



# WEED news



October-December, 2012

Vol. 12, No. 4

## From Director's Desk



Weed management technologies are in great demand by the farmers. This is because of the acute labour scarcity and high cost of manual weeding throughout the country. Unfortunately, there is not enough awareness among the farmers about improved weed management practices, even in areas not far away from the cities and research institutions. It is also often argued that scientists are doing their research work without any regard to the real problems faced by the farming community. In order to understand the weed related problems faced by the farmers and find solutions, our Directorate initiated a major programme from rainy season 2012 to undertake on-farm research trials and demonstrate our technologies. The objective is to understand farmers' problems and undertake necessary interventions through farmer participatory approach.

The areas around Jabalpur were surveyed for the crops grown, weed infestation, awareness of farmers and management practices followed by them. Accordingly, six localities about 50-80 km from the Directorate were selected, and in each locality 2-3 villages were identified. About 8-10 farmers were selected from each village for implementation of suitable interventions. At the Directorate, 6 multi-disciplinary teams of scientists each having 3 members were constituted. A specific day of the week was

marked from each team to visit the identified locality and conduct on-farm trials on 1 acre area in each farmer's field.

Results obtained during the first season showed significant advantages of improved technologies compared with the farmer's practice (see Table). Additional returns over the farmer's practice also increased substantially, and the farmers were highly satisfied with the demonstrated technologies. The programme was highly successful and led to greater awareness among the farmers about the low-cost weed management practices. Most scientists of the Directorate also had first time experience working with the farmers and enjoyed sharing their expertise with them. It is proposed to launch more such programmes in the coming season on a wider scale. Impact assessment of these technological interventions will be made after two years of continuous adoption.

### Average yield of different crops during rainy season, 2012 (8-10 farmers at each location)

Locality	Crop	Grain yield (t/ha)	
		Farmers' practice	Improved weed management
Majhoul	Soybean	1.50	2.00
Bankhedi	Rice (direct-seeded)	3.71	4.08
Panagar	Rice (direct-seeded)	3.33	3.75
Panagar	Rice (transplanted)	3.64	3.95
Shahpura	Rice (direct-seeded)	3.28	3.78
Gosalpur	Rice (transplanted)	4.06	4.52
Kundam (Tribal area)	Maize	1.52	2.51

## Research

### Design, development and evaluation of wick applicator for weed management

DWSR had designed and developed an applicator, known as *DWSR herbicide wick applicator*, for applying non-selective, contact herbicides in between wide-spaced crop rows. It consists of cylindrical roller pad, frame, ground wheels, solution tank, cut-off valve and handle. Concentrated herbicide solution stored in chemical tank flows over to cylindrical roller pad through cut-off valve. The cylindrical roller is covered with fibrous clothed pad which gets wet by herbicide solution. When the unit is operated in wide

spaced crop rows, the wet roller pad/cloth comes in contact with the grown up weed plants and herbicide solution gets applied / contacted with weed plants. Further improvement has been made to enhance the stability during operation of this applicator by reducing the overall weight of the machine, reducing the size of tank, compact arrangement of fixing herbicide tank at lower height, reducing the size of wheel, incorporating bearings in rotor wheels. The field performance of the modified wick applicator was carried out in mustard during *rabi* 2011-12 and compared with HV Knapsack sprayer using nozzle hood for application of imazethapyr and glyphosate. The weed control efficiencies were 67.7 and 72.1% with herbicide wick applicator as compared to 74.0 and 75.2% with HV

knapsack sprayer for imazethapyr and glyphosate, respectively, in mustard. *DWSR herbicide wick applicator* satisfactorily controlled weeds growing in between crop rows and its efficiency was close to that of HV knapsack sprayer with nozzle hood.



