ISWS News Letter
A publication of Indian Society of Weed Science
July-December 2015

President's Message

We are happy (and relieved too) that the 25th APWSS Conference was conducted in a grand way. The Conference witnessed the largest participation in the history of APWSS. It was attended by well over 700 delegates including 107 from overseas from 25 countries. In all, there were 11 plenary presentations, 16 lead presentations and 106 oral presentations. Besides, five satellite symposia on emerging topics (conservation agriculture, weedy rice, biological control, herbicide resistance and weed utilization) were organized. This is one of the many firsts in the history of APWSS and was highly appreciated by the participants. A record number (627) of presentations were made at the poster session. I believe that young scientists and students were benefitted the most by listening to some excellent presentations by world renowned scientists and interacting with them. I advise these budding scientists to keep in touch with them and derive long term benefits.

A brief ceremony to mark the Silver Jubilee edition of the APWSS Conferences was observed with the release of a special publication "Weed Science in the Asian-Pacific Region". The publication with contributions from 19 countries, edited by the editorial team led by Prof V S Rao was received well. The conference proceedings were provided to all the delegates and are also available on ISWS and APWSS websites. I appreciate if you could recommend these prices publications to your libraries. I would like to thank all the speakers, participants, sponsors and the members of various committees for making this event a memorable one.

With this major responsibility over, we would now like to concentrate during the remaining time of our tenure to make the ISWS stronger. I appreciate receiving your suggestions to serve the society better. The new website has many innovative features. Please enrol yourself in the weed scientist's directory and keep updating your profile. This will help in greater interaction amongst the members and help you serve the discipline well.

I wish you all a Happy Christmas and a bright New Year.

NT Yaduraju

25th Asian-Pacific Weed Science Conference Organized

A Silver Jubilee conference of Asian-Pacific Weed Science Society (APWSS) on "Weed Science for Sustainable Agriculture, Environment and Biodiversity' was successfully organized during 13-16 October, 2015 at Professor Jayshankar Telangana State Agricultural University (PJTSAU), Hyderabad. This mega event was organized by Indian Society of Weed Science in collaboration of APWSS, Indian Council of Agricultural Research (ICAR), Directorate of Weed Research (DWR) and PJTSAU. Dr. N.T. Yaduraju, Convener of Conference and President of APWSS and Indian Society of Weed Science welcomed the Chief Guests and participants during inaugural function and gave his Presidential address highlighting the menace of weeds and ways of their management world over.

The conference was inaugurated on 13thOctober 2015 by Prof. P. Appa Rao, Vice Chancellor of the University of Hyderabad as a Chief Guest and Dr. D. Rama Rao, Director, NAARM as the Guest of Honour. The conference was attended by 690 registered participants including 107 from overseas and 46 from industries representing entire world. In this Conference, 11 Plenary

presentations were made by the stalwarts in weed science who have made a mark at the International level. In all, there were 12 technical sessions wherein 16 lead presentations and 106 oral presentations were made. In the conference, there were 5 satellite symposia on different emerging topics viz., conservation agriculture, weedy rice, biological control, herbicide resistance and weed utilization. These symposia were exclusively planned and organized by the identified world renowned weed scientist as conveners. Apart from this, about 627 poster presentations were made during the Conference. A judging committee examined the posters and 9 best posters were awarded representing Sri Lanka, India, Japan,

Silver Jubilee function of the APWSS Conferences and the book release ceremony of the special publications was held on 14th October, 2015, which was another unique event of this Conference. Field visit to the research farm of the University, Indian Institute of Rice Research and ICRISAT was also arranged by the organizers for the benefit of the delegates. This Conference was categorized one of the largest APWSS conferences held so far. Delegates from 25 countries including Republic of Korea, Vietnam, New Zealand, Italy, Malaysia, Sri Lanka, Indonesia, Germany, Philippines, United States, Nigeria, Australia, United Kingdom, China, Canada, Japan, Turkey, Bangladesh, Pakistan, Singapore, Tanzania, Taiwan and Sudan participated, which is also a record. An overview of the conference and vote of thanks was given by Dr. A.R. Sharma, Organizing Secretary, APWSSS/Secretary ISWS and Director, ICAR-DWR, Jabalpur during valedictory function

Training on Statistical Software Organized

The Organizing Committee of the 25th APWSS Conference, in collaboration with International Weed Science Society (IWSS) and Gylling Data Management (GDM) organized one-day training on Statistical Software 'ARM' on 12th October, 2015 at Professor Jayshankar Telangana State Agricultural University (