



**WEED SCIENCE NEWS LETTER**  
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### President calling.....



It has been almost a year since the present Executive took over the working of the ISWS from the previous Executive. We believe we have done reasonably well during this period, although we could have done better provided the conditions for working were more congenial. First and foremost we have succeeded in obtaining recognition from the ICAR. The first year's grant is already with us for the publication of the *Indian Journal of Weed Science*. We can also now hope for getting grants from the ICAR for organizing the Biennial Conferences and other meetings.

Secondly, I am very happy to say that we have gone online. In the IT era, it is very important that we use technology to maximize our full potential. The members can now access not only the present issue of *Indian Journal of Weed Science*, but the entire back volume collections at the click of a mouse. Very few Societies have done this and we could genuinely be proud of this achievement. We will soon be attempting to put in place the online submission of the articles and their processing.

A new website has been designed which is more dynamic and interactive. Being the window to the outer world, this will bring greater visibility and recognition of the work being done by our weed scientists. So keep watching the space ([www.isws.in](http://www.isws.in)).

However, on the flip side, running of a parallel Society by a group of scientists, has dealt a severe blow to the image and credibility of Weed Scientists of this country. The re-registration of the Society is a non issue. No entity is registered more than once. Some of the senior members of the society wanted to intervene to find just solution to the problem, but this group cares less for the Science and retired Weed Scientist/Past Presidents for reasons best known to them. This cannot and should not continue for long. The present executive is determined to sort this out soon come what may. We need the whole hearted support of all the members in these hours of need and I promise that we stand to serve you and serve you better.

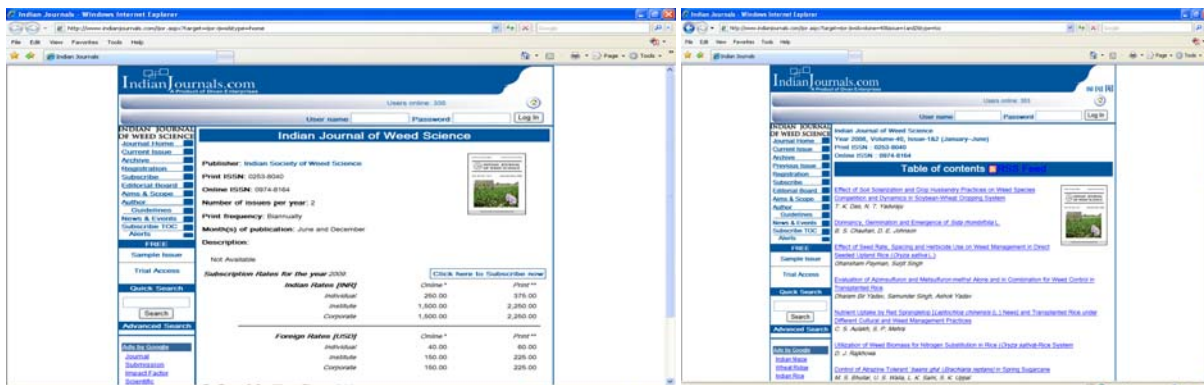
N T Yaduraju  
President, ISWS

### Indian Journal of Weed Science is now available online:

Thanks to the concerted efforts of the Executive Committee of Indian Society of Weed Science; the journal is now available online at [www.indianjournals.com](http://www.indianjournals.com). This will increase visibility of the articles/journal at national and international levels to add to its impact factor. This will be helpful in reversing the trend of submitting the best data/papers in overseas journals by weed scientists. The IndianJournals.com will also share the revenue with the society and will enroll more clients out of the country. Soon the articles will be accessible with user name and password assigned to the members of the Society. In the future, manuscripts

processing will also go online to help reduce publication time after the manuscript submission and lowering the cost of publication. If successful, we may start publishing only online issues in the future, but that would take time. As of today we wish to have both hard copy and its online version availability to all our stakeholders (libraries and Society members). The revised rates for print and print plus online are revised and available online at <http://www.indianjournals.com/ijor.aspx?target=ijor:ijws&type=home>

We hope this will be helpful to our students, teachers, researchers, industry and other users in accessing scholastic publications. As promised by the new EC under the dynamic leadership of Society's President, the Journal will be on time and backlog will be cleared by 2009.



