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DWSR

Marching ahead....

"तृण ज्ञानेन सर्वजन हिताय"

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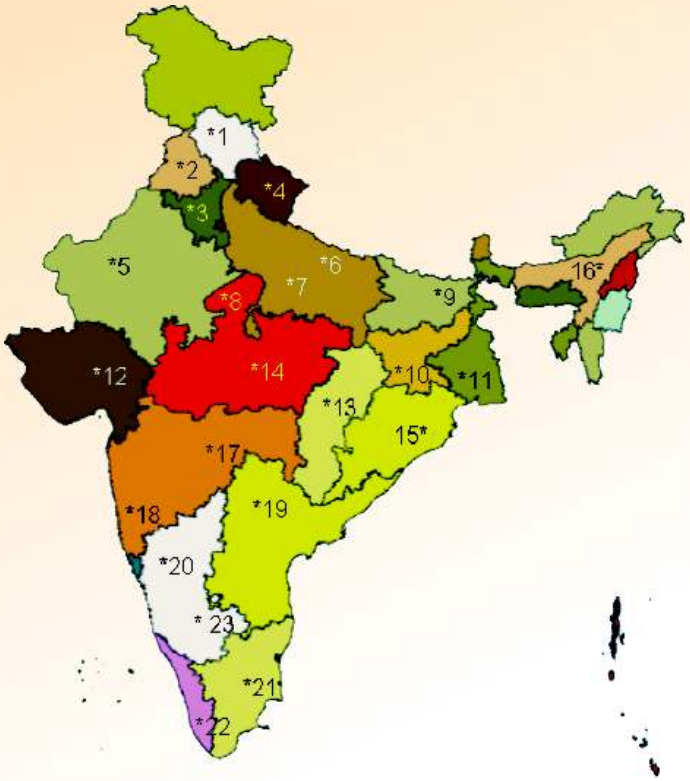
Directorate of Weed Science Research, Jabalpur

DWSR - Publications

A brief description of the recent initiatives in research and infrastructural development and achievements made

DWSR Marching ahead ....



DWSR Coordinating Centres

1	CSKHPKV, Palampur	13	IGKV, Raipur
2	PAU, Ludhiana	**14**	**HQ, DWSR, Jabalpur**
3	CCSHAU, Hisar	15	OUAT, Bhubaneswar
4	GBPUAT, Pantnagar	16	AAU, Jorhat
5	RAU, Bikaner	17	MAU, Parbhani
6	NDUAT, Faizabad	18	DBSKKV, Dapoli
7	CSAUAT, Kanpur	19	ANGRAU, Hyderabad
8	RVSKVV, Gwalior	20	UAS, Dharwad
9	RAU, Pusa	21	TNAU, Coimbatore
10	BAU, Ranchi	22	KAU, Thrissur
11	VB, Sriniketan	23	UAS, Bangalore
12	AAU, Anand		

BASIC INFORMATION

DIRECTORATE OF WEED SCIENCE RESEARCH

National Research Centre for Weed Science established in 1989 as a nodal centre for basic and applied research in weed science has been upgraded as Directorate of Weed Science Research in January 2009. It is the only institution in the world exclusively dealing with weed science research using multidisciplinary approach.

OUR MISSION

"To provide scientific research and technology in weed management for maximizing the economic, environmental and societal benefits for the people of India"

OUR MANDATE

- To undertake basic, strategic and applied researches for developing efficient weed management strategies in different agro-ecological zones;
- To provide leadership at country level in weed science and coordinate the network research with state agricultural universities for generating location-specific technologies for weed management in different crops, cropping and farming systems;
- To act as a repository of information in weed science;
- To act as a centre for training on research methodologies in the area of weed science and weed management;
- To collaborate with national and international agencies in achieving the above mentioned goals;
- To provide consultancy on matters related to weed science.

OUR CHALLENGES

- Development of weed management technologies for rain fed situations
- Management of Alien Invasive Weed Species
- Effects of climate change on crop-weed competition, distribution and productivity
- Mitigating the emerging threat of weedy rice in rice growing areas
- Identifying the metabolite changes in herbicides after application in soil and water
- Developing economical and eco-friendly weed management technologies in different crops and cropping systems under varied situations
- Weed management in vegetables, medicinal & aromatic, horticultural and plantation crops
- Research on aquatic and parasitic weed management
- Creating awareness among policy planners due to loss by weeds

RESEARCH THEMES AND PROGRAMMES

Weed biology and eco-physiology

- Weed collection and preservation
- Crop-weed interaction
- Weed flora shift

Herbicide as a tool in weed management

- Long-term effects of herbicides for managing weeds in different cropping systems
- Efficient weed management through herbicide use
- Transformation and degradation of herbicides

Weed management techniques

- Integrated weed management
- Mechanical weed management
- Management of parasitic and problem weeds

Bio-pesticides and bio control of weeds

- Survey, identification and impact evaluation of new and existing insect/plant pathogen/bio-agents for biological control of important weeds in India
- Herbicidal properties of plant constituents

Weed Utilization

- Phyto remediation of contaminated soil and waste water using weeds
- Vermicomposting

Transfer of technology

- Training
- Awareness programmes
- Demonstration of proven weeds management technologies
- Impact analysis

STAFF AND FINANCE

DWSR has a sanctioned cadre strength of 27 scientists, 24 technical and 11 administrative staff. Presently this Directorate has 16 scientists including one post of RMP, 24 technical and 11 administrative staff. This Directorate has the total allocation of Rs. 1110.90 lakhs under Plan during XIth Five year Plan (2007-2012).

