

**Proceedings of Biennial Conference of  
Indian Society of Weed Science (ISWS) held at Patna, India  
(27<sup>th</sup>-28<sup>th</sup> Feb, 2008)**

The theme of Biennial Conference was **“Weed Management in Modern Agriculture: Emerging Challenges and Opportunities”**

The greatest challenge of the 21<sup>st</sup> century is to meet the rising food demand while maintaining the sustainability of the natural resource base. By 2025, global population will be around 7.9 billion. The growing population will demand more food, fibre and fuel. Weeds adversely affect humans in both agricultural and non agricultural environments. They compete with crops for available resources and decline the productivity. Despite the progress made in weed science over the last 40 years, weeds remain one of the major constraints to agricultural production in developed and developing countries. Losses caused by weeds in the developing world are still at least 37% annually and in certain regions, losses can be up to 90-95% including total crop failure. Keeping the weed management challenges in view, the Indian Society of Weed Science is organizing this conference. The purpose of this conference was to bring all the fraternity of weed scientists who were engaged in research work at various national institutes and universities as well as the eminent scientists who contributed their best to the cause of weed science, to a common forum to interact and discuss on issues of national importance.

The various activities held during the conference were as follows:

**Inaugural Ceremony:**

The Biennial Conference was ceremonially opened Rajendra Agricultural University, Patna campus on 27<sup>th</sup> Feb, 2008. Shri. Ramadhar, Chairman, Farmers’ Commission, Govt. of Bihar, Patna was the Chief Guest who inaugurated the Conference. Dr. N.L. Maurya, Vice-Chancellor, Rajendra Agricultural University, Patna was the Guest of Honour.

Dr. Jay G. Varshney, President of the Indian Society of Weed Science, delivered the Welcome Address and also presented the inaugural lecture on Weed Management – Challenges and Opportunities. .



Dr. Devendra Singh, Local Organizing Secretary of the Conference proposed the Vote of Thanks.

## Conference Proceedings:

- The various sessions of the Conference were held at the Auditorium of the Bihar Veterinary College, Patna, India during 27<sup>th</sup> - 28<sup>th</sup> Feb, 2008.
- There were four technical sessions and four concurrent poster sessions besides the Plenary Session and Scientist-Extension officers-Farmer Interface .
- About 174 delegates from all over India and two from outside the country (one each from USA and Australia) attended the Conference.
- A total of about 35 oral (including 12 invited) and 195 poster presentations were made. Dr. Nimal Chandrasena, Australia made a presentation on ‘Weeds and weed management under a changing climate’ and Dr. Prasanta C. Bhowmik, USA on ‘Spread and management of quarantine and invasive weeds’.



## Awards and fellowships:

During inaugural ceremony of conference, various awards to weed scientists for their outstanding contributions were announced. Dr. Jay G. Varshney, President, ISWS informed the gathering about the warm responses received by the ISWS office from the weed scientists all over the country for nomination of various awards. The list of awardees were as follows:



- Life Time Achievement Award : Dr. S. Sankaran. Ex-VC, TNAU, Coimbatore  
: Dr. V.M. Bhan. Ex-Director, NRCWS, Jabalpur
- ISWS Gold Medal : Dr. A.N. Tewari, CSAUA&T, Kanpur  
: Dr. T.V.S. Ramachandra Prasad,UAS,Bangalore.
- ISWS Fellowship : Dr. R.K.Ghosh, BCKVV, Mohanpur (WB)  
: Dr. C. Chinnusamy, TNAU, Coimbatore
- ISWS Honorary Fellow : Dr. (Mrs.) P.N. Ganga Visalakshi, Indian Institute of Horticultural Research, Bangalore
- ISWS Recognition Award : Dr. Sushilkumar, NRCWS, Jabalpur

- ISWS Best M.Sc. Thesis Award : Ms V.S. Mynavathi, “Evaluation of manually operated weeders in irrigated maize”, TNAU, Coimbatore
- ISWS Best Ph.D Thesis award : Dr. Puja Ray, “Management of Waterhyacinth employing some Insects and Fungi”, NRCWS, Jabalpur
- ISWS Best Book Awards : Dr. V.S.G.R. Naidu and Dr. Jay G. Varshney for their book in English entitled “Weed Seed Atlas”.  
: Dr. Sushilkumar and Dr. Jay G. Varshney for their Book in Hindi entitled ‘*Gajar Ghas ka Jaivikiya Niyantaran: Vartman Stithi and Sambhavanaien*’
- Young Scientist Award : None was found suitable

### **General Body Meeting:**

The General Body Meeting of the ISWS was held in the evening of 27<sup>th</sup> Feb, 2008. The General Body approved the new executive body of society elected in the recently concluded elections as follows:

President	: Dr. Jay G. Varshney, NRCWS, Jabalpur (M.P.)
Vice-President	: Dr. A.N. Tewari, CSAUA&T, Kanpur (U.P.)
Secretary	: Dr. Sushilkumar, NRCWS, Jabalpur (M.P.)
Joint Secretary	: Dr. M.L. Kewat, JNKVV, Jabalpur (M.P.)
Treasurer	: Dr. V.P. Singh, NRCWS, Jabalpur (M.P.)

