

On the request of Director, National Research Centre for Agroforestry, Jhansi (U.P.), about 25000 Mexican beetles, were provided as a gift from DWSR for biological control of *Parthenium*. Dr. Sushil Kumar imparted technical knowhow to the staff of NRCAF and farmers of village Parasai (Parasai-Sindh Watershed) Babina Block, district Jhansi





on 17 August, 2013, a move of NRCAF to save the land and environment from *Parthenium*. Bioagents were released and distributed to farmers.

### Training Programme on *Parthenium* Management at Rewa

Dr. A.R. Sharma, Dr. Sushil Kumar and Dr. P.K. Singh from DWSR delivered lectures on *Parthenium* management in Krishi Vigyan Mela held during 11-13 September, 2013 at Rewa on the request of Deputy Director, Agricultural Department, Madhya Pradesh. A training on various aspects of *Parthenium* management was given. Mexican beetles were distributed to the farmers of different villages of Rewa district. A visit to the demonstrations area on soybean and rice in farmers' fields was made. Bed planting of soybean along with basal N and S application showed excellent results.



### Monitoring Team Visits AICRP Weed Control Trials

A team consisting of Dr. Sushil Kumar and Bhumesht Kumar (DWSR), Dr. C.T. Abraham (KAU), Dr. Devendra and Dr. Sanjay (UAS) monitored the experiments of AICRP-WC centers of KAU, TNAU and UAS during 4-9 September, 2014. The team visited the experimental sites and examined the experiments conducted. The team suggested to follow the plan of experiments as per approved programme. Long term herbicide trial conducted by KAU, Thrissur showed no residue in the soil indicating that herbicides are relatively safe than other pesticides. Weedy rice was found a major problem in rice fields in most of the areas of the Kerala.



### Travailing Seminar on Conservation Agriculture

Directorate hosted the visit of participants of National Travailing Seminar on Conservation Agriculture organized by ICAR-CIMMYT-BISA on 21 September, 2013. Dr. A.R. Sharma, Director, DWSR made a brief presentation about the research programmes being run at the Directorate. He discussed the experiments on weed management in conservation agriculture systems. A field visit was organized during which all the experiments were discussed thoroughly and participants shared their views. Dr Raj K Gupta, Nodal Officer of the event appreciated the research efforts being made by scientists of DWSR.



### DWSR Imparted Technical Knowhow on Water Hyacinth Management at Banswara (Rajasthan)

Directorate received a request from Collectorate office of Banswara to provide technical knowhow for management of water hyacinth in ponds in the city. Dr. Sushil Kumar, visited

Banswara. Lodha pond of Banswara, spreading in about 65 ha area was fully infested with water hyacinth. Dr. Sushil Kumar, provided technical help to keep the pond free



from water hyacinth with the help of power point presentation. It was suggested to keep continuous watch of ponds and to remove newly emerging water hyacinth regularly to check further multiplication and spread of the weed. Dr. Kumar also demonstrated to make vermicompost from the removed biomass of weed for the use in plantations and garden.

### हिन्दी पखवाड़े का आयोजन

निदेशालय में राजभाषा कार्यान्वयन समिति द्वारा दिनांक 16 सितम्बर 2013 से 30 सितम्बर 2013 तक हिन्दी पखवाड़े का आयोजन किया गया जिसमें कार्यालय के समस्त अधिकारियों/कर्मचारियों ने भाग लिया। पखवाड़े के दौरान निदेशालय में आलेखन एवं टिप्पण, शुद्धलेखन एवं क्विज प्रतियोगिता का आयोजन किया गया। पखवाड़े के समापन अवसर पर कवि सम्मेलन भी किया गया जिसमें जबलपुर और कटनी के प्रख्यात कवियों ने भाग लिया और अपनी प्रस्तुती दी। इस अवसर पर विभिन्न प्रतियोगिताओं में जीतने वाले प्रतिभागियों को पुरस्कारों से सम्मानित किया गया। डॉ. पी.के. सिंह एवं श्री संदीप घग्गट को उनके हिन्दी के लेखों पर विशिष्ट पुरस्कार दिया गया। डा. पी.पी. चौधरी ने हिन्दी पखवाड़े के समापन समारोह में धन्यवाद प्रस्ताव प्रस्तुत किया।



### Participation in ICAR Zonal Sports Meet

Sports contingent of DWSR consisting of 25 players led by Dr. Bhumesht Kumar (Chief-de-Mission) participated in ICAR Zonal Sports Meet 2013 held at CIAE, Bhopal during 24-28



September, 2013. Players participated in 11 individual events and 4 team events. Dr. Meenal Rathore (Discus throw - Women), Sh. S.K. Bose (Chess - Men) and Sh. Veer Singh (Carom - Men) won first positions, while Dr. Meenal Rathore (Shotput - Women), Mr. Dibakar Ghosh (Shotput Men, Javelin-Men) won second positions. In addition, Mr. Dibakar Ghosh (Javelin-Men, High jump-Men), Mr. Nemichand (Long jump - Men) and Mr. Mohan Dubey (1500 m race -Men) got third positions. In team events also, DWSR teams reached into semifinal in Kabbadi and Volleyball (Shooting).