## Honours and Awards to Indian Students and teachers in USA



### Vinod Shivrain, Nilda R. Burgos and Sanjeev Bangarwa

Vinod Shivrain completed his PhD under Dr. N. R. Burgos from University of Arkansas and was declared Outstanding Ph.D. Student in the Dept. of Crop, Soil, and Environmental Sciences. Vinod completed his B. Sc. (Hons) from India before joining Master and PhD at University of Arkansas, Fayetteville, USA. Vinod has recently joined Syngenta (USA) and presently posted in Greensborough, North Carolina. He is the recipient of several awards including Individual and Team Championship in Weed Contest (USA), participated in many US and International Conferences and published several papers in Weed Science, Weed Technology and other reputed journals.

Sanjeev Bangarwa, after completing his Masters from India joined PhD at Clemson with Dr. J. K. Norsworthy and later moved to University of Arkansas, Fayetteville (along with his supervisor) is making excellent progress and achieved **1<sup>st</sup> place in Beltwide Cotton Conference**, graduate student oral presentation contest, Jan 5-8, 2009 at San Antonio, Texas and **2<sup>nd</sup> place in Beltwide Cotton Conference**, graduate student poster contest, Jan 5-8, 2009 at San Antonio, Texas. Sanjeev is also a recipient of **Gerald O. Mott Meritorious Graduate Student Award** in Crop Science, University of Arkansas, 2009. Gerald O. Mott Meritorious Graduate Student Award in Crop Science recognizes top-notch graduate students pursuing advanced degrees in crop science disciplines. The award is offered by Crop Science Society of America, named after the first CSSA president, Gerald O. Mott, who trained 75 graduate students during his 45-year career at Purdue and the University of Florida.

## Mayank Malik joins CREC, Univ. of Florida, USA

Dr. Mayank Malik, after completing his PhD from Clemson University, South Carolina, USA joined the lab of Prof. Megh Singh at Citrus Research and Education Center, Lake Alfred, Florida. CREC is the biggest and oldest research center wholly dedicated to all aspects of citrus. Mayank will be working on weeds of citrus groves to improve weed management by lowering the cost and improving efficacy of herbicides in an integrated weed management system. Mayank did his PhD on 'Biology and ecology of wild radish (*Raphanus raphanistrum*)' from Clemson University and masters from University of Arkansas on 'Confirmation, characterization, and control of herbicide-resistant and susceptible biotypes of barnyardgrass in Arkansas' and published half a dozen papers in refereed journals of international repute. He is also co-



**Dr. Mayank Malik and Dr. Prasanta Bhowmik at WSSA meeting in Orlando, Florida, USA**

author of dozens of refereed and non-refereed papers and submitted over 40 abstracts in national and international meetings. Mayank is a recipient of Dr. and Mrs. H.P. Cooper memorial endowment award in agronomy from department of Entomology, Soils, and Plant Sciences, Clemson University. He has rich experience in field and lab work and participated in several scientific contests as a graduate student and won individual and team awards. Mayank's father is a weed scientist of international repute and we wish Mayank to attain more heights in his career as a weed scientist.

