



# ISWS News Letter

A publication of Indian Society of Weed Science

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2014

## Message from the President

### How much do weeds cost us?

Often the economic impact of weeds is calculated based on productivity losses. Sometimes the cost incurred on weed management is taken in to account. However, the costs related to the decreased efficiency of inputs- particularly that of fertilizers; increased cost related to crop management- such as increased pest incidence or harvesting; effect on crop quality etc., are seldom taken in to account. Further, there are many weeds which impact health of human beings and livestock. The invasive weeds affect biodiversity adversely but its quantification is not the easy things to do. The impact of aquatic weeds is of a different type involving direct effect on fisheries and navigation to aesthetic and recreational value of water bodies. While many developed countries have a sound estimation of economic losses of weeds, our values are more of 'guesstimates' - that too based on crop yield losses alone. Even here the figures are inconsistent. While some overestimate the losses by taking the potential losses caused by weeds- the usual yield difference between weed free and weedy treatments, the others base their reports on an assumed value of say 5 or 10%. Both are incorrect and unscientific. They don't represent the actual yield losses experienced by the farmers. Every farmer does attempt to control weeds with whatever resources at their command. Often they compromise with below satisfactory levels of weed control. Our efforts must be to estimate the yield loss at that level of weed management the farmers are practicing. The reference for comparison would be the yield obtained with no or minimal weed competition. However, such estimates are hardly available. It is time we gave attention to this. A proper scientific study on the economic impact of weeds to Indian agriculture and to the nation as a whole is badly needed. As this is a specialized work, we need to take the help of experts and social scientists in this exercise.

Such studies are important to highlight the importance of weeds and to sensitize the policy makers in order lay claim to higher allocation of funds for weed science research and extension activities. A micro-analysis of such data will also help in identifying gaps and in prioritizing research and extension. In fact such studies are a pre-requisite for receiving public funds in many developed countries. I draw the attention of our members to the publication 'The economic impact of weeds in Australia by CRC for Australian Weed Management'. The publication can be downloaded at [http://www.researchgate.net/publication/236935376\\_The\\_economic\\_impact\\_of\\_weeds\\_in\\_Australia/file/3deec52dc8d1566048.pdf](http://www.researchgate.net/publication/236935376_The_economic_impact_of_weeds_in_Australia/file/3deec52dc8d1566048.pdf). which lays down the appropriate methodology for such studies. I hope this will arouse some interest among our weed scientists.

Happy reading.



N.T. Yaduraju

## Conference on 'Emerging Challenges in Weed Management' Organized

To commemorate the Silver Jubilee Year of the Directorate of Weed Science Research (DWSR) and to address the emerging challenges in weed management, Indian Society of Weed Science organized the biennial conference of ISWS at DWSR, Jabalpur during 15-17 February, 2014. About 250 delegates from all over India and overseas including members of the Society, scientists from agricultural research institutions and State Agricultural Universities (SAUs), representatives from concerned government departments and industries attended the Conference.



The conference was inaugurated by Dr. V.S. Tomar, Vice Chancellor, JNKVV, Jabalpur, and the Chief Guest of the function. The other dignitaries present were ; Dr. N.T. Yaduraju, President, ISWS; Dr. T.V. Muniyappa, Immediate Past President, ISWS; Dr. R.K. Malik, Dr. L.S. Brar, Former Presidents, ISWS; Dr. A.R. Sharma, Secretary, ISWS and Director, DWSR, Dr. Nimal Chandrasena, Dr. Megh Singh and Dr. Bhagirath Chauhan representing Australia, USA and Philippines, respectively. In his inaugural address, Dr. Tomar highlighted the problems posed by the weeds especially alien invasive



weeds like Parthenium, Lantana, Chromolaena, Mikania, Water hyacinth and submerged weeds in terrestrial and water ecosystems, and emphasized the need of their integrated management instead of relying only on chemicals. He desired that weed scientists should formulate strategies for weed management which are especially suitable for the country. Dr. A.R. Sharma welcomed the participants representing almost every state of India. He explained the challenges posed by weeds and the importance of their management. He hoped that this Conference will be useful for the delegates and students to know about the emerging challenges in weed management in different parts of the country and the world. Dr. N.T. Yaduraju, President ISWS highlighted the current scenerio of weed problems in the country and the world. He informed the gathereing about the current mangement practices being adopted in India as well. Dr. T.V. Muniyappa hightlighted the role and work carried out by the past Executive Committee under his leadership. He stressed the need to strenthen ISWS more vigorously.