Besides, the election of two Zonal Secretaries each from the five Zones viz., North, South, East, West and Central was also approved.

### **Zonal Secretaries**

- North Zone- 1. Dr. S.S. L. Tripathi, BPUA&T, Pantnagar (Uttaranchal)  
2. Jai Dev sharma, NDUAT, Faizabad (U.P)
- South Zone 1. Dr. C.Chinnusamy, TNAU, Coimbatore (Tamil Nadu)  
2. Dr. G.N. Dhanpal, UAS, Bangalore (Karnataka)
- East Zone 1. Dr. R.K. Ghosh, BCKVV, Mohanpur (West Bengal)  
2. Dr. Devendra Singh, RAU, Pusa (Bihar)
- West Zone 1. Dr. R.B. Patel, AAU, Annand (Gujrat)
- Central Zone 1. Dr. S.S. Kolhe, IGAU, Raipur (Chhatisgarh)  
2. Dr. Anil Dixit, NRCWS, Jabalpur (Madhya Pradesh)

In general body meeting, newly elected President of ISWS, Dr. Varshney welcomed all the members for their overwhelming response to participate in the Biennial Conference. Dr. Varshney on behalf of newly elected executive body gave thanks to all the members for their support and assured the members to work with full zeal and enthusiasm without favour to any body for the progress of the society. Dr. Varshney put forwarded all the names of executive

committee before the general body and sought the approval. All the participants approved the new executive of ISWS unanimously.

There was discussion about the modification in the by laws for appointment of Zonal and state officers of the society to make it stronger and to fulfill the objective of the society in broader perspectives. While the appointment of Zonal secretary was appreciated but for giving the financial power it was unanimously decided that EC may take this decision considering all pros and cons.

There was detailed discussion in the meeting about the publication of journal of the society. It was unanimously approved by the General Body that New Executive Body of ISWS will decide New Editorial Board and the next issues of Indian Journal of Weed Science wef 2008 onward will be published by the Head Quarter at Jabalpur.

Dr. Varshney, President of ISWS proposed to hold an International Conference by the Society in India in February 2009 was unanimously approved by the General Body. It was decided to put forward the detail proposal of International Conference before the executive Committee of society for further implementation.

In General Body meeting, it was viewed that if society wish to take financial assistance from the Government to organize Conferences in future, it is very necessary to have audited account and all the papers of society in order. In past, society was registered at Bangalore but it has not continued its registration and not submitted and audited accounts due to which whenever any conference is proposed by the society, financial assistance from Govt. is not available. It was viewed that a huge expenditure will have to be borned by the society as a penalty to continue the society's registration in Karnataka state. It was unanimously decided in General Body that efforts should be made for afresh registration of this society in any of the states in India so that in future financial assistance from Govt. could be obtained for holding conference/symposia etc.

#### **Scientist-Extension Worker-Farmer Interface:**

Concurrently with Technical Sessions, a Scientist-Extension Worker-Farmer Interface was held on 28<sup>th</sup> Feb, 2008 which was chaired by Dr. Jay G. Varshney, President, ISWS. The meeting was attended by Dr. R.K. Sohana, Director Agriculture, Patna Dr. B.C. Chaudhary, Director Research, RAU, Pusa, Dr. S.P. Verma, Dean, RAU, Pusa, Dr. Devendra Singh, PI-AICRP, RAU and Local Organizing Secretary of conference and many Scientists from RAU and NRCWS, Jabalpur. The meeting was attended by 50 progressive farmers of Patna and adjoining area. During the interface, solutions were offered to the problems on weed management being faced by the farming community of Bihar state.



#### **Plenary Session:**

The 2-day Conference after successful deliberations concluded with the Plenary Session on 28<sup>th</sup> Feb, 2008 which was chaired by Dr. S. Sankaran, Ex-VC, Tamil Nadu Agricultural University, Coimbatore. Dr. P.C. Bhowmik, Professor & Head, Department of Plant, Soil and Insect Sciences, University of Massachusetts, Amherst MA, USA acted as a Co-Chairman. Dr. T.V. Ramachandra Prasad, Professor of Agronomy, AICRP on Weed Control, University of Agricultural Sciences, Hebbal, Bangalore was the rapporteur.