## Weed Science Society of America, Outstanding Research Award to Dr. Ragahavan Charudattan

Ragahavan Charudattan was born in Tanjavur (India) and after completing his B. Sc. and MSc. Degree in



Botany and Chemistry and PhD in Plant Pathology from University of Madras joined PDF at University of California, Davis and later at University of Florida, Gainesville, USA. Dr. Charudattan joined as Asstt. Prof. in 1973 and became a full Professor in 1983 at Univ. of Florida and did a pioneering research and teaching on biological control of weeds using biocontrol agents. He worked on invasive and alien weeds viz. water hyacinth, hydrilla, purple nutsedge and tropical soda using fungal pathogens and served as a consultant on biocontrol programs in Australia, Brazil, Canada, Egypt, Italy, Mexico, South Africa and several US states. Dr. Charudattan also served on several national and international panels including US Congress Office of Technology Assessment, National Academy of Sciences Board on Agriculture, EPA, USDA-CSREES, ARS, APHIS, World Bank, FAO and others. He was the founder of 'Biological

Control' journal and was president of International Bioherbicide group; published over 400 papers including 5 books, 24 book Chapters, 94 refereed papers, 11 patents and 274 non-refereed papers. After having a wonderful career at University of Florida, Dr. Charudattan started a biotech company, BioProdex, Inc. in

Gainesville, Florida to develop and commercialize bioherbicides and other 'green' technologies for pest management. In 2000 he was awarded with a Fellow of WSSA. He is also a Fellow of APS (American Phytopathological Society). Dr. Charudattan is son of late Dr. Venkatarama Raghavan, Professor of Sanskrit, University of Madras, and late Mrs. Sarada Raghavan. His wife Dharini Charudattan and son Savitar Kartika Charudattan live in Gainesville, Florida. Indian Society of Weed Science is greatly honoured with his magnificent achievements and wishes him all the best for his endeavor (BioProdex). A very happy re-tired life to dear 'Charu'.

## International Weed Science Society meeting

Prof. Baruch Rubin making a presentation in the IWSS meeting at Orlando, Florida, USA on 11.02.09

Dr. Samunder Singh, who was on his personal visit to Florida, was invited to attend the meeting of International Weed Science Society held at Hilton in the Walt Disney World Resort, Orland on Feb. 11, 2009. The meeting was attended by present office bearers, past-Presidents, EWRS representatives and other members of ISWS. The points raised by Secretary, Indian Society of Weed Science were also taken up in the agenda items and it was discussed to have more interactions and representations of weed scientists and Societies



from developing countries to make IWSS more vibrating. It was also decided that IWSS will provide technical support to Regional Societies in organizing specialized workshops during their national meetings/conferences. Dr. Nilda Burgos, Secretary & Treasurer accepted the challenge to revamp the Society under the guidance of Prof. Baruch Rubin, President, IWSS to have wider reach in Asian and African countries and to support their Regional Societies. More weed scientists from developing countries will be encouraged to participate in the next International Weed Science Congress to be held in China in 2012.

## New Positions



**Dr. H. V. Nanjappa, Professor and Head of Agronomy, University of Agricultural Sciences, GKV, Bangalore joined the post of Director of Instruction (Post-Graduate studies). Dr. Nanjappa is a very distinguished and dynamic weed scientist and also Vice-President of ISWS. Indian Society of Weed Science feel elated for his promotion and wishes him well for his new assignment.**

**Dr. J. S. Mishra, another well-known Weed Scientist from NRCWS Jabalpur and past Treasurer, ISWS was promoted as Principal Scientist (Agronomy) at National Research Centre for Sorghum, Rajendra Nagar, Hyderabad. He was the most celebrated Weed Scientist at the National Research Center for Weed Science and his departure will be greatly missed. ISWS wishes him all the best for his new position at NRC Sorghum.**



## Proceedings of ISWS National Symposium on the Strategies for the Management of Herbicide Resistance in the Rice-Wheat Cropping System.

The Symposium was organized at National Agricultural Sciences Complex, New Delhi on 14<sup>th</sup> Nov. 2008. It was attended by several representatives from pesticides companies and University/ICAR scientists to take stock of herbicide resistance situations with respect to the new herbicides released a decade back for managing isoproturon resistant *Phalaris minor* in wheat under rice-wheat cropping system. The symposium comprised of invited presentations by lead speakers, poster papers and panel discussion to chalk out strategies for mitigating farmers' losses due to reduced control of *P. minor* by the existing wheat herbicides.