Following booklets on weed science were also released by the Chief guest and dignitaries.

- *Trin Sandesh* - a publication in Hindi containing information on weed problems and management – DWSR, Jabalpur
- *Parasitic Weeds: Biology and Management* - Dr. V.S.G.R. Naidu and Dr. J.S. Mishra, CTRI, Rajamundri and DSR, Hyderabad
- *Weed Management in Vegetable Crops* - V.P. Singh, S.K. Guru, S.P. Singh, T.P. Singh, A. Kumar and N. Tripathi – GBPUAT, Pantnagar
- *Dhan Ki Sidhi Boai Utpadan Tachniq evam kharpatwar prabandhan* (In Hindi) (Bulletin No. 192) - V.P. Singh, T.P Singh, S.P. Singh, S.K. Guru and A. Kumar – GBPUAT, Pantnagar

**Awards and Fellowships:** During inaugural function, the following scientists were honoured for their outstanding contributions to weed science.

### **Life Time Achievement Award:**

Dr. R.K. Malik (Hisar, Haryana)

### **Special Appreciation Award :**

Dr. T.V. Muniyappa (Bengaluru, Karnataka)

### **ISWS Gold Medal**

Dr. V.P. Singh (Pantnagar, Uttrakhand) for 2012

Dr. (Mrs.) Sashi Bala Singh (New Delhi) for 2013

### **ISWS Fellowship**

Dr. Guriqbal Singh, (Ludhiana, Punjab) for 2012

Dr. Sanjoy Saha (Cuttack, Odisha) for 2012

Dr. Anil Dixit (Raipur, Chhattisgarh) for 2012

Dr. Gulshan Mahajan (Ludhiana, Punjab) for 2013

Dr. Suresh Kumar (Palampur, H.P.) for 2013

Dr. R. Devendra (Bengaluru, Karnataka) for 2013

Dr. R.S. Chhokar (Karnal, Haryana) for 2013

### **Young Scientist Award**

Dr. Amit Kumar Jha (Jabalpur, M.P.)

### **ISWS Best M.Sc. Thesis Award**

- Dr. (Mrs.) K. Sivagamy (Kalavai, Tamil Nadu) for 2012 on “Weed management effects on non-target toxicity and weed bank dynamics in soybean (*Glycine max*)-wheat (*Triticum aestivum*) cropping system”.
- Dr. (Mrs.) Masoume Yonnesabadi (IARI, New Delhi) for 2013 on “Evaluation of weed management options in transgenic stacked and non-transgenic maize hybrids”.

### **ISWS Best Book Awards**

Dr. V.S.G.R. Naidu (Rajahmundry, Andhra Pradesh) for the “Hand Book on Weed Identification”

### **General Body Meeting of ISWS Held**

A general body (GB) meeting of the Indian Society of Weed Science was held on 16 February, 2014 at the Directorate of Weed Science, Jabalpur. The meeting was attended by large number of ISWS members and executives, who participated in the ISWS conference.

At the outset, Dr. N.T. Yaduraju, President of ISWS welcomed the members and thanked for their confidence and support in the Society. Dr. A.R. Sharma, Secretary, ISWS apprised the house about the activities carried out by ISWS during 2013-14. He informed about the steps taken to improve the website of ISWS. The proceedings and journals published during the last 5 years have been uploaded on the website for free access to the users, which had increased the visibility of the Society. He also informed that combined issues of Indian Journal of Weed Science (1 and 2, 3 and 4) were being brought out since 1984 but we have brought out 4 individual issues during 2012 and 2013. Dr. Shobha Sondhia, Treasurer, ISWS presented the details of receipt and expenditure of last two years. It was unanimously approved by the GB.

Dr. Sushilkumar informed about the efforts taken by the present EC to improve the quality of Indian Journal of Weed Science, due to which, we could secure a reasonably good ranking from NAAS (3.94). He requested the authors to contribute good quality papers to further improve the NAAS rating. He also requested the scientists to cite the papers published in IJWS in their forthcoming research publications.

Dr. A.R. Sharma, Secretary placed the following agenda before GB based on the feedback from the ISWS members:

#### **1. Closing of bank account at Hisar and transfer of money**

It was apprised that the bank account of the Society at Hisar has still not been closed in spite of request made to Dr. Samunder Singh. However, Dr. Singh has informed that he would make another request to Bank Manager to close the account and transfer the money to the existing account at Jabalpur. It was suggested to again approach Dr. Samunder Singh to pursue the matter more vigorously with the Bank Manager, SBI, Hisar for the transfer of money.