The Chairman invited to make presentations of the recommendations from Chairmen/ Co-chairmen/ Rapporteur of various sessions.

Session I chaired by Dr. V.M. Bhan. The inaugural paper entitled “ Challenges and opportunities in weed science was presented by Dr. Jay G. Varshney President, ISWS wherein he highlighted the scope of weed management to enhance the crop productivity and to eliminate farmers poverty. Dr. Nimal Chandrasena from Australia presented his views on the topic entitled “ Weeds and weed management under changing climate. Dr. Prasanta Bhowmik from USA, highlighted the spread and management of quarantine and invasive weeds. The current status and future prospects of aquatic weed management was discussed by Dr. C.T. Abraham. Management of monocot weed by Targa Super was presented by Dr. O.P. Singh from Dhanuka Industries. A lucid account on herbicide tolerant crop was presented by Dr. Arya from Monsanto. Dr. C.T. Abraham as rapporteur presented the recommendations.

Session II was chaired by Dr. S. Sankaran and Dr. S.L. Tripathi acted as rapporteur. 4 papers were presented. Dr. Tripathi from Pantnagar observed minimum dry matter accumulation by the weeds and significantly higher seed yield of French bean (Rajma) with the preemergence application of 0.75 kg/ha pendimethalin. Dr. Srivastava from Kanpur reported that the tank mix application of glyphosate and 2,4,-D was good to kill *Pluchia lanceolata* before the onset of monsoon. Dr. Bhargava reported establishment of Mexican beetle at Saharanpur.

Session III was chaired by Dr. P.C. Bhowmik. Dr. T.V. Ramachandra Prasad presented the report. 5 papers were presented. The importance of weed management in medicinal and aromatic crops was presented by Dr. J.P. Tiwari from Jabalpur. Current status of parasitic weeds and their management was presented by Dr. T.V. Ramachandraprasad from Bangalore. Dr. Shobha Sondhia from Jabalpur presented the lucid account of herbicide residue status in various commodities and food chain. The current status of biological control of terrestrial and aquatic weeds was presented by Dr. Vishalakshi from Bangalore. Dr. Anil Dixit from Jabalpur presented the role of new herbicide molecules in modern weed management.

Session IV was chaired by Dr. J.P. Tiwari. Dr. S. Gautam from Palampur presented the salient report of the session. In this session out of 16 oral presentations, 13 were presented as follows:

L.G. Pawar from Gujrat and associates revealed that mechanical weeding was most effective and glyphosate spray 1.0 kg ha<sup>-1</sup> after 3 months manual cutting of grass was not feasible while animal grazing was found effective in orchards.

R. Devendra from Bangalore revealed that triton X 200 surfactant forms micelle which after chemical reaction leads to nano-particle formulation.

studies on herbicides applied with and without FYM on physicochemical properties of soil and its residues in potato conducted by R.B. Patal and his associates revealed that application of fluchloralin (1.0 kg ha<sup>-1</sup>) with FYM 10 t ha<sup>-1</sup> resulted in lower bacteria and fungi population as compared to its alone application.

R.D. Gautam and his association from IARI New Delhi while working with Pusa protocol for Parthenium management-2008 revealed that integration of two biological control agents viz. botanical, *Kochea indica* and *Zygogramma bicolorata* caused good suppression of parthenium. A report on survey and biology of new occurrence of *Elatine triandra* and *Oryza rufipogon* from West Bengal was presented by Dr. Ghosh from West Bengal. In a study on integrated weed management in maize at Palampur by Suresh Kumar and his associates it was found that intercropping of soybean in between two rows of maize (1:1) in combination with metolachlor 1.0 kg ha<sup>-1</sup> (Pre) resulted in significantly higher Maize yield. Padmavati