Dr. N. T. Yaduraju, in his Presidential address threw the gauntlet to the scientists, regulatory authorities and pesticides manufactures for the challenge of fighting herbicide resistance in wheat weeds in north-west India, which is a real threat to increased food grain production at a time when the stocks are all time low. Dr. Yaduraju commended the scientists working in this region for their insight and the spirit in tackling the problem head on. It is strange that still there are some skeptics who are unable to understand the evolution of resistance. Had that been the case, the pesticide manufacturers would not have withdrawn the herbicide which was not providing effective control at farmers' field and to bring an altogether new chemistry.

**Prof. R. K. Malik, Symposium Coordinator** discussed the history of resistance evolution in 1992 in India and the scientific impetus for innovative technology adoption due to resistance onslaught, release of new herbicide molecules with the help of pesticide industry and regulatory authority, zero tillage and resource conservation technology. He stressed that herbicides will be essential part of the weed management practices in rice-wheat cropping system; however, with new agronomic tools (zero till, raised bed plantation, selection of competitive varieties, planting time etc. in wheat and transplanting rice under zero till) will help lowering the soil weed seed bank resulting in lowering herbicide consumption. Evolution of resistance in *P. minor* to isoproturon was instrumental in paradigm shift and large scale adoption of zero tillage technology in wheat, which not only saved on cost of field preparation (fuel burning), but also enriches the soil through enhanced water percolation. Resource conservation technology has a direct effect on soil seed bank of weeds and in the long run also restores soil productivity.

**Dr. A. K. Gogoi, ADG, ICAR**, chaired the first session where herbicide scenario was presented from different regions with management strategies and the views of herbicide manufacturers were also expressed. Dr. Gogoi highlighted the significant role played by weed scientists for managing two important weeds; *Phalaris minor* and *Parthenium hysterophorus*. Both are of larger significance with huge economic stakes. He stressed on conservation agriculture which offers a prominent role on the management of herbicide resistant weeds. The contribution of NRC Weed Science for the management of *Parthenium* and CCS HAU Hisar, Haryana and PAU Ludhiana, Punjab for the management of *P. minor* was appreciated.

**Dr. U. S. Walia**, Prof. and Head of Agronomy department, PAU Ludhiana presented paper on the state of affairs of resistance in *P. minor* under Punjab conditions. Dr. Walia talked about the important weeds of wheat in Punjab and the herbicides available for their management, shift of weed flora and failure of herbicides in controlling *P. minor* by the new herbicides that were recommended for its control during 1998. Atlantis (mesosulfuron+iodosulfuron) and Total (sulsosulfuron+metsulfuron) which were recommended only two years back were also found less than satisfactory.

**Dr. Samunder Singh** from CCS Haryana Agricultural University presented the latest resistance scenario for Haryana state. Failure of new herbicides was observed on a large scale as happened earlier with isoproturon. A multipronged strategy is required to meet the onslaught of resistant biotypes in the rice-wheat growing zones of North India for sustaining wheat production of the country.

**Dr. R. S. Chhokar** from Directorate of Wheat Research (ICAR) dwelt on the management aspect of resistant biotypes of *P. minor*. Dr. Chhokar mentioned that IPU resistant biotypes were earlier found sensitive to clodinafop, fenoxaprop, sulfosulfuron, metribuzin, pinoxaden, Atlantis (mesosulfuron + iodosulfuron), fluazolate, pendimethalin, trifluralin, chlorotoluron and terbutryne; however, during 2002-03 several biotypes defied fenoxaprop and clodinafop and later sulfosulfuron (2006-07).

**Dr. T. K. Das** (IARI) also made a presentation on his work with several herbicides and *P. minor* biotypes for the possible loss of activity with these new herbicides to support the observations of earlier two presentations.

Two presentations were made from **Syngenta** and **Bayer CropScience** on the problems of herbicide resistance in the rice-wheat cropping system and the contribution of Industry in fighting the resistance with a multi-pronged strategy in collaboration with weed scientists and farmers of the affected areas. The industry was well informed of the brewing problem and looking at the possible alternatives.