NEW RESEARCH PROJECTS INITIATED

- Assessment of potential of weeds for phytoremediation of heavy metal contaminated water
- Study on the effect of elevated CO_2 on weeds and competitive interaction between crops and weeds
- Evaluation of herbicide persistence in water and their effect on non-targeted organisms
- Evaluation of risk of ground water contamination by herbicides
- Impact of soil physical environment on efficacy of pre-emergence herbicides
- Investigation on the role of leaf surface in the phototransformation of prominent herbicides
- Designing and evaluation of aquatic weed collector from ponds and water bodies
- Weed management in citrus and mango orchards
- Organic weed management in rice-wheat, soybean-wheat, okra-cauliflower-cowpea and chili-tomato-cowpea cropping systems
- Evaluation of *Neochetina sp* and glyphosate on water quality and fish mortality in integrated management of water hyacinth
- Evaluation of bioagents for biological control of problem weeds
- Collection, characterization and evaluation of plant pathogens for weed management
- Biological control of *Cyperus, Euphorbia* and *Legasia sp.* using rust fungi
- Biological management of water hyacinth (*E. crassipes*) using potential aquatic fungal pathogens
- Bio-herbicidal potential of allelochemicals from *Lantana,* neem and tropical soda apple
- Isolation and identification of root exudates of linseed and marigold and their growth inhibitory effect on weeds
- Weed management in medicinal plants
- Long-term effects of herbicides in different cropping systems
- Collection, conservation and multiplication of weed germplasm and documentation of weed seed identification characters
- Impact of herbicides on N-fixation by the legume-rhizobium symbiosis

INFRASTRUCTURAL FACILITIES CREATED

Research Facilities

- Construction of Containment facility for conducting experiments under varied environmental conditions.
- Open top chambers (OTC) to study the effect of elevated CO_2 on crop-weed competition under controlled condition.
- Installation of FACE facility to study the effect of elevated CO_2 on crops in association with weeds under field conditions.
- Lysimeter for studying leaching behavior of herbicides.
- Quarantine insectory for rearing and testing host specificity of insect bioagents of quarantine nature.
- Development of wet land facility for phytoremediation studies using aquatic weeds.

Containment Facility

Open Top Chambers

FACE Facility

Lysimeters

Phytoremediation Facility

Weed Cafeteria

- Live weed cafeteria for conservation of live Weed Germplasm.
- Aquatic ponds for aquatic weed management studies.
- Runoff water collection tank for herbicides residue studies in non target organisms.
- Line quantum sensor with data logger for measuring radiation interception by crops.
- Pneumatic boat for survey and surveillance of aquatic flora and fauna.
- Gel documentation unit for studies of parasitic weed-host interaction.
- Development of Central Laboratory facility with sophisticated instruments *viz.* LC-MS/MS, HPLC, GC, AAS, UV-VIS spectrophotometer, etc.

Aquatic ponds

Net House

Orchard

Laboratory

Runoff tank

Central Laboratory

- Development of Information centre for dignitaries, farmers, etc.
- Rejuvenation of conference hall, committee hall, visitors' room and research laboratory.
- Library automation facility.
- Mango and citrus orchards for undertaking weed management studies.
- Vermicompost facility for making compost using weeds.
- Developed a weed cafeteria containing germplasm of 100 weeds.
- Field laboratories to facilate field research activities.

Weed Seed Herbarium

Implement Shed

Reception Hall

Information Centre

Committee Hall

Visitors Room

ARIS Cell

Library

ARIS AND LIBRARY FACILITIES

- ARIS cell is well equipped with computers, LAN facilities, color xerox-cum-printer and A-0 plotter. Specialized software like ARCInfo for GIS analysis, ERDAS Imagine for satellite image analysis is available. All the scientists are provided with internet facility through Lease line facility.
- Library has a total collection of 2107 books pertaining to weed science. It has modern facilities such as CAB-PEST and CAB-SAC CD-ROMs and Current Contents on Diskette (CCOD) on biological sciences, software for library automation and information retrieval. It subscribes 68 Indian and 20 foreign journals. It is also a member of Consortium for e-Resources in Agriculture (CeRA) under NAIP (ICAR). All the scientists have on-line access to more than 2000 e-journals in various fields of science. Reprographic and documentation facilities have also been created for the preparation of documents and reports.