Devi and associates from Hyderabad conducted experiment on degradation pattern of pretilachlor in soil and its residues in rice and revealed that pretilachlor safely be applied to rice crop as pre emergence for weed control. No residues were found in grains and soil. Pretilachlor residues degraded in 40 and 60 days after planting in doses at 1.0 and 2.0 kg ha<sup>-1</sup>. In an study on rice and rice cropping system in Orissa, S. S. Mishra and associates revealed that application of pretilachlor (0-75 kg ha<sup>-1</sup>) in kharif and butachlor, 1.25 kg ha<sup>-1</sup> + Almix 4 g/ha in rabi was found to be the best treatment. B. Duray (Sririketan) in studies on emergence profile of weeds and critical period of crop weed competition in summer sesame revealed the emergence of grassy weeds in sesame commenced first followed by broad leaved weeds and critical period of weed competition in sesame was between 15-45 days. Study on utilization of parthenium compost as a nutrient source for irrigated maize and sunflower system by Chinnusamy and his associates from Coimbatore revealed encouraging results of parthenium compost in yield improvement. Study on allopathic effect of prominent weed species on important crops by C.A. Agasimani and his associates at Dharwad on *Cyprus* significantly reduced the height, leaf area, dry matter and its partitioning at 30 days. In a study on integrated weed management in brinjal by A.K. Gore and his associates at Parbhani revealed that integration of one hand weeding at 6 WAP with pendimethalin 0.75 kg ha<sup>-1</sup> gave highest fruit yield. Jaidev Sharma and his associates from Faizabad evaluated effect of phosphorus and weed control measure on growth and yield of chickpea and revealed that application of phosphorus at 60 kg ha<sup>-1</sup> significantly increased all growth characteristics of chickpea.

Dr. Sushilkumar, Secretary of the Society announced the awards of the poster presentations. At the spot, a cash award of Rs 500/- was declared to winner of First rank by Dr. Varshney, the President of ISWS. The name of the winners of poster presentation awards were as follows:

<b>Award Rank</b>	<b>Author Name</b>	<b>Title of the poster</b>
First	A.K. Jha, M.L. Kewat, S.K. Vishwakarma, V. Jain and R.S. Sharma	Effect of tillage and sowing management on weed dynamics, grain yield and conservation of resources in rice-wheat cropping system
Second (1.)	V.P. Singh, J.S. Mishra, K.K. Barman, Chandra Bhanu and Jay G. Varshney	Effect of soil solarization of weed dynamics, weed seedbank, chemical and biological status of soil and productivity of crops in niger-tomato cropping system.
Second (2)	S.P. Singh, V.P. Singh, M.K. Singh, Neeta Tripathi & Abnish Kumar	Weed management and rice establishment methods their impact on weed flora and wheat establishment methods in sequence
Third (1)	Dhagat Sandeep, Shukla Pankaj and Tiwari O.N.	GIS Techniques and Making Weed Emergence Maps
Third (2)	Nawalesh K. Sinha, Mrintunjay Kumar, Devendra Singh, D.K. Roy, J.P. Singh and D.N. Pandey	Studies on allelopathic potential of <i>Caesulia axillaris</i> on physiology and yield of wheat
Consolation prize (1)	Shobha Sondhia and Benu Singhi	Detection of sulfosulfuron residues in surface and subsurface soil
Consolation prize (2)	Durga Devi K.M., Samuel Mathew and Abraham C.T.	Leaching pattern of 2,4 -D in wet land soils

Dr. Sushilkumar proposed vote of thanks to all those involved in making this conference successful.

After presentations of each technical session and award ceremony by the rapporteurs, **Dr. S. Sankaran as Chairman** indicated that the quality of presentations made in oral as well as in posters is considerably good and presentations covered varied aspects of weed management. He appreciated the concern of Dr. Nimal Chandrasena from Australia about the possible differential interaction of C<sub>3</sub> and C<sub>4</sub> weed types to change in climate. More focused research on this may be initiated at NRCWS and a few selected places. Research may also be initiated on the use of nanotechnology for weed management. Holding International Conference in Weed Science at Jabalpur to draw the attention of International Weed Scientists about the National Research Center for Weed Science is a good suggestion, provided the society has enough money. He indicated that suitable time and theme may be worked out to attract International Weed Scientists of Indian Origin and others for participation, apart from mobilizing funds. Membership drive is necessary to at least increase the present level to 1000 members. Weed Atlas may be brought out by NRCWS. If it has already been done, a copy may be spared to the Senior Weed Scientists for their information and suggestions, if any. He has suggested inclusion of the views expressed by industry personnel in the proceeding for greater interaction with the Society for useful outcome. The recommendations having practical relevance may be pooled and sent to media for greater publicity and issues needing the attention of Planners or the Government may also be indicated properly. He also suggested that the Weed Scientists should come up to the expectations of the farmers and should get good respect from farmers in solving the weed problems. I hope the society with new office bearers will bridge the gap between Industries – Weed Scientists – Institutions – Farmers so that greater integration will be imminent for solve future weed problems varying in dimension. At the end, he suggested to have the research outcome brought out in manner that could be advantageously adopted by the user in a profitable way so that farming become economical to the farmers. Of course, weed management options so developed should invariably lower the cost of production.