#### **2. Removal of names from Life Members list who are not responding**

Dr. A.R. Sharma, Secretary, ISWS informed the house that some letters / journals are repeatedly being returned from the addresses of members available in the database. In past, attempts were made to update the addresses but still a good number of members could not be traced. It was proposed to delete the names of such members from the mailing list so that time and money of Society could be saved. It was felt that it is the duty of the concerned member to provide latest address to society in case of his/her transfer/retirement etc. The house decided that letters/journals on such addresses should be stopped till the Society received request from such members with their updated address.

### **3. Free online availability of IJWS on website**

It was suggested that IJWS should be made available for free access to users to enhance the visibility of the Society. It was informed that steps have already been taken in this matter and journals from 2008 have already been uploaded on the website for the benefit of the users. The title of all the papers have been uploaded on the website since the inception of the journal in 1969.

### **4. Provision for online submission of articles**

Many members suggested to create provision for online submission of the papers for publication in IJWS. Dr. Sushilkumar, Chief Editor informed that submission of research papers in hard copy has been stopped. Now papers are being received through email only. It was informed that efforts will be made in due course to create software for complete online submission of research articles.

### **5. Election for co-opted post of Vice president and Joint Secretary**

There were suggestions that co-opted posts of Joint Secretary and Vice President should be filled through the due election process as for other positions rather than by the elected members of EC. Lively discussion was held on this issue. Some members were of the opinion that this provides opportunity to EC to select the members from the non-represented regions of the country. It was decided to continue with the present system for the time being.

### **6. Proposals from members for donations to the Society for instituting ISWS awards**

Dr. A.N. Rao submitted a proposal to institute the Best Ph.D. thesis Award in the name of his father. The proposal was accepted in principle. Details will be worked out by the Executive Committee later. Dr. A.N. Rao handed over cheque of Rs 1.0 lakh in the meeting. The gesture was appreciated by the members present.

Dr. T.V. Muniyappa, Former President, ISWS also put forth a proposal to sponsor Young Scientist Award. The proposal was accepted by the house. Dr. Muniyappa announced a donation of Rs 1.0 lakh for this purpose.

Dr. Sushilkumar informed that Dr. Mahesh K. Upadhyaya, life member of the Society based in Canada also contributed a sum of Rs 50,000/- in 2012 to sponsor a lecture on non-chemical weed control. This proposal was also approved by the house.

It was proposed by Dr. Megh Singh that a fund should be raised to facilitate the participation of students and young scientists in the ISWS conferences. He promised a contribution of Rs. 1.0 lakh, and mentioned that many other scientists based in other countries are also willing to make contributions for this fund. A member of the Society among the audience announced to contribute his one day salary for this fund.

### **7. Creation of position of Associate Editor to expedite editing process**

It was decided to create a position of Associate Editor in the Editorial Board to expedite processing / editing of articles and further improve the quality of the journal. Dr. N.T. Yaduraju urged the members to come forward to take such responsibility. Dr. A.N. Rao volunteered for the same. His name was approved by the house.

### **8. Holding of 25th APWSS conference**

Dr. N.T. Yaduraju, President of ISWS and President of APWSS informed that 25<sup>th</sup> APWSS Conference will be held in India during October,

2015. The proposal to organize this Conference by the ISWS was appreciated by the members. Dr. Yaduraju suggested the venue at Hyderabad; however, there were also opinions to organize the Conference at NASC, New Delhi. The Executive Committee was authorized to take necessary action to hold the conference in the most befitting manner with maximum participation of the members from India as well as abroad.

Dr. A.R. Sharma, Secretary, ISWS proposed formal vote of thanks.