OTHER INFRASTRUCTURE CREATED

- Carried out the following works as per the farm development plan suggested by CSWCRTI, Dehradun.
  - Reconstruction of the farm roads
  - Reshaping of research fields
  - Development of drainage system
  - Construction of Water harvesting ponds
- Proper electrification of entire front and farm roads.
- Farm boundary on north, east and west sides to prevent pilferages.
- Proper fencing of boundaries to avoid any encroachment.
- Plantations of trees particularly with teak, white oak, anwala, and other tress on entire boundary of farm for revenue generation in future.

- Erection of two watch towers to strengthen farm security.
- Installation of CC cameras for proper monitoring of the day to day activities in the farm and office building premises.
- Farm godown to accommodate farm produce, farm stores, farm staff, etc.
- Small farm store near the threshing floor to facilitate post harvest operations.
- Construction of South wing the institute building is to start soon.
- Construction of Staff welfare club for recreational activities.
- Development of front area of office building premises.
- Overhauling of guesthouse.

Water Harvesting Pond

Watch Tower

Farm Godown

Small Farm Store

Field Laboratories

Vermicomposting Facility

COORDINATION AND LINKAGES

The Directorate is having 22 centres and 9 voluntary centres located in different SAUs for carrying out network research in the country. The institute is also the headquarters of the National Invasive Weed Surveillance programme sponsored by the Department of Agriculture and Cooperation, Govt. of India.

Inter-institutional projects at DWSR

Programmes	Institutes/ Organizations	Period	Budget (Rs. Inlakhs)
National Invasive Weed Surveillance (NIWS) programme	DPPQS (Faridabad) and 267 districts under 10 states with different SAUs, Central and other universities	2008-2011	716.00
Precision farming technologies based on microprocessor and decision support systems for enhancing input application efficiency in production agriculture	NAIP (ICAR, New Delhi) in collaboration with CIAE (Bhopal), IIT (Kharagpur) and PDCSR (Modipuram)	2009-11	50.57
Survey of natural enemies of *Cyperus rotundus*	PDBC, PAU, AAU(J), AAU(A), TNAU, KAU	2005-08	Collaborative
Structural behavior of different of cropping conditions - identification and quantification sulfonylurea herbicides in sub -soil under the influence of potential metabolites responsible for the toxicity and their bio-accumulation in fish	IIBAT (Padappai) and PAU (Ludhiana)	2005-08	9.26
Large scale demonstration on management of *Parthenium hysterophorus* through integrated approach	DBT (New Delhi) and DWSR centres at ANGRAU, UAS(D), UAS(B), MPKV, IGKV, TNAU, CSKHPKV	2004-08	11.35
Determination of the role of weeds in epidemic and perpetuation of economically important plant viruses (In collaboration with IARI)	IARI and DWSR	2004-07	4.50

Externally funded schemes under operation

Project Title	Funding Agency	Duration		Budget (Rs. In lakhs)
National Invasive Weed Surveillance (NIWS) programme	DPPQS	2008	2011	716.00
Compost production from weed biomass for the socio economic development of rural people	DST	2009	2011	5.55
Precision farming technologies based on microprocessor and decision support systems for enhancing input application efficiency in production agriculture	NAIP	2008	2011	50.57

Externally funded schemes completed in recent past

Project Title	Funding Agency	Budget (Rs. In lakhs)
Large scale demonstration on management of *Parthenium hysterophorus* through integrated approach (Net work project with 7 cooperating centres)	DBT	11.35
Herbicidal property of Invasive and noxious weed -lantana (*Lantana camara* L.) constituents	DST	16.14
Feasibility of increasing persistence of some rice herbicide and its consequence in soil environment	ICAR	19.53
Augmentation and activity enhancement of Mexican beetle for biological control of parthenium	ICAR	14.53
Structural behavior of different of cropping conditions - identification and quantif ication sulfonylurea herbicides in sub - soil under the influence of potential metabolites responsible for the toxicity and their bio -accumulation in fish (In collaboration with IIBAT, Padappai and PAU, Ludhiana)	ICAR	9.26
Effect of elevated atmospheric ca rbon di-oxide (CO_2) on crop-weed interactions	ICAR	19.57
Determination of the role of weeds in epidemic and perpetuation of economically important plant viruses (In collaboration with IARI)	ICAR	4.50
Bio-safety research trial level -1 (BRL-) in stacked tr ansgenic corn	DBT	-

Scientists visited abroad

- Dr. Jay G. Varshney, Director visited Colombo for presenting a paper and chairing a technical session during 2-6 Oct.2007
- Dr. Jay G. Varshney, Director was invited and sponsored by FAO to present a lead paper on "Distribution and management of parthenium at global level" at International Weed Science Conference held at Vancouver during 22-28 June, 2008
- Dr. PJ Khankhane, Sr. Scientist, Soil Science nominated by NAIP for 3 months training at Netherlands
- Dr. Shobha Sondhia, Sr. Scientist, Residue Chemistry nominated by NAIP for 3 months training at Mississippi (US)
- Dr. VSGR Naidu, Sr. Scientist, Economic Botany nominated by NAIP for 3 months training at United States.