### Weed control efficiency with wick applicator and HV knapsack sprayer in mustard

Treatment	Weed control efficiency (%)		Seed yield (t/ha)
	Weed count	Dry biomass	
Imazethapyr by wick applicator	57.6	67.8	1.13
Glyphosate by wick applicator	57.0	74.0	1.17
Imazethapyr by HV knapsack sprayer with nozzle hood	54.6	72.1	1.17
Glyphosate by HV knapsack sprayer with nozzle hood	53.9	75.2	1.17
Weed - free by mechanical twin wheel hoe weeder	57.7	90.7	1.24
Unweeded	-	-	1.0

### Characterization of weedy rice biosimilars

Weedy rice infestation in India has increased rapidly in recent past. Keeping it in view, survey work was carried out in adjoining villages of Jabalpur, viz. Khinni, Mahegawa and Bhadra Paradiya of Panagar block to find out the status of weedy rice infestation under upland conditions in direct-seeded and puddle-broadcasted rice. It was found that infestation varied from 5% in well managed fields to 50% in less managed ones, as farmers showed inability to recognize these rice biosimilars at early vegetative stages because of their similar morphology with rice. Farmers could assess the presence of weedy rice only after appearance of panicle and by the time, losses occurred to the significant level. It was also observed that these rice biosimilars possess traits like early maturity, early shattering and asynchronous maturity along with varied hull colour.

Control of weedy rice is difficult as cultural practices for rice also favour weedy rice. Hence, weedy rice biosimilars accessions were collected from the villages surveyed, DWSR farm, and also from other locations of the country for studying its biology with interventions at molecular level to understand and figure out the origin of weedy rice in India by comparing genetic backgrounds of different accessions and to detect probable target sites for its control. Phenotypic variations were observed in the weedy rice accessions collected from the surveyed areas. So far, total 79 accessions of weedy rice biosimilars and 7 lines of wild rice germplasm were collected.

### Morphological characters of weedy rice samples collected from farmers' fields

S. No.	Characters of awn	Colour of hull	Plant height (cm)	Inter-nodal length (cm)	Presence of ligule	Asynchronous maturity
S/1	black, long	brownish black	121.9	25	yes	yes
S/2	brown, long	dark brown with stripes	134.6	27	yes	yes
S/3	red, short	Grey brown	152.4	24	yes	no
S/4	black, long	Brown black	121.9	28	nd	yes
S/5	no	brown	142.2	23	nd	no
S/6	red, long	grey brown	142.0	33	yes	yes
S/7	no	Brown	157.5	33	yes	no
S/8	no	brown	152.4	28	yes	yes
S/9	brown, long	blackish	134.6	27	yes	yes
S/10	no	dark brown with stripes	106.7	23	yes	yes
S/11	brown, small	brown	86.4	27	yes	yes
S/12	brown, long	dark brown with stripes	111.8	30	yes	no
S/13	brown, long	brown black	142.2	27	yes	yes

### Morphological characters of weedy rice samples collected from DWSR Farm

S. No	Characters of awn	Colour of hull	Plant height (cm)	Inter-nodal length (cm)	Presence of ligule	Asynchronous maturity
F1	--	brown	147.3	29	yes	yes
F2	brown	dark brown with stripes	149.8	27	yes	yes
F3	black	grey brown	71.1	22	yes	yes
F4	black	blackish	76.2	22	yes	yes
F5	brown	brown	116.8	28	yes	yes
F6	--	black	111.7	21	yes	yes
F7	--	brown black	116.8	19	-	yes
F8	--	blackish	nd	nd	-	yes
F9	--	brown black	142.2	29	-	yes
F10	brown short	blackish	11.5	25	yes	no
F11	--	brown with stripes	91.4	21	yes	no
F12	reddish black	blackish	144.8	30	-	yes

## News

### National Training Programme for ATMA Officers of Uttar Pradesh

The Directorate organized a five-day national training programme during October 16-20, 2012 on the 'Advancement in Weed Management Techniques' for agriculture/ATMA officers, achiever farmers and NGOs of Uttar Pradesh. Mr. B.P. Tripathi, the chief guest of the inaugural programme and Joint Director Agriculture, MP Government, expressed his agony on the yield loss being caused by weeds in some major crops in MP.