### Meeting of Executive Committee of ISWS Held

The meeting of Executive Committee (EC) of Indian Society of Weed Science (ISWS) was held at ANGRU, Hyderabad to examine the receipt and expenditure of ISWS Biennial Conference and select the venue for 25<sup>th</sup> APWSS Conference to be organized at Hyderabad. Following were present:

1. Dr. N.T. Yaduraju President, ISWS
2. Dr. A.R. Sharma Secretary, ISWS
3. Dr. J.S. Mishra Joint Secretary, ISWS
4. Dr. Sushilkumar Chief Editor, IJWS
5. Dr. A.N. Rao Special Invitee
6. Dr. M. Yakadri Special Invitee
7. Dr. M. Madhavi Special Invitee

All the members visited various places like International Conventional Centre (HICC) and Hotel Marriott and ANGRAU auditorium to inspect the venue for holding the APWSS Conference. It was realized that total expenditure for organizing the Conference at HICC or Marriott Hotel may be in the region of Rs. 80-90 lakhs. The committee discussed the opportunities available for collecting funds from different donors. Considering all the options available, it was proposed that ANGRAU will be the ideal venue to host the APWSS Conference. The following decisions were taken by the committee after discussion:

- ANGRU will be the venue for organizing 25<sup>th</sup> APWSS Conference.
- Dr. N.T. Yaduraju will meet the Vice Chancellor, ANRAU along with Dr. M. Yakadri and Dr. M. Madhavi to get the necessary approval for ISWS to organize the Conference in collaboration with DWSR, ANGRAU and ICAR.
- The Conference will be organized from 13-16 October, 2015 as proposed at the 24<sup>th</sup> APWSS Conference at Bandung, Indonesia.
- First circular for holding the APWSS conference should be circulated at the earliest preferably by the end of April 2014. The draft copy to be developed by DWSR and shared with EC for comments by 20<sup>th</sup> April.
- A separate website should be launched for this purpose having facilities of online registration, online payment, booking accommodation in hotels, and online submission of invited papers / oral presentations/abstract/extended summaries giving acknowledgement/acceptance of paper to the uploading authors.
- It was decided to seek quotation for rates from different outsourcing agencies for creation and management of a separate website with the above features, arrangement of pre- and post-conference tours for delegates, facilities for exhibition / posters sessions, signages and promoting brands of sponsors and donors, organizing cultural event and any other such facilities.
- It was decided to hold the local field visit on the third day of the conference. The cost of travel will be borne by the Society.
- Local Organizing Committee of ANGRAU will explore the possibility to organize the cultural event through central/state cultural Ministry.
- It was decided to include the names of the Directors of ICAR institutes located in Hyderabad in the National Organizing Committee.
- It was decided to make all out efforts to advertise the Conference, through display of posters at all places including conventional universities too besides the State Agricultural Universities and ICAR institutes.
- Committees for transport, accommodation, food, registration, cultural programme, hall management etc. will be constituted locally by

including scientists from ANGRAU and ICAR institutes located at Hyderabad.

- Local Organizing Committee of ANGRAU will explore the possibility of arranging buses and smaller vehicles from ICAR institutes located at Hyderabad and KVKs of ANGRAU.
- The registration kit having bag, pad, pen, cap, memento will be arranged by the constituted committee for this purpose.
- The lunch and session tea will be provided by the organizers during all the days. A gala dinner will be hosted by organizers on the cultural evening.
- No transport will be provided to delegates attending the Conference from railway/bus station, airport to respective accommodation places. However, the delegates will be provided all details through mail about the location of accommodation arranged for them.
- Accommodation for foreign and other interested Indian delegates will be arranged at *Marriott, HICC and other* hotels at negotiated rates.
- Indian participants will be provided accommodations in various guest houses of the state / central institutes, including cheap hostel accommodation for the students.
- Registration fee of Rs. 6000/- for Indian delegates, Rs. 3000/- for students / SRFs, US \$ 350 for foreign delegates (US \$275 for delegates from SAARC countries), and US \$ 200 for students foreign countries will be charged.
- A Resource Generation Committee will be constituted to generate funds from different sources.
- Dr. A.R. Sharma, Secretary, ISWS was nominated as the Organizing Secretary of the Conference.
- The theme of the conference was decided as “Weed Science for Sustainable Agriculture, Environment and Biodiversity”
- Dr. A.R. Sharma, Director, DWSR was requested to explore the possibility of organizing AICRPWC Annual Review Meeting along with APWSS conference to ensure maximum participation of scientists in the conference.
- It was decided to bring out a publication on status of weed science in different countries of Asian-Pacific region. Dr. A.N. Rao was requested to prepare an outline of the contents

for uniformity. It was also decided to identify the names of prospective authors from each country.

### **Resolution Passed by the Roundtable Meeting on “GM Crops for Nutritional Security”**

A meeting was held at the National Academy of Agricultural Sciences, New Delhi on the 12th February, 2014 under the Chairmanship of Prof. M.S. Swaminathan, Founder Chairman and Chief Mentor, M.S. Swaminathan Research Foundation, Chennai. The Round Table group discussed the potential of GM crop technology in solving the entrenched low farm productivity, malnutrition and hidden hunger problems in a large section of Indian population, particularly, women and children in the underprivileged sections of our society and resolved the following.