RESEARCH ACHIEVEMENTS

WEED SURVEY AND SURVEILLANCE

- Weeds that may become a serious problem in near future have been identified: for example: Infestation of *Malwa parviflora*, *Rumex retroflexus*, *Poa annua*, *Coronopus didymus* and *Polypogon monspliensis* is increasing in rice-wheat cropping zone; *Ipomoea pestigridis* has become a serious weed of sugarcane in Haryana and U.P.; intensity of submerged weeds is gradually increasing in the rice-rice sequence in Assam; Parthenium is spreading beyond the non-cropped area and gradually entering into cropped and plantation area; Loranthus is going to be a major problem for mango orchards in southern part of the country.
- Resistance of *Phalaris minor* to isoproturon was noticed in Haryana and Punjab. Alternative technology to control isoproturon resistant *P. minor* has been developed.
- The existing weed control technologies being followed by the farmers in different parts of the country are being recorded keeping in view the future possible up gradation in those technologies.

Loranthus attack on mango

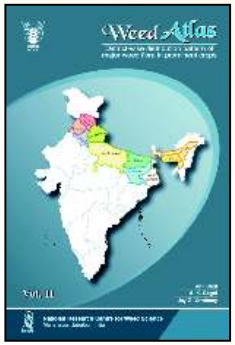
Infestation of *Malwa parviflora* in wheat

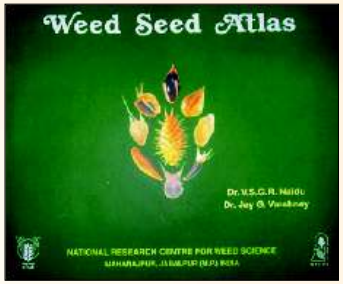
Parthenium in Forest

Ipomoea lacunose infestation in sugarcane

NATIONAL DATA BASE ON WEEDS

- Developed Weed Atlas for major weeds in major crops of 435 districts of 19 states of the country.
- Developed a weed seed repository of about 150 weed seeds along with a weed seed identification kit.





GLOBAL CLIMATE CHANGE

- The possible impact of global worming due to increase in atmospheric CO_2 concentration on weed species and herbicide efficacy was studied. Decrease in herbicide efficacy and increase in weed problem is likely to occur in such condition.
- Elevated CO_2 enhanced the water use efficiency, the increased uptake of nutrients as well as heavy metals in water hyacinth (*Eichhornia crassipes*). This finding indicated that phytoremediation potential of water hyacinth will increase at elevated CO_2 levels.

Shoot and root growth at ambient and elevated CO_2 concentration

ECO-PHYSIOLOGY OF WEEDS

- Weed competitive varieties of different crops have been identified. Varieties KRH-2, BR-2655 IR-30864, Bahadur, White Ponni , ADT 46, MTU-7029, Annapurna, C3-2-49, RNR 23064, Satya, Govind, HKRH 1076, Prabhat, Pusa Sugandha3, Masoori, Karjat5, R-971-2515-2-1, Vandana, Kalinga-III and RR-151-3 of rice; GPBD-4, Dh-53, Mutant-3, Dh-86 and JL-24 of groundnut showed significant competitiveness against weeds.

Evaluation of upland rice cultivars for weed competitive ability

- Quick growing and spreading type pea cultivar JP885 is quite effective in weed suppression.
- Biology of *Parthenium, Alternanthera, Cassia, Celosia argentea* and *Bracharia eruciformis* were studied.
- Technology to break the seed dormancy of wild oat, *Ageratum houstonianum, Bidens pilosa, Mimosa pudica, Cyperus iria* and *Fimbristylis littoralis* weeds by using GA3 was developed.

HERBICIDES AS A TOOL FOR WEED MANAGEMENT

- Herbicide recommendations for various crops and cropping systems have been made based on the multi-disciplinary and multi-location trials conducted in different agro- climatic zones.
- Weed flora shift due to continuous use of some herbicides have been noticed, and accordingly alternative chemical weed control methods were recommended.
- Continuous use of butachlor in rice and isoproturon in wheat has reduced the problem of *Echinochloa colona* in rice and *Phalaris minor*, *Cichorium intybus* and *Chenopodium album* in wheat.
- Monitoring of herbicide residues in soil, water and food chain, in crops and cropping systems throughout the

country revealed that none of the herbicides, used as per recommendation, persisted at levels above the safety limit in soil and in edible plant parts.