The Panel Discussion session was chaired by **Dr. R. K. Malik, Symposium Coordinator**. The following points were discussed to evolve strategies to manage herbicide resistance:

### **1. Standardization of methodology for confirming resistance evolution**

There is a great need to follow standardized methodology and similarity of use by all the weed scientists working with herbicide resistance. Dose response analysis (Probit/logit analysis) should be followed using fresh/dry weight or percent mortality. A minimum of five application rates of herbicides should be used for calculating GR<sub>50</sub> values. Initial screening studies can be done by using three application rates of herbicides as full, half and double the recommended rates. After the confirmation of results from preliminary studies, it should be further confirmed with several dose rates for the given herbicide. The pot size for raising plants in green house should not be too small as it may affect the growth of plants and herbicide efficacy. Medium size pots (6 x 6" top diameter and height) for screening and large sized (8 x 8" or 10 x 10" diameter and height) pots for further confirmation of resistance will be ideal for resistance detection. It was suggested that a thorough survey and mapping of resistance affected areas be done which can serve as a base and be used for further studies and recommendations. Suggestions were also made to have a central registry for naming biotypes collected from different districts/states, so that there is uniformity in reporting and ascertaining the areas affected by resistance. This can be done by prefixing the name of the district followed by the state and the number of biotypes collected. The next meeting of HARC will work on this aspect.

### **2. Evolving partnership (HRAC)**

All the participants were of the view that it is high time to sensitize policy makers that resistance is happening and we should chalk out strategies for its timely management. All the major multinational companies working with herbicide were asked to request their parent companies for a lookout of a grass herbicide in their inventory for the control of *P. minor*. If there is a potential new molecule or the existing one, but not evaluated against resistant *P. minor*; the same may be exploited and if found suitable for Indian situation, registration authorities can be approached for ad-hoc recommendation. It is ideal time for capacity building by universities/institutes and extension workers engaged in the

management of *P. minor*. Epidemiology of resistance at farmer's level (survey) should be done by Univ./ICAR Instt. It was also suggested from the Pesticide industry representatives to have a helpline to guide resistance affected farmers. This was appreciated by all and modalities will be worked out during the current wheat weed control season. The next meeting of HRAC will work on this issue.

### To manage the resistance the following points need to be considered:

1. PPI/PRE herbicides fb POE applications where the problem is very serious
2. Application techniques are most important in the management of *P. minor* as proper coverage with flat fan certainly helps in improved control. Popularizing spray techniques (nozzles, volume of water and optimum dose and time) with industry's help.
3. Company's collaboration is vital in delaying or managing the resistance, particularly through new herbicide molecules.
4. There is limited scope for crop rotation, due to cost of cultivation and remuneration to farmers. Niche for substitute crops in case of wheat crop failure due to resistance should be considered. Crops like sunflower can be raised in case resistant biotypes are not controlled by herbicides causing crop failure.
5. Varieties for early canopy cover should be preferred. Role of variety is significant in the competition with weeds. Early sowing is better in *P. minor* problem areas as wheat can smother late emerging *P. minor* plants.
6. Adoption of Zero Tillage (ZT) where ever possible. Zero tillage must be encouraged to reduce the seed bank of *P. minor* population. Rotavator antagonize ZT benefit in *P. minor* management and should be discouraged in rice-wheat rotation areas.
7. Techniques for exhausting soil seed bank of *P. minor* be studied for its effective control.

*P. minor* defying herbicides in R-W rotation areas (Sirsa). Integration of ZT, early sowing, competitive variety, timely & proper spraying produced excellent wheat crop in the resistance affected areas in Tohana (inset), Haryana, India, 04.04.09



The meeting ended with thanks to the Chair. Secretary, ISWS thanked all the participants from industry, SAU's, ICAR, CIMMYT and other organizations for their valuable contribution in the fight against resistance. The financial support from Monsanto, Syngenta and Bayer CropScience for holding Symposium and NASC facilities was thankfully acknowledged.