1. GM crop technology is a promising, relevant and efficient technology for low-input high-output agriculture for crop improvement where conventional breeding tools have not been effective. GM technology will be a tool to improve agricultural crops for their nutritional value, nutrient & water use efficiency, productivity, tolerance/resistance to biotic and abiotic stresses.
2. The present de facto moratorium on the field trials of GM crops should be lifted at the earliest. It is putting the clock back in relation to progress in harnessing the benefits of GMO technology in agriculture. Confined field trials are essential for the evaluation of productivity performance as well as food and environmental safety assessment. The non-conductance of regular field trials is a handicap as well as disincentive in harnessing the benefits of a wide array of transgenic material available with different research organizations. Many of these research materials have excellent resistance to diseases, pests, drought and salinity as well as improved nutritional quality. Much of this work has been done in research organizations committed for

- general public good and by young researchers who are getting increasingly discouraged due to lack of clear policy on the future of GM crops.
3. The Indian biosafety regulatory system is in compliance with the international regulatory consensus based guidelines. The system, put in place under the Environment Protection Act (1986) should dynamically evolve, update, adopt and implement the biosafety protocols and procedures. The bill on Biotechnology Regulatory Authority of India introduced by the Government needs to be pursued further taking into account the observations by all stakeholders. Meanwhile the existing three tier system of IBSC, RCGM and GEAC has done a good job and should be strengthened with adequate infrastructure and technical support to continue with the confined field trials so that the research progress is not halted.
  4. The Agricultural Biotechnology Committee chaired by Prof. M.S. Swaminathan submitted its report in 2004 for a Parliament approved Regulatory Agency as well as conducting All India Coordinated Trials with GMOs, taking all necessary precautions. In the process, it is required to consider during risk assessment the genuine concerns of the GMO opponents on a scientific basis.
  5. After biosafety clearance by the GEAC, ICAR should play a key role in the commercial release of the GM crops to prevent undue proliferation of large number of hybrids/varieties.
  6. The national regulatory system should integrate capacity building as a necessary operational requirement to keep pace with scientific advancement through international collaborations to evolve as the most effective system including collaborations with countries such as USA, Australia, Canada, Norway and Brazil.
  7. Scientists should communicate with public and policy makers about the safety and benefits of GM crop products and remove the undue fears and apprehensions about GM crop adoption. A media resource centre may be set up for providing up-to-date scientific information to media representatives and dispel any misinformation.
  8. The Academy may set up two Committees on the pattern set up by the Royal Society of London, a. Committee on Public Understanding of Science, b. Committee on Political Understanding of Science.
  9. Until the time a Parliament approved autonomous National Biotechnology Regulatory Authority comes into existence, RCGM & GEAC should have full time chairpersons as recommended by SAC to PM and GEAC should issue 'Decision Documents' at the time of allowing field trials of a GM event and at the time of final release of a GM event.
  10. The GEAC should function like a statutory body and make final decision on approval of the GM event for environmental release. The "No-Objection" certification from state governments for conduct of confined field trials is not required as their products will not get to farmers or consumers.
  11. Agriculture is a state subject and it is important that the State Agricultural Universities and State Departments of Agriculture are involved in the implementation of the field trials but without losing time. Some states are declaring themselves an organic state which precludes the use of GM crops. However, organic farming would require effective methods to face the challenge of pests and diseases.
  12. Nutritional security involves attention to balanced diets and nutrition literacy. The Food Security Act 2013 will ensure that all needing social protection against hunger will be able to get the needed calories. However, it is required to attend to other nutritional problems such as protein hunger and hidden hunger caused by the deficiency of micro-nutrients and vitamins.

13. There is need for a PAN-political support for promoting genetic engineering research in our country to harness its full potential.
14. Return from investments in biotechnology research is very high. Public and private sectors should develop a joint strategy which will help to ensure the inclusiveness of access

to improved technologies among all farmers, small or large.

15. To achieve a zero hunger challenge of the United Nations by 2025, we must double the small farm productivity. Such an increase will be possible only through the intelligent and intensive applications of new technologies such as Biotechnology.