Dr. A.P. Shrivastava, Joint Director (Agriculture), UP Government, opined that there is urgent need to train the officials to properly equip the farmers with modern weed management technologies. Dr. A.R. Sharma, the Director of DWSR, explained how weeds are harming crop production both quantitatively and qualitatively. He advised to lead the farmers to get rid of weeds to provide food security and to conserve biodiversity. In the technical session total 15 lectures covering important aspects of advanced weed management were delivered by the scientists from the Directorate as well as from JNKVV. Practical sessions were conducted in weed identification, spraying techniques, mechanical weeding tools, use of GIS/GPS weed survey database and weed identification kits, compost making using weed biomass and biocontrol agents. The trainees were also taken to the FLD/OFT sites of the adopted villages to show performance of the improved weed management technologies in the farmers' field. Dr. R.P. Singh, Former Director, PDFSR, and Secretary General, IAUA, chaired the closing ceremony. He insisted the participants to implement the knowledge gained during the training in the farmers' fields. Dr. P.K. Singh coordinated the programme.



**DWSR starts Knowledge Management Service**

A knowledge management service through SMS was launched for speedy and timely dissemination of information to the farmers on 20 October, 2012. Dr. R.P. Singh, Former Director, PDFSR, and Secretary General, IAUA inaugurated the Knowledge Management Services on Weed Management through SMS being introduced by DWSR for farmers of the country and other end users. Dr. A.R. Sharma, Director of DWSR explained its need in present day to disseminate the knowledge-based information on weed management to all stakeholders in agriculture in no time.



**National Training Programme on 'Advances in Weed Management'**

The Directorate of Weed Science Research organized a ten-day national training programme during October 31 - November 9, 2012, on the 'Advances in Weed Management'. Twenty trainees from different ICAR institutes and agricultural universities participated in this programme. Dr. A.R. Sharma, Director of DWSR, briefed the programmes to be conducted in the technical sessions and explained the purpose of it. To him, advancement in weed

management is badly needed to combat weed problems now and in future under changing climate. At the same time he opined to disseminate the technologies developed amongst the scientists to create scope for further development. Dr. N.N. Pathak, the chief guest of the inaugural programme and the Vice Chancellor, Jawaharlal Nehru Krishi Viswavidyalaya, Jabalpur opined that strong endeavor is required to pursue research work on bioherbicides and biocontrol agents, system management, and cloning of genes. In the technical session total 32 lectures broadly covering all aspects of advanced weed management were delivered by the scientists from the Directorate as well as from JNKVV. An interaction session with Dr. R. K. Gupta, Country Head, the Borlaug Institute for South Asia, was also arranged. He explained lucidly the pros and cons of the conservation agriculture citing examples of farmers' practices of different locations on the globe. Er. H.S. Bisen, Director in-charge, DWSR, chaired the closing ceremony on November 09, 2012. Appreciating the programme Er. Bisen insisted scientists and extension workers to disseminate the research output in practical field.



**Agriculture Education day**

DWSR organized first Agriculture Education Day on November 20, 2012 at the Directorate for promoting the spirit of agricultural science among the school children of the rural areas of Jabalpur. Thirty students from 6 government schools belonging to classes from IX to XII participated in this programme. The students were enlightened on the topics, such as 'Developments in agriculture – an historical perspective', 'Challenges to agriculture vis-à-vis climate change', and 'Environmental pollution – human concerns and solutions'.



**Participation in 3<sup>rd</sup> International Agronomy Congress**

DWSR participated in 3<sup>rd</sup> International Agronomy Congress held at IARI, Pusa, New Delhi from 26-30 November 2012, and its exhibition stall was adjudged best in the congress. Number of dignitaries and scientists from the country and abroad visited and appreciated the efforts made by DWSR through its stall and attracted many students for DWSR publications.



## Training on Weed Management for Sustainable Oilseeds and Pulse Production

Eight-day model training course on 'Weed management for sustainable oilseeds and pulse production' was organized by the Directorate during December 13-20, 2012. Over Twenty two agricultural officers and researchers of different states participated in this programme.