- Investigations were carried out to study the impact of herbicides on soil micro flora. The extent of impact varied depending upon the nature of herbicide molecule and the microbes under study, but in general short term and reversible adverse effects of herbicides on soil microbial population was recorded.
- Residual effect of fluchloralin, pendimethalin, metolachlor and oxyfluorfen applied in blackgram, okra and cotton did not disturb the biological balance of soil microflora (bacteria, fungi and actinomycetes). While 2,4-D, glyphosate, paraquat have shown detrimental effect on earthworms.
- Developed protocols for herbicide leaching
- Identified sensitive plants for bioassay of herbicides.

WEED MANAGEMENT IN CROPS AND CROPPING SYSTEMS

- Developed IWM technology using cowpea or dhaincha as an intercrop for reducing weed competition in upland direct-seeded rice.

***Sesbania* with rice**

Killing of *Sesbania* with 2,4-D at 35 DAS

- Developed chemical weed management technology for weed control in onion.

Onion under weedy check

Onion under oxyfluorfen treated plot

- Soil solarization alone as well as with FYM at 5 t/ha for a period of 6 weeks has shown excellent control of most of the annual weeds in sesame-tomato systems.

Solarized sesamum

Non-solarized sesamum

- Soybean-chickpea system has been found to increase the problem of *Euphorbia geniculata.*
- In rice-wheat system, zero-tillage in wheat has reduced the population of *Phalaris minor* but increased wild oat population.

Zero till seed drill

Zero till wheat

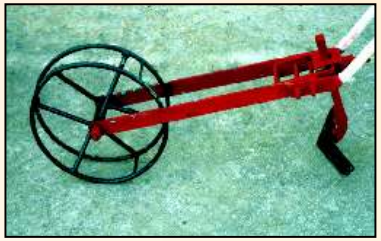
Zero till pea

Wick Applicator

MECHANICAL TOOLS

- Weeding tools collected from different parts of the country were evaluated and improved for controlling weeds in crops.
- A wick applicator was developed for application of non-selective herbicides in standing crops like mustard and soybean.
- Developed and tested an aquatic weed cutter.

Aquatic Weed cutter



Big wheel hoe

INTEGRATED WEED MANAGEMENT IN ORCHARD

- Growing of cover crops is effective in suppressing the weeds in newly planted orchard crops.

Cover crop in newly planted orchard

MANAGEMENT OF PROBLEM WEEDS

- Summer ploughing fb glyphosate application (2.0 kg/ha) at 4-6 leaf stage during April-May was found very effective in controlling *Saccharum spontaneum* (Kans).
- Quizalofop at 125-150 g/ha has been found effective in managing *Saccharum spontaneum* in mustard, chickpea and pea.
- In chickpea, oxadiazon (0.5 kg/ha) and pendimethalin (1.0 kg/ha) as pre-emergence have reduced the infestation of *Asphodelus tenuifolius*.
- *Cuscuta*, a parasitic weed, has several hosts and has become major problem for many parts of the country. Pre-emergence application of pendimethalin (1.0 kg/ha) has effectively controlled *Cuscuta* spp. in niger and urdbean. Post-emergence application of pendimethalin 0.5-0.75 kg/ha has been found safe and effective in lucerne.

Saccharum spontaneum

***Cuscuta* infestation in niger**

- *Orobanche* is a parasitic weed of tobacco, potato, tomato, mustard, etc. and has become serious problem in southern part of India. It causes enormous yield loss and often results in total crop failure. This Directorate has come up with the technology to manage the problem of this parasite in the above crops. The effective control measures are: Soil Solarization; growing trap crops viz. chilli, castor, sesamum, niger, soybean, linseed, Amaranthus, turmeric, moongbean, chickpea, urd bean, lucerne etc.; application of neem cake and herbicides like imazethapyr and oxyfluorfen.
- Metsulfuron-methyl is effective in controlling *Alternanthera* in aquatic bodies and low land areas.

***Orobanche* in Tomato and Potato**

Alligator weed *Alternanthera* infested pond

WEED UTILIZATION

- Biomass of several weed species like *Parthenium*, *Lantana*, *Mikania*, *Chromolaena*, *Cassia*, *Ipomoea carnea, Salvinia*, water hyacinth etc. can effectively be utilized as mulch.
- Composts prepared from *Parthenium* and water hyacinth are equivalent to FYM in terms of nutrient content.
- Aquatic weed *Arundo donax* can be used for phytoremediation of nickel, copper, nitrate and phosphate contaminated waste water.

Water hyacinth mulch in potato

Arundo donax

- Technology to use *Mimosa* (an invasive weed) as fodder for animals have been developed. Ensiling this weed for 45 days reduced the mimosine content and the toxicity of the fodder.
- *Parthenium* biomass has been used for making paper and particle boards.

Particle board made of *Parthenium*

BIOLOGICAL CONTROL OF WEEDS

- Mexican beetle *Zygogramma bicolorata* proved to be an effective bio-agent against *Parthenium hysterophorus*.