## RESEARCH NOTES

### Management of *Orobanche aegyptiaca* in Indian Mustard

Indian mustard (*Brassica juncea* L.) is the major oil seed crop of Haryana being grown in an area of 0.6 m ha on light textured loamy to sandy loam soils characterized by poor fertility, light in texture with low moisture holding capacity. Mustard crop in Bhiwani Mahender Garh, Rewari, Jhajjar and some parts of Hisar and Sirsa adjoining Rajasthan is severely infested with holoparasitic weed broom rape (*Orobanche aegyptiaca* L.) commonly known as 'Margoja', 'rukhri' or 'sarson ka mamma' which has threatened mustard cultivation in these areas. Systematic experiments were conducted on *Orobanche* management at farmers' fields in villages Obera, Gignau, Hasan, Madhan, Lalpura, Jainawas of Distt. Bhiwani (Haryana) during last 12 years (2000-2013). For the effective management of *Orobanche* in mustard, following practices could be adopted in an integrated manner.

- Crop rotation with non-host crops like wheat, barley and chickpea depending on the irrigation facilities.
- Delayed sowing (25<sup>th</sup> October-10<sup>th</sup> November) supplemented with higher seed rate.
- Use of organic manures in combination with increased fertilizer N dose (125% of RD)
- Two sprays of glyphosate @ 25 g/ha at 30 DAS and 50 g/ha at 55 days after sowing provided the crop does not experience any moisture stress at the time of spray.
- Hand removal/pulling of left-over emerging shoots before flowering to reduce weed seed bank in the soil.



Infestation of *Orobanche* on mustard roots below ground



First spray of glyphosate (30 DAS)



Second spray of glyphosate (55 DAS)

(Dr. SS Punia, CCSHAU, Hisar)

## Human Ancestors Consumed *Cyperus rotundus* Which Inhibited Human Teeth Decay- Reveals a Study

*Cyperus rotundus* or 'purple nut sedge' is a C4 plant of tropics and known widely as the 'world's most expensive weed', in 92 countries and 52 different crops, due to its rapid spreading ability through its underground storage system of bulbs, rhizomes and tubers. Though it is considered by farmers as most difficult to control weed in tropics, *C. rotundus* is a good source of carbohydrates and has many useful medicinal and aromatic qualities and it contains lysine, an amino acid which human beings need to survive. Ancient Egyptians used it to make perfume. It was a staple for some Aboriginal populations.

*C. rotundus* was highlighted as a potentially key component of the diet of the Late Palaeolithic population of Wadi Kubaniya in southern Egypt (17,000–15,000 BC) 1000 km north of Al Khiday, where it predominated in the abundant assemblages of charred plant remains. A recent study conducted by researchers at Institutió Catalana de Recerca i Estudis Avançats and Universitat Autònoma de Barcelona in Spain found that ancestors in Africa munched on weeds such as the purple nutsedge for sustenance. According to findings published in the journal PLOS ONE, ancient teeth samples from an archaeological dig near the Nile River revealed their old food choice. Results of research Stephen Buckley and others demonstrated the ingestion in both pre-agricultural and agricultural periods of *C. rotundus* tubers. Ability of *C. rotundus* to inhibit *Streptococcus mutans*, an acid-producing bacterium that breaks down tooth enamel and causes cavities, may have contributed to the unexpectedly low level of caries found in the agricultural population. Other evidence extracted from the dental calculus includes smoke inhalation, dry (roasting) and wet (heating in water) cooking, a second plant possibly from the Triticaceae tribe and plant fibres suggestive of raw material preparation through chewing. (Further details can be read in: Buckley S, Usai D, Jakob T, Radini A, Hardy K (2014) Dental Calculus Reveals Unique Insights into Food Items, Cooking and Plant Processing in Prehistoric Central Sudan. PLoS ONE 9(7): e100808. doi:10.1371/journal.pone.0100808)

(News item from Dr. Adusumilli Narayana Rao  
Email: anraojaya1@gmail.com)