**Dr. P.C. Bhowmik as Co-chairman** appreciated that the Society has made good efforts in inviting papers from different aspects of Weed Science. The presentations made by Speakers – Oral and Poster were pretty good. The research outcome from various presentations is quite useful. He suggested proper time allocation for invited speakers giving time for presentation and for discussion on the points raised by others. He indicated that the posters prepared by various scientists differed in all aspects and no uniformity was followed. The posters should contain parts like Introduction, Objectives, Material and Methods, Results and Discussion with suitable Table(s), Figure (s) or photo (s), Conclusion and References. This should be indicated by the Society in their circular to have the uniformity in presentation. He indicated that the Society should have more members. He can help other Indian Friends working in Weed Science in abroad to become members of ISWS. The Secretary is requested to send an appeal letter along with the membership form through E-mail to him for mobilization of members from abroad.

He suggested initiating work on a) Weed management in organic agriculture, b) Biology of alien weeds might help in understanding ecology of the weed and develop strategy to contain the spread of the weed, c) Quarantine aspect of weeds, d) Weed shift due to global warming; and e) GPS and GIS usage in Weed Mapping for different regions. He indicated that the recommendations relevant to government agencies for adoption may be properly spelt out. He suggested having poster session separately for young scientist and graduate students to encourage the youngsters for making good presentations and greater participation. He also suggested having suitable theme for the International Conference to attract International

Weed Scientists and avoid the year where APWSS Conference is scheduled to be held in Pakistan in order to attract foreign participants.

**Dr. Jay G. Varshney as President of ISWS** indicated that NRCWS is already conducting work on effect of CO<sup>2</sup> on crop-weed competition; use of nanotechnology for weed management; use of GPS in weed survey; and integration of GIS software for weed mapping. The weed atlas for 5 major crops in each district of the country is in printing stage and will be published very soon. He also indicated the work on biology of alien weeds will be intensified. Based on the suggestions of Chairman and Co-Chairman in the next conference, proper time scheduling of Invited lecturers, uniformity in presentation of posters, proper theme of the Conference to attract weed Scientists, planning of concurrent sessions to have more oral presentations, etc. will be planned. He thanked Chairman and Co-Chairman for the suggestions.

There was a great deal of discussion on quarantine aspects in checking the entry of alien weeds through import of food grains from other countries. General consensus was that seeds imported for seed production should be weed free for the weeds that are not present in India. Grains imported as food grains may be allowed with barest minimum as followed in other countries like US. In US, grains imported can have weed seed contamination of 0.01%. Looking into quantity of consignment imported, it was suggested that the weed seed contamination should be less than 0.01%. It was suggested that Director, NRCWS may take suitable decision considering the weed type being imported along with food grains, occurrence of that weed in Indian Continent, number of seeds likely to be introduced per quintal of food grains and test weight of weed seeds. Allowing weed contamination of 0.3 to 1% will certainly will be disastrous, as happened with the case of *Phalaris minor* and *Parthenium hysterophorus*. This should be viewed with proper prospective by quarantine officials. The Society should bring this to the knowledge of the enforcing authorities on the implications of alien, but un-introduced weeds.

After detailed discussion following recommendations emerged:

1. The importance of weed has yet not been realized by policy planners. It is well documented fact that about 37% loss in crop productivity is occurred due to weeds only besides loss to human and animal health, plant biodiversity and environment. Proper control of weeds itself can contribute significantly to our food security by reducing the potential yield losses in crop production amounting to > Rs. 1000 billion a year.
2. There are reports that herbicides may cause damage to non-target species besides development of herbicides resistance in weeds. Therefore, intensive research is required for developing herbicide recommendations which cause minimum environmental hazardss, shifts in weed flora, development of herbicide resistance in weeds and impact on non target organism.
3. It has been realized that due to lack of poor quarantine facilities and strict laws, many alien weed species have entered into India and have become menace in agriculture, forests and aquatic areas. Therefore, emphasis has to be given for identification and management of invasive weeds in cropped, non cropped and aquatic areas. Govt. may strengthen efforts on early detection and management of alien invasive weeds under strict quarantine conditions while importing food grains which may contain weed seeds. The Govt. should make strict laws for import of food grains from other countries so that alien weed seeds may be quarantined at the entry point.