***Zygogramma* feeding on Parthenium**

***Parthenium* infestataion**

- Identified environmentally beneficial competitive plants, viz. *Cassia*, marigold etc. to suppress *Parthenium* growth.
- *Neochetina* spp. an exotic insect has successfully suppressed water hyacinth in three ponds of Jabalpur.

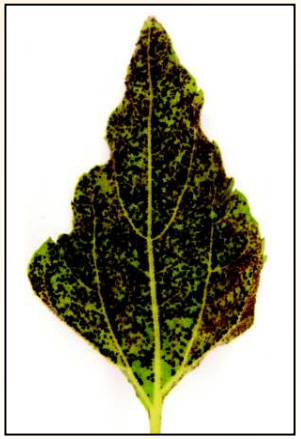
Adult *Neochetina*

A pond full of water hyacinth

Browning of water hyacinth due to *Neochetina* attack

- Isolated a new rust bio-agent *Puccinia* sp. (isolate NRCWSR-3) to manage the exotic weed *Lagascea mollis*.

Reduced growth of *Lagascea mollis* due to *Puccinia* sp. (isolate NRCWSR-3) infection



***Puccinia* sp. (isolate NRCWSR-3) infected *Lagascea mollis* leaf**

- Isolated allelochemicals from root exudates of linseed and marigold to control *Parthenium*, *Vicia* and *Echinochloa*.

TRANSFER OF TECHNOLOGY

- A large number of field demonstrations and on-farm trials besides various Kisan Melas/Gosthis, TV shows, radio talks etc., have been carried out to demonstrate the effectiveness of improved weed management technologies for cropped and non-crop areas. Conducted several training programmes for farmers, subject matter specialists and extension personnel.

Kisan Gosthi

Field Demonstration

Training Programme

- Adopted and created weed free village.
- Carried out as 'Parthenium Awareness Week' through out the country during 6-12 September in 2006, 2007, 2008 and 7-13 August in 2009. Distributed about 6.5 lakhs of Mexican beetle through out the country free of cost to SAUs, ICAR institutes, KVKs, etc.

Release of *Zygogramma*

***Parthenium* awareness rally**

NATIONAL INVASIVE WEED SURVEILLANCE (NIWS)

- A NIWS project is being run by this Directorate for early detection of the five invasive weed species, namely, *Cenchrus tribuloides*, *Solanum carolinense*, *Viola arvensis*, *Cynoglossum officinale* and *Ambrosia trifida* intercepted in wheat imported from various countries during 2006-07 for Public Distribution System. This project is being run in 10 states, viz. Andhra Pradesh, Chattisgarh, Gujarat, Karnataka, Kerala, Orissa, Madhya Pradesh, Maharashtra, Tamil Nadu and West Bengal, where the weed seed contaminated wheat was distributed.