## Personalia

### Participation in Seminars / Symposia

- Dr. Sushil Kumar participated in "National Workshop on Grassland Management in Protected areas in India", held

at Bandhavgarh National Park during 4-6 July, 2013 organized by Wild Life, Forest Department of Madhya Pradesh.

- Dr. A.R. Sharma and Dr. V.P Singh attended meeting of Directors and Agricultural Engineering Divisions at NASC, New Delhi, and NCAP New Delhi on 15 July, 2013.
- Dr. A.R. Sharma attended Foundation Day and Award Ceremony of ICAR at NASC, New Delhi on 16 July, 2013.
- Dr R.P. Dubey delivered a lecture on 'Weed Management in Horticulture - Citrus Orchard' in "National Citrus Meet" held at NRC on Citrus, Nagpur during 12-13 August, 2013.
- Dr A.R. Sharma attended meeting of "Agri-CRPs and AICRP/AINP" held at NASC New Delhi during 29-31 August, 2013.
- Dr. K.K. Barman and Sh. G. Vishwakarma attended "Training-cum-Workshop on Hindi" at Central Hindi Training Institute, New Delhi from 1-7 September, 2013.
- Dr. V.P. Singh participated in "National Traveling Seminar on Conservation Agriculture" during 16-25 September 2013 organized jointly by ICAR-CIMMYT-BISA.
- Dr. Shobha Sondhia attended "Awareness Workshop on National Fund for Basic, Strategic and Frontier Application Research in Agriculture (NFBFSFARA)" held at CIFE, Mumbai during 27-28 September, 2013.

#### Director's meetings with Scientists and Staff

- Monthly scientists meeting on 27 July, 2013 and 26 August, 2013 to discuss various research issues and other on-going assignments.
- Meeting with all staff of Administration, and Finance & Accounts sections on 5 July, 2013 and 3 August, 2013 to discuss administrative and financial issues.
- Meeting with accounts sections on 3 August, 2013 to discuss administrative and financial issues.
- General body meeting with all staff of directorate on 20 September, 2013 to address issues related to grievances of employees and general points.

#### Field Visit at Directorate

- A field visit was held on 20 September, 2013 to review the progress of on-going research experiments during *Khraif* season.



#### Technical Seminars

- Dr. A.R. Sharma: "Weed and nutrient management" on 30 July, 2013.
- Mr. Dibakar Ghosh: "Herbicide resistant weeds" on 27 August, 2013.

#### Guest Lectures

- Dr. Ranjan Bhattacharya: "C-Sequestration under rice-wheat systems" on 21 September, 2013.

#### P.G. Students' Seminars

- Mr. Neeraj Dixit: "Performance of post-emergence herbicide under diverse weed flora in wheat, on 3 July, 2013.
- Mr. Rohit Kumar Pandey: Fungal transformation of orthosulfamuron in rice rhizospheric soil" on 20 July, 2013.
- Mr. Ajay Verma: "Impact of weed management practices on soil health indicator in a citrus orchard with and without intercropping" on 22 July, 2013.
- Mr. Anil Naguwanshi: Evaluation of prtilachlor, pneoosulam, pyrazosulfuron persistence and yield of paddy grown on a vertisilic soil on 29 July, 2013.
- Mr. Manoj Kumar Sharma: "Effect of crop establishment and weed management practices on growth and yield of wheat" on 18 September, 2013.

#### Talk on Doordarshan

- A talk of Dr. A.R. Sharma was recorded at Delhi Door darshan studio on 16 August, 2013. on '*Parthenium* Menace and Management' for telecasting during *Parthenium* Awareness Week during 16-22 August, 2013.

#### Foreign Training

- Dr. C. Kannan, Senior Scientists' Plant Pathology was selected for a foreign training in the area of Biomolecules for 89 days (September-November, 2013) in the laboratory of Professor B. Zwanenburg, Cluster Molecular Chemistry, Institute of Molecules and Materials, Radboud University, The Netherlands.



#### Distinguished visitors

- Dr. P.K. Ghosh, Director, IGFR, Jhansi (UP) on 8 September, 2013.
- Dr. B. Mohan Kumar, ADG (Agronomy & AF), ICAR, New Delhi on 29 September, 2013.
- Dr. Ranjan Bhattacharya, Sr. Scientist Division of Environmental Science on 21 September, 2013.

#### Transfer/Posting/Appointment

- Dr. Anil Dixit, Principal Scientist (Agronomy) was transferred on 17 July, 2013 from DWSR to "National Institute of Biotic Stress Management" at Raipur.
- Dr. M.S. Raghuwanshi, Technical Officer was transferred on 20 July, 2013 from DWSR to CAZRI, Regional Research Station, Leh (Jammu & Kashmir) on his selection as Sr. Scientist.



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