4. There is change in global climate. Therefore, intensive efforts are needed on development of varieties and agro techniques suited to decline crop and weed competition in the changing global climate.
5. It was realized that Herbicide Tolerant GM crops may offer simplified and efficient control of weeds particularly in wheat, rice, maize cotton and pulses. Therefore, efforts should be made towards evaluation and development of herbicide tolerant technologies for viable public private partnership in Indian conditions.
6. In India, the area under organic farming is increasing every year. There is great challenge before the scientists to develop proper weed management technologies in organic farming
7. So far meager research has been done on biology and management of parasitic weeds of crops and orchards. Therefore, research efforts are required on pest potential of parasitic weeds and their management in orchards and cropping systems.
8. A few biological control programme against water hyacinth, water fern and parthenium by imported bioagents has given appreciable results. Therefore, success story of biological control of weed parthenium, water hyacinth and water fern needs to be extended to other areas for widening the prospects.
9. Although herbicides are considered safe than other pesticides yet sufficient data on herbicide residue particularly the effect of metabolites in food chain is still lacking. Therefore, national monitoring programme on herbicide residue in food chains including water, soil and food commodity should be launched.
10. So far only a few bioagents against exotic weeds have been imported into India under classical biological control in comparison to other countries. Therefore, more efforts are required to import and test more bioagents against problematic weeds of cropped and non-cropped areas.
11. There is vast scope of microbes in weed management but so far little work has been done. Intensive research is required to explore the possibilities of microbes utilization in weed management.
12. So far, proper importance has not given on utilizations aspects in spite of vast scope of weeds in medicine, food and fodder, bio-pesticide development, compost, particle board, paper making etc. Therefore, intensive research is required on utilization aspects of the weeds.
13. There is coordination gap between industries and research institutions. Therefore, linkage between industries with NRCWS and SAUs for managing the weed problems should be strengthened.

### Registered Participants in ISWS Biennial Conference at Patna

1.	Shri. Ramadhar	Chairman, Farmers Commission Govt. of Bihar
2.	Dr. N.L. Maurya	RAU Pusa
3.	Dr. V.M. Bhan	Jabalpur
4.	Dr. S. Sankaran	Coimbatore
5.	Dr. P.C. Bhomick	USA
6.	Dr. Nimal Chandra Sen	Australia
7.	Dr. J.P. Tiwari	Jabalpur
8.	Dr. R.K. Sohana	Director, Agriculture
9.	Dr. B.C. Chaudhary	RAU Pusa
10.	Dr. S.P. Verma	RAU Pusa
11.	Dr. Jay G. Varshney	N.R.C.W.S., Jabalpur
12.	Dr. Rohitashava Singh	GBPUA&T, Pantnagar
13.	Dr. S.S.L. Tripathi	GBPUA&T, Pantnagar
14.	Dr. S.P. Singh	GBPUA&T, Pantnagar
15.	Dr. Devendra Singh	RAU, PUSA, Samastipur
16.	Dr. Dharendra Kr. Roy	RAU, PUSA, Samastipur
17.	Dr. N.K. Sinha	RAU, PUSA, Samastipur
18.	Dr. D.N. Pandey	RAU, PUSA, Samastipur
19.	Dr. Dharmendra Dwivedi	RAU, PUSA Samastipur
20.	Dr. Mrintunjay Kumar	RAU, PUSA Samastipur
21.	Dr. Harendra Singh	RAU, PUSA, Samastipur
22.	Dr. J.P. Singh	RAU, PUSA, Samastipur
23.	Dr. P. Sarvanane	Pt. J.N. College of Agric. & Res. Instt., Karaikal
24.	Dr.R.K. Ghosh	BCKVV, Mohanpur (Nadia)
25.	Dr. Protit Bandopadhyay	BCKVV, Mohanpur (Nadia)
26.	Dr. Debesh Pal	BCKVV, Mohanpur (Nadia)
27.	Dr. Kironmay Barui	BCKVV, Mohanpur (Nadia)
28.	Dr. Manab Roy	BCKVV, Mohanpur (Nadia)
29.	Dr. Ashim Kr. Dolai	BCKVV, Mohanpur (Nadia)
30.	Dr. Subhajit Mallick	BCKVV, Mohanpur (Nadia)
31.	Dr. Ms. Dipali Mandal	BCKVV, Mohanpur (Nadia)
32.	Dr. Ms. Paramita Biswas	BCKVV, Mohanpur (Nadia)
33.	Dr. C. Chinnusamy	TNAU, Coimbatore
34.	Dr. N.K. Prabhakaran	TNAU, Coimbatore
35.	Dr. (Mrs.) Meena	TNAU, Coimbatore
36.	Dr. S. Padma Rani	TNAU, Coimbatore