The training was inaugurated by Dr. Sahib Singh Tomar, Director Research Services, JNKVV as chief guest. While presiding the inaugural programme, Dr. A.R. Sharma, Director, DWSR enlightened views on importance of weed management in raising agricultural production. Dr. P.K. Singh, training convener stated the importance of this programme in disseminating knowhow to farmers. Participants were exposed to almost every nooks and corner of weed management practices through presentations, documentaries, exhibition and field visit. During concluding ceremony, Dr. K.K. Saxena, Director Extension Services, JNKVV and chief guest opined that this training would certainly bring positive result.

## Personalia

### Awards and Recognitions

1. Directorate was awarded best stall award during 3<sup>rd</sup> International Agronomy Congress held at IARI, New Delhi during 26-30 November, 2012.
2. Dr. A.R. Sharma, Director was conferred ISA Fellow (2009) during 3<sup>rd</sup> International Agronomy Congress held at IARI, New Delhi 26-30 November, 2012.
3. Dr. A.R. Sharma, Director, DWSR was honoured by the Vice Chancellor, PAU, Ludhiana for being 'outstanding alumni' at the Alumni Meet of PAU on 21 December, 2012.

### Participation in seminars/symposia and training

1. Dr. Anil Dixit participated in Pre-RMP programme

on management development training programme on Leadership Development at NAARM, Hyderabad during October 8-19, 2012.

2. Dr. Raghwendra Singh attended the training on 'Analysis of Experimental Data using SAS' under Component I, NAIP at NAARM, Hyderabad during November 2-8, 2012.
3. Drs. A.R. Sharma, VP Singh, Anil Dixit, R.P. Dubey and PK Singh attended 3<sup>rd</sup> International Agronomy Conference at IARI, New Delhi during November 26-30, 2012.
4. Dr. Meenal Rathore attended the Winter School on 'Biotechnological approaches for adaptation to climate change' at NRCPB, New Delhi during December 4-24, 2012.
5. Dr. Shobha Sondhia attended 2<sup>nd</sup> International Science Congress at Bon Maharaja Engineering College, Vrindavan, Mathura, UP on December 8-9, 2013.
6. Dr. Yogita Gharde participated in 8<sup>th</sup> International Triennial Calcutta Symposium on 'Probability and Statistics' held at Kolkata on December 27-30, 2012.

### Technical Seminars by DWSR Scientists

1. Dr. Yogita Gharde: 'Forecasting methods in Agriculture' on 05.10.2012
2. Dr. Bhumesh Kumar: 'Bioprospection of weed species for food security under the regimes of climate change' on 29.10.2012
3. Dr. P.J. Khankhane: 'Weed utilization: potential and prospects for control of soil and water pollution' on 22.11.2012

### Distinguished visitors

- Mr. Nicholas Davis, the Borlaug Institute of South Asia, Jabalpur on 19.10.2012
- Mr. Bhagirath Singh Chouhan, Weed Scientist, International Rice Research Institute, Los Baños, Philippines on 24.11.2012
- Dr. N.N. Pathak, Vice Chancellor, Jawaharlal Nehru Krishi Viswavidyalaya, Jabalpur on 31.10.2012
- Dr. R.P. Singh, Former Director, PDFSR, and Secretary General, IAUA on 20.10.2012
- Mr. B.P. Tripathi, Joint Director (Agriculture), MP Government on 16.10.2012
- Dr. A.P. Shrivastava, Joint Director (Agriculture), UP Government on 16.10.2012
- Dr. R.K. Gupta, Country Head, Borlaug Institute for South Asia on 20.10.2012

### New recruitment

Sh R.K. Giri from CIAE, Bhopal, joined the Directorate as Administrative Officer on 05.11.2012.



**Editorial Team:** Dr. V.P. Singh, Dr. K.K. Barman, Dr. S. Sondhia, Dr. P.P. Choudhury, Dr. M.S. Raghuwanshi

**Technical Support:** Mr. Sandeep Dhagat

**Published by:** Dr. A.R. Sharma, Director

Directorate of Weed Science Research, Maharajpur, Adhartal, Jabalpur – 482004 (M.P.)

**Phones :** +91-761-2353001, 2353101, 2353138, 2353934, **Fax :** +91-761-2353129

**E-mail :** [dirdwsr@icar.org.in](mailto:dirdwsr@icar.org.in)

**Website:** <http://www.nrcws.org>