Solanum carolinense

Viola arvensis

Cenchrus tribuloides

Ambrosia trifida

Cynoglossum officinale

Invasive weeds intercepted in imported wheat

HONOURS / AWARDS AND RECOGNITIONS

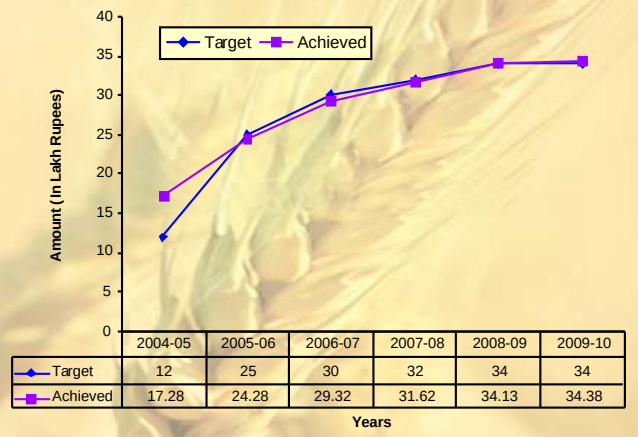
HONOURS / AWARDS AND RECOGNITIONS

- Dr. Jay G. Varshney, Director, DWSR, Jabalpur chaired Technical Session in Asian Pacific Weed Science Conference held at Colombo, Srilanka during October 2007.
- Dr. Jay G. Varshney, Director, DWSR, Jabalpur was elected unanimously the President of Indian Society of Weed Science for 2008& 2009
- Dr. Jay G. Varshney, Director, DWSR, Jabalpur was awarded 'Gold Medal' by Crop and Weed Science Society of India, BC Krishi Vishwa Vidyalaya, Mohanpur, Kalyani, West Bengal on 21st May, 2008 in recognition of outstanding contribution to weed science in India
- Dr. Jay G. Varshney and Dr. VSGR Naidu were jointly awarded for 'Best Book Award' (in English) for 'Weed Seed Atlas' by Indian Society of Weed Science in its biennial conference held at Patna during 27-28 Feb. 2008
- Dr. Jay G. Varshney and Dr. Sushil Kumar were jointly awarded with 'Best Book Award' (in Hindi) for 'Gajar ghass ka jaivik niyantran - vartman esthati evam sambhavnayen' by Indian Society of Weed Science in its biennial conference held at Patna during 27-28 Feb. 2008.
- Dr. Jay G. Varshney, Director, DWSR, Jabalpur was nominated as National Coordinator for the project "National Invasive Weed Surveillance (NIWS)" programme for states by DAC, GOI in 2008 for leading the programme in 10 states at district level
- Dr.Jay G. Varshney, Director was nominated and sponsored by FAO to deliver a talk on "Status of parthenium at global level and its management" at International Weed Science Congress held at Vancouver during June, 2008
- Dr. Jay G. Varshney, Director, DWSR, Jabalpur was nominated as Member of the Policy Planning Committee on Science and Technology, Govt. of Chattisgarh, Raipur.
- NRCWS, Jabalpur has been upgraded to the status of Directorate of Weed Science Research (DWSR) w.e.f. January, 2009.
- Dr. Puja Ray, Senior Research Fellow, DWSR, Jabalpur received the graduate student award and travel grant to attend the 5th International Weed Science Congress, held at Vancouver, British Columbia, Canada during 22-27 June, 2008. She presented a paper on "Possibilities of activity enhancement of *Zygogramma bicolorata*, a biocontrol agent of *Parthenium hysterophorus*, by temperature regulated diapause aversion".
- Dr.Jay G. Varshney was nominated as member, Core group of Expert, National Integrated Bio-security System, Govt.of India
- Dr.Jay G.Varshney has been nominated as a statutory member in "Review Committee on Genetic Manipulation", Deptt. of Biotechnology, Govt. of India for a term of 3 years.

- Dr.Jay G. Varshney was awarded Late Shri P.P. Singhal Memorial Award by Society of Plant Protection Sciences, New Delhi for outstanding contribution in weed science in the 8th National symposium on problems and prospectus in Eco-friendly Innovatives to Plant Protection during Jan.24-25, 2010
- Dr. Jay G. Varshney, Director, DWSR, Jabalpur was awarded 'Gold Medal' for outstanding contribution in the field of Weed Science by Indian Society of Weed Science in its Biennial conference held at Raipur during 25-26 Feb. 2010.
- Dr. Jay G. Varshney and Dr. Shobha Sondhia were awarded 'Best Book Award' (in English) for 'Herbicides' by Indian Society of Weed Science in its Biennial conference held at Raipur during 25-26 Feb. 2010.
- Dr. Jay G. Varshney and Dr. R.L. Arya were awarded 'Best Book Award' (in Hindi) for 'Kharpatwar niyantran' by Indian Society of Weed Science in its Biennial conference held at Raipur during 25-26 Feb. 2010
- Dr. V.P. Singh, Pr. Scientist, DWSR, Jabalpur was awarded 'ISWS Fellowship' by Indian Society of Weed Science in its Biennial conference held at Raipur during 25-26 Feb. 2010.
- Dr. Shobha Sondhia, Sr. Scientist, DWSR, Jabalpur was awarded 'ISWS Fellowship' by Indian Society of Weed Science in its Biennial conference held at Raipur during 25-26 Feb. 2010.
- Dr. Jay G. Varshney, Director, DWSR, Jabalpur was reelected as President of Indian Society of Weed Science unanimously for 2009-12

RESOURCE GENERATION

(Rs. In lakhs)



	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Target	12	25	30	32	34	34
Achieved	17.28	24.28	29.32	31.62	34.13	34.38

EVENTS ORGANISED

HUMAN RESOURCE ACTIVITIES ORGANIZED

Training on *Parthenium* management	9-11 August,.2005
Training Programme on weed management in winter crops	November-December 2005
Training on *Parthenium* management	September 2006
Use of GPS in Weed Survey and Surveillance	10. May, 2007
Training on weed management in *kharif* crops	29 Aug. 2007 to 01 Sept..2007
Menace of *Parthenium* and its management	10.September, 2007
National Training Program on 'Advance Instrumental Training for the Analysis of Pollutants in the Food Commodity and Water'	20-26 November, 2007
Training on Protocol and methodologies for weed survey and surveillance under NIWS	28 July.2008 to 01 August 2008 19-23.August,2008 26-30.August ,2008 2-6 March, 2009
One day training on *Parthenium* management for farmers	09.September, 2008
Eight days Model training course on Recent advances in weed management	29 Dec .2008 to 05 Jan .2009
Training on protocols and methodologies for weed survey and surveillance	September 1-5, 2009 November 13-15, 2009
Training on Parthenium Awarness	12 August, 2009
National Consultation on Weed Utilization	20-21, October 2009
Advance training for the analysis of herbicide residues in soil, water and food chain	16-22 November, 2009
Weed Management in Field crops	04-11 January, 2010
ICAR-Planning Commission Interface Meet	22, January 2010
National Consultation on Biological Weed Management	17-18 March, 2010