37. *	Ms. K. Nalini, Ph.D. Scholar	TNAU, Coimbatore
38.	Ms. J. Bhubaneswari	TNAU, Coimbatore
39.	Ms. C. Vennila,	TNAU, Coimbatore
40. *	Dr. C.R. Chinnamuthu	TNAU, Coimbatore
41. *	Mr. D. Ravisankar	TNAU, Coimbatore
42.	T. Selvakumar,	TNAU, Coimbatore
43. *	Ms. S.P. Sangeetha	TNAU, Coimbatore
44. *	Mr. P. Lakshaman,	TNAU, Coimbatore
45.	Dr. Mr. Champak Kr. Kundu	BCKVV, Kalyani, Nadia
46.	Dr. V.C. Raj,	N.M. College of Agric. N.A.U., Navsari
47. *	Dr. T.K. Das	IARI, New Delhi
48.	Dr. T. Girija	College of Horticulture, KAU, Thrissur
49.	Dr. K.M. Durgadevi	College of Horticulture, KAU, Thrissur
50.	Dr. C.T. Abraham	College of Horticulture, KAU, Thrissur
51.	Ms. V.S. Mynavathi	TNAU, Coimbatore
52.	Sh Amit Jha,	JNKVV, Jabalpur
53.	Dr. Jaidev Sharma	NDUA&T, Faizabad
54.	Dr. S.S. Singh	NDUA&T, Faizabad
55.	Dr. A.K. Singh	NDUA&T, Faizabad
56.	Dr. Rajkumar	NDUA&T, Faizabad
57.	Sh. Manoj Kumar Upadhyay	NDUA&T, Faizabad
58.	Sh. Ajay Kr. Maurya	NDUA&T, Faizabad
59. *	Dr. Asha Arora,	College of Agriculture Gwalior
60.	Dr. M. Padmavati Devi	College of Agriculture, ANGRAU, Hyderabad
61.	Dr. M. Madhavi	College of Agriculture, ANGRAU, Hyderabad
62.	Dr. D. Madhusudan Reddy	College of Agriculture, ANGRAU, Hyderabad
63.	Sh. Ravi Prakash Shukla	JNKVV, Jabalpur
64.	Sh.S.P. Singh	JNKVV, Jabalpur
65.	Sh.R.D. Soni	JNKVV, Jabalpur
66.	Sh. Rajeev Dubey	JNKVV, Jabalpur
67.	Ms. Anugya Sharma	JNKVV, Jabalpur
68.	Dr. S.S. Mishra	OUA&T, Bhubaneshwar
69.	Dr. M.M. Mishra	OUA&T, Bhubaneshwar
70.	Dr. G.C. Mishra	OUA&T, Bhubaneshwar
71.	Dr. Gokulesh Jha	Tirhut College of Agric., Dholi, Muzaffarpur
72.	Dr. S.C. Dhiman	Maharaj Singh College Saharnpur (U.P.)
73.	Mr. Y.K. Yadav	Maharaj Singh College Saharnpur (U.P.)

74.	Mr. Parvesh Kumar	Maharaj Singh College Saharnpur (U.P.)
75.	Mr. Motilal Bhargava	Maharaj Singh College Saharnpur (U.P.)
76.	Dr. MPS Arya	NRC-Women in Agriculture P.O. Baramunda, Bhubaneswar
77.	Dr. B.D. Patel	B.A.C.A., Anand Agril. University, Anand
78.	Dr. K.S. Yadav	College of Agriculture Gwalior (M.P.)
79.	Dr. R.L. Rajput	College of Agriculture Gwalior (M.P.)
80.	Dr. A.M. Jaulkar	College of Agriculture Gwalior (M.P.)
81.	Dr. B.D. Patel	B.A.C.A., Anand Agril. University, Anand
82.	Sh. D.K. Tiwari,	College of Agril., Kandeshwar Tikamgarh
83.	Dr. R.R. Upasani,	Deptt. of Agronomy BAU, Ranchi
84.	Dr. T.V. Ramchandra Prasad	University of Agril. Sciences, Hebbal, Bangalore
85.	Dr. M.T. Sanjay,	University of Agril. Sciences, Hebbal, Bangalore
86. *	Dr. D.J. Rajkhowa	Assam Agril. University Jorhat
87.	Dr. R.Devendra	UAS, Main Research Station Hebbal, Bangalore
88.	Dr. R. Channabasave Gowda	UAS, Main Research Station Hebbal, Bangalore
89.	Mr. Arun Kumar. N.	UAS, Main Research Station Hebbal, Bangalore
90.	Mr. S.B. Manjunatha	UAS, Main Research Station Hebbal, Bangalore
91.	Miss L.K. Akshata	UAS, Main Research Station Hebbal, Bangalore
92.	Dr. D.P. Khali	FRI, Dehra Dun
93.	Dr. Dinesh Tiwari	GBPUAT, Pantanagar
94.	Dr. P.J. Khankhane	N.R.C.W.S., Jabalpur
95.	Dr. M.B.B. Prasad Babu	N.R.C.W.S., Jabalpur
96.	Dr. Chandra Bhanu	N.R.C.W.S., Jabalpur
97.	Dr. H.S. Bisen	N.R.C.W.S., Jabalpur
98.	Dr. V.P. Singh	N.R.C.W.S.
99.	Dr. V.S.G.R. Naidu,	N.R.C.W.S.
100.	Dr. R.P. Dubey	N.R.C.W.S.
101.	Dr. Shobha Sondhia	N.R.C.W.S.
102.	Dr. P.K. Singh	N.R.C.W.S.
103.	Dr. Puja Ray <sup>1</sup> ,	N.R.C.W.S.
104.	Dr. Sushilkumar	N.R.C.W.S.
105.	Nitish Singh Parihar	N.R.C.W.S.
106.	Sandeep Dhagat	N.R.C.W.S.
107.	Dr. M.S. Raghuvanshi	N.R.C.W.S.