## DWSR Co-operation for Aquatic Weeds Management in Bengaluru city

On an invitation from Bruhat Bengaluru Mahanagara Palike (BBMP), Bengaluru, DWSR extended helping hands for aquatic weed management in lakes of the Bengaluru city. BBMP is having a problem of managing aquatic weeds in lakes and posing a big challenge for revival of vanishing lakes. Dr. Sushil Kumar, Principal Scientist, DWSR Jabalpur along with Dr. G. N. Dhanapal, Professor of Agronomy and Principal Investigator and Dr. M. T. Sanjay, Junior Agronomist of AICRP on Weed Control, UAS, Bengaluru made a presentation on management of aquatic weeds. Further, the team of scientists along with NGOs of Bengaluru city visited several lakes infested with aquatic weeds around Hebbal, Nagavara and Yelahanka areas of Bengaluru. Among several measures suggested, the scientists advised to adopt an integrated aquatic weed management involving biological control (use of insects feeding on weeds) and use of safe herbicide would go a long way in combating the menace. Respectful mayor of BBMP Sri B.S. Satyanarayana and other BBMP officers, besides a NGO called 'YUVA' attended the presentation and sought for collaboration with DWSR (Jabalpur) and Scientists of AICRP on Weed Control UAS Bengaluru. It was agreed to provide training for line departments /NGO'S/ to create awareness and technical inputs for effective control of aquatic weeds. The proceedings were also discussed with Dr. K. Narayana Gowda, Vice Chancellor, UAS, Bengaluru and he appreciated the action initiated by the NGOs and technical support being given to them by the weed scientists.



(Dr. G.N. Dhanapal, UAS, Bangalore)

## Recognitions and Awards

**Dr. Samunder Singh**, a well known weed scientist from CCSHAU, Hisar, India has been selected for the **Honorary Member Award**, the top honor of Weed Science Society of America. This honour is given to an individual who has performed meritorious service in the field of weed science. This prestigious award is given to only one person in a year or sometimes in two years to a weed scientist from the whole world. The award will be presented on 9th Feb. 2015 in the annual meeting of the Society in Lexington, Kentucky (USA). This is for the first time that the award will be given to an Indian weed scientist. The ISWS family congratulates Dr. Singh for this honour.



**Dr. G.N. Dhanapal** Professor of Agronomy & PI, AICRP on Weed Control, University of Agricultural Sciences, Bengaluru was honoured with "Scientist of the Year-2013" award of the National Environmental Science Academy, New Delhi. The award was presented to him by Dr. Devaraj, Vice Chairman, University Grants Commission, New Delhi. Congratulations to Dr. Dhanapal.



## Congratulations to Our Retiree- Dr. R. Devendra

**Dr. R. Devendra** obtained Ph.D. in Crop Physiology (1987) from UAS, Bangalore with Marit Scholarship. Dr. R.Devendra served as Research Assistant (1973-83) at Dept. Rice breeding, Vishveshwara Channel Farm, Mandya and Dept of Crop Physiology, GKVK Campus, UAS, Bangalore; joined AICRP on Weed Control project as Junior Physiologist at UAS, Bangalore (1983-87), Associate Prof (1987-1995), Professor (1995-till

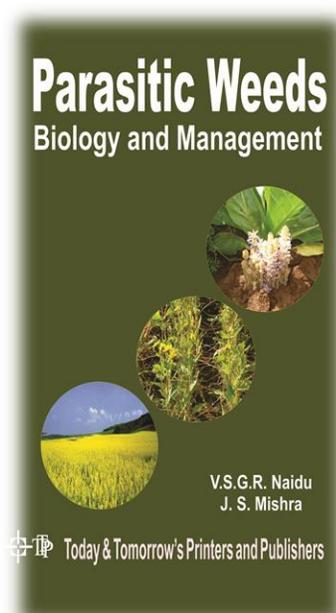


date). He served as in-charge Principal Investigator AICRP on Weed Control project from January 2013. Dr. Devendra has made outstanding research contributions in the field of Weed Science. He quantified the herbicide entry and translocation into different plant parts using radioactive herbicides. He attempted to reduce the application of herbicide dosage by recommending use of narrow orifice flood-jet anti-drift nozzle so that, fine droplet deposited, increase area of contact for individual herbicide and use of other adjuvants to herbicide spray solution for its enhanced entry into weed foliage. He quantified competitive ability of crop-weed and joint action of herbicide mixtures having synergistic action which facilitate reduction of individual herbicide dosage in mixture. He has published more than 50 research articles, 3 review articles and book chapters, 3 laboratory manuals, and presented about 60 papers in seminars/symposia. He was conferred Certificates of appreciation for the team work under the leadership of Dr. K. Krishnamurthy (1986) and Dr. M. Udayakumar (1993) both by USDA. Best research paper presentation award (2012) by Swadeshi Vijnana Andolana-Karnataka and prestigious ISWS 2013 fellow award.