ORGANIZATION OF NATIONAL EVENTS

- XVII Biennial Workshop of All India Coordinated Research Project on Weed Control was held during 01-03, June 2006 at ANGRAU, Hyderabad.
- Organized and launched national level "*Parthenium* Awareness Week" programme at CIAE, Bhopal on 6th Sept. 2006, H.E. Dr. Balram Jakhar, Governor of MP was Chief Guest of the function
- Organized and launched national level "*Parthenium* Awareness Week" programme at NRCWS, Jabalpur on 6th Sept. 2006
- Organized Annual Group Meet of AICRP-WC during May 2007 at NRCWS, Jabalpur
- Organized a Consultation on Herbicide Tolerant GM Crops" jointly with Biotech Consortium India Limited (BCIL) in New Delhi on December 10-11, 2007;
- Organized XVIII Biennial Workshop of AICRP-Weed Control at Rajendra Agricultural University (Bihar Veterinary College), Patna on 25th Feb, 2008.
- Organized Biennial Conference of ISWS on “Weed Management in Modern Agriculture: Emerging Challenges and Opportunities” at Patna from 27 - 28 Feb, 2008.

- Brain storming discussions on microbiological and plant physiological research in weed management was conducted during 3-4 April 2008.
- Launched programme on National Invasive Weed Surveillance (NIWS), sponsored by DPPQS, Govt. of India, on 22 April 2008.
- Organized and launched national level Parthenium Awareness campaign at UAS, Bangalore on 06.09.2008.
- Organized workshop of National Invasive Weed Surveillance (NIWS) at the Centre on 25-26 November 2008.
- Organized Annual Group Meet of AICRP-WC during 27-28 February 2009 at RAU, Bikaner
- Organized Annual Review Meet of National Invasive Weed Surveillance programme at TNAU, Coimbatore on 1st Aug. 2009
- National Conference on Weed threat to environment, biodiversity and agricultural productivity was organized at TNAU, Coimbatore on 2-3 Aug. 2009
- Organized and launched national level Parthenium Awareness campaign at CSK HPAU, Palampur on 07.08.2009.
- National Consultation on Weed Utilization was convened on 20-21 October 2009 at DWSR, Jabalpur.

- 3rd Review meet of National Invasive Weed Surveillance programme was observed at BCKVV, Mohanpur on 12-13 Jan. 2010
- Biennial Workshop of Coordinating centres of DWSR was organized at IGKV, Raipur from 23-24 February 2010.
- Biennial conference of ISWS on Recent Advances in Weed Science Research-2010 was organized at IGKV, Raipur from 25-26 February 2010.
- National Consultation on Biological Control of Weeds was convened at DWSR, Jabalpur on 17-18 March 2010.

PUBLICATIONS

INSTITUTE PUBLICATIONS

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PROMINENT VISITORS

PROMINENT VISITORS AND THEIR COMMENTS

Dr. Gautam Kalloo, Former DDG (Horti. and Crop Science), ICAR (22.05.2006)

An excellent centre for addressing various issues of integrated management of weeds.

Dr. M. Mahadevappa, Former ASRB Chairman (15.01.2007 and 15.07.2008)

My wish to visit the Centre materialized today. I am happy to state that the during my visit of the institute, I could see many broad and well drawn projects to answer the problems of farming community. Very Impressive.

It is informative to visit NRC weeds to get all the latest research information.

Dr. AK Singh, DDG (NRM), ICAR (02.02.2008)

I was very impressed by the work being carried out by the Director, NRCWS and his team of scientists. They are addressing the issues of vital importance related to the weed management that has a direct relevance to the agril. productivity.

Dr. Raj Prasad, International Expert, Pacific Forestry Centre, Canada (13.02.2009)

Extremely delighted to visit this Centre to interact with the scientists and staff and thoroughly enjoyed my stay here. They are doing very useful/ relevant research. My dream of a National Weed Centre for India that I proposed and initiated with Dr. MS Swaminathan in 1970 seems to be fulfilled.

Sh. Hari Ranjan Rao, District Collector, Jabalpur (28.08.2009)

I am impressed by the work done by the Centre and its impact on agril. productivity of the Nation.

Dr. Mangala Rai, Secretary, DARE and Director General, ICAR (20.10.2009)

Good progress in farm development and its management.

Dr. K. Kasturirangan, Member Planning Commission (Science) (23.01.2010)

Very memorable visit to an extraordinary institution, unique in many ways. A promising direction to deal with the issues of improving the overall food protection for the country.

Dr. CD Mayee, Chairman, ASRB (18.03.2010)

I visited Jabalpur after 25 years and the first visit to DWSR which is an exclusive institute for the weeds in the world. I had some wrong impressions about the instt's mandate and work. After the visit, I am highly impressed and now can authoritatively say that they are doing fine work and keeping with latest research agenda. Dr. Varshney need to be complimented for setting the Institute in direction right for ICAR. I congratulate him and his staff. Wish I will visit it again.

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