108.	Mr. O.N. Tiwari	N.R.C.W.S.
109.	Mr. Pankaj Shukla	N.R.C.W.S.
110.	Mr. Sonu Kumar Sahu	N.R.C.W.S.
111.	Dr. R.B. Patel	AAU, Anand, Gujart
112.	Dr. B.T. Sheta	AAU, Anand, Gujart
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115.	Dr. A. Hossain	Institute of Agriculture, Vishwa Bharti, Shiriniketan (W.B.)
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117.	Dr. Vivek	SVBPUAT, Meerut
118.	Dr. J.K. Jadhav	MAU, Parbhani
119.	Mr. Satyanarayan Prasad	Student, RAU, Pusa
120.	Dr. C.A. Agasimani	UAS, Dharwad
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124.	Dr. Vikram Bhaval	Tirhut College of Agriculture, Dholi, Muzaffarpur
125.	Dr. Shivnath Das	RAU, Pusa
126.	Dr. Sunil Kumar	RAU, Pusa
127.	Dr. Johnes Nirmalnath	UAS, Dharwad
128.	Mr. Sunil Kumar	Dhanuka Agritech Ltd., New Dehli
129.	Mr. Sanjay Singh	Dhanuka Agritech Ltd., New Dehli
130.	Dr. N.K. Deka	AAU, Jorhat
131.	Dr. S. K. Mohanti	OUAT, Bhubaneswar
132.	Dr. J. Deka	AAU, Jorhat
133.	Dr. K. Barua	BCKV, Mohanpur, Nadia (W.B.)
134.	Dr. N. Borah	AAU, Jorhat
135.	Dr. R.D. Gautam	IARI, New Delhi
136.	Dr. Shambhu Prasad	BAU (RAU), Sabour, Bhagalpur
137.	Dr. Mukesh Kumar	RAU, Pusa
138.	Dr. R.P. Sharma	RAU, Pusa
139.	Dr. A.P. Singh	IGKV, Raipur
140.	Dr. Tpas Chaudhary	IGKV, Raipur
141.	Dr. A.K. Shrivastava	CSUAT Kanpur
142.	Dr. R.A. Yadav	CSUAT Kanpur
143.	Dr. A.K. Tripathi	CSUAT Kanpur
144.	Dr. R.S. Singh	Dholi
145.	Dr. Rakesh Kumar	RAU, Pusa
146.	Dr. A.K. Gore	MAU, Parbhani
147.	Dr. V.B. Nevase	MAU, Dapoli
148.	Dr. Vinod Kumar	RAU, Pusa
149.	Dr. R.K. Bhatia	PAU, Ludhiana
150.	Dr. S.K. Randhava	PAU, Ludhiana
151.	Dr. Suresh Kumar	CSKHPKV, Palampur
152.	Dr. Neelam Sharma	CSKHPKV, Palampur

<b>153.</b>	Dr. Rajesh Kumar	RAU, Pusa
<b>154.</b>	Dr. K.P. Singh	RAU, Pusa
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<b>162.</b>	Dr. L.G. Pawar	College of Agriculture Dapoli
<b>163.</b>	Dr. S.K. Singh	ICMR, Patna
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<b>165.</b>	Dr. R.K. Goel	Syngenta India Ltd.
<b>166.</b>	Dr. J.N. Majumadar	Syngenta India Ltd.
<b>167.</b>	Dr. Dev Raj Arya	Monsanto India Ltd.
<b>168.</b>	Dr. A. Roy	Dow Agro. Sci. Mumbai
<b>169.</b>	Dr. S.K. Verma	Dow Agro. Sci. Mumbai
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\* Registered by sending Registration fee but did not turn up at Patna.