## Coming Events

2009

July 6-10 1<sup>st</sup> International Conference "Conserving Arable Weed Diversity – the Role of Weeds as Ecological Resources and Indicators of Agro-ecosystem Function". Venue: Ozarow Maxowieck/Radzikow, Poland; Contact: Denise F. Dostatny; Voice: +48 22 725 3611 w. 262 (int.); FAX: +48 22 725 4714; ([d.dostatny@ihar.edu.pl](mailto:d.dostatny@ihar.edu.pl)); [www.florapolna.pl](http://www.florapolna.pl).

- June 8-12 **10th World Congress on Parasitic plants**. Kusadasi, TURKEY. Contact: A. Uludag, ([secretary@ippsturkey.com](mailto:secretary@ippsturkey.com)) [Http://www.dalyatur.com/parasiticplants/](http://www.dalyatur.com/parasiticplants/).
- July 26-29 **10th Queensland Weed Symposium**; Yeppoon, QLD, Australia Contact: <http://tinyurl.com/5t74r3>.
- Sept 7-10 **EWRS 2<sup>nd</sup> International Conference**, "Novel and Sustainable Weed Management in Arid and Semi-Arid Agro Ecosystem". Venue Santorini, Greece; Contact: Dr. Garifalia Economou [economou@aua.gr](mailto:economou@aua.gr) or Dr. Ilias Travlos [htravlos@yahoo.gr](mailto:htravlos@yahoo.gr), [www.ewrs.org/arid/default.asp](http://www.ewrs.org/arid/default.asp).
- Sept 21-24 **North American Weed Management Association Conference**, Kearney, NE, USA. Contact: K. Paul, [kossweed@gpcom.net](mailto:kossweed@gpcom.net). [Http://www.nawma.org](http://www.nawma.org).
- Oct 07-08 **4th Victorian Weed Conference "Plants Behaving Badly - In Agriculture and the Environment**, Geelong, VIC, AUSTRALIA. Contact: R. Shepherd, WSV, PO box 987, Frankston, VIC 3199, AUSTRALIA. [Secwssv@surf.net.au](mailto:Secwssv@surf.net.au). Voice/FAX: 61-03-9576-2949 [Http://www.wsvic.org.au](http://www.wsvic.org.au).
- Oct 19-23 **22nd Asian Pacific Weed Science Conference, Asian-Pacific Weed Science Society** Venue: G.C. University, Lahore, Pakistan. Theme: *Judicious Weed Management- Road To Sustainability*; Contact: Prof. Dr. Gul Hassan, General Secretary APWSS, Voice: 92-91-9218206/9216542; Email: [secretarywssp@yahoo.com](mailto:secretarywssp@yahoo.com)
- Nov. 2009 **Biennial meeting of Indian Society of Weed Science**. Contact: Secretary, ISWS; Voice: +91 1662 289268; Email: [isws.hisar@gmail.com](mailto:isws.hisar@gmail.com).

## 2010

- Feb 7-11 **Weed Science Society of America and Society of Range Management**; (joint meeting). Denver, CO USA. Contact: John Jachetta. (317)-337-4686 ([jjjachetta@dow.com](mailto:jjjachetta@dow.com))
- July 12-15 **15<sup>th</sup> EWRS Symposium**. Venue: Kaposvar University, Guba S. Str. 40, H-7400, Kaposvar, Hungary. Contact: Gabriella Kazinczi DSc. ([kazinczi.gabriella@ke.hu](mailto:kazinczi.gabriella@ke.hu)) [www.asszisztencia.hu/ewrs](http://www.asszisztencia.hu/ewrs)

### Indian Society of Weed Science Executive Committee for 2008-2010

President	Dr. N. T. Yaduraju, ICAR, New Delhi
Vice-President	Dr. H. V. Nanjappa, UAS Bangalore
Vice-President (Co-opt)	Dr. A. K. Gogoi, ICAR, New Delhi
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