## New Publications

The book '**Parasitic weeds-Biology and Management**'

contains a unique review of the present status of research on parasitic weeds, Cuscuta, Orobanche, Striga, Mistletoe. The provides cutting-edge information on all key aspects of plant parasitism, such as the structure, development and function of the haustorium, nutrient transfer and the physiology



of the parasite-host association, host reaction to parasitic plants, seed production and germination, the biology and ecology, problem posed by the weedy parasites, and detailed discussion of the various management strategies, including agronomic, chemical and biological approaches as well as utilization. It is anticipated that this book not only acts as a text for the students, but also as an exhaustive reference source for researchers, teachers, extension workers, and all those interested in managing these weedy parasites.

### **Transgenic Herbicide Resistance in Plants**

**Dr. V.S. Rao**

*Elk Grove, California, USA*

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Evolution of weed resistance to herbicides due to their continuous use has become a challenging issue in global agriculture during the last five decades. Besides, some herbicides, both selective and non-selective, cannot be used because of crop toxicity. The discovery of herbicides with new action mechanisms has become scarce over the last 20 years. These problems are sought to be mitigated via transgenic engineering in which genes—from non-plant sources or within the plant kingdom—that encode herbicide resistance traits are transferred into the target plant's genome. Using this technology, scores of crops have been engineered to develop hundreds of varieties resistant to herbicides, besides insects, pathogens, and abiotic stresses.

This reference-cum-textbook provides a comprehensive and in-depth discussion on the development of herbicide resistance, emphasizing the biochemical pathways of herbicide resistance in weeds. It discusses the principles of plant genetics, different methods of genetic engineering, transgenes involved in herbicide resistance, making of transgenic plants, various transgenic crops conferred with herbicide resistance, evolution of weed problems subsequent to growing of transgenic crop events and stacks as

also benefits and risks of growing them. It also presents a detailed discussion on the adoptive and regulatory procedures followed by major biotech growing countries besides the role of transgenic technology in phytoremediation of soils and environment from organic contaminants including herbicides, explosives, etc.

The book, being published by CRC Press (Boca Raton, FL, USA), a division of Taylor & Francis (U.K.) contains nine chapters: 1. Introduction; 2. Herbicide Resistance; 3. Gene, Genome, and Crop Improvement; 4. Transgenic Engineering; 5. Transgenes in Herbicide and Insect Resistance; 6. Herbicide-Resistant Transgenic Crops; 7. Transgenic Phytoremediation of Herbicides and Explosives in Soil and Environment; 8. Adoption and Regulation of Transgenic Crops; 9. Benefits, Risks, and Issues Associated with Transgenic Crops and Foods. Packed with up-to-date information, the book includes relevant uptodate references, data, figures, and illustrations.

This book, now in press, is expected to be available in November 2014. This book, first of its kind in herbicide resistance-related genetic engineering, is expected to be useful to a wide range of plant scientists involved, directly and indirectly, with this ever-growing field of weed science.

### **M.Sc. (Ag) Theses in Weed Science**

**Charles Bisiwasi:** "Effect of integrated weed management on green forage and quality of oat (*Avena sativa* L.)". M.Sc. (Ag.) Thesis. 2013. Mahatma Phule Krishi Vidyapeeth, Rahuri.

Advisor: Dr. P.S. Bodake

**Charan Teja K:** Effect of bensulfuron-methyl + pretilachlor and other herbicides on weed growth and productivity of wet season transplanted rice. M.Sc. (Ag.) Thesis. 2014. Visva Bharati, Sriniketan.

Advisor: Dr. B. Duary

## Coming Events

### 8th International Conference on Biological Invasions

03-08 November 2014

Venue: Antalya, Turkey

Go to <http://www.neobiota2014.org>

### 13th World Congress on Parasitic Plants,

Venue: Kunming, China

June/July, 2015

Dates to be confirmed and other details will be available on the IPPS website in due course.

### 13th IUPAC International Congress of Pesticide Chemistry

Venue: San Francisco, US

Go to <http://www.iupac2014.org> for more details.

### 25th Asian Pacific Weed Science Society Conference

13-16 October 2015

Venue: Hyderabad, India

Other details will be available on the Indian Society of Weed Science website in due course.

### 18th International Plant Protection Congress,

"Mission Possible: Food for All through

Adequate Plant Protection"

24 – 27 August 2015,

Venue: Berlin, Germany

Go to <http://www.ippc2015.de> for more details.

Details of the proceedings is available on <http://www.isws.org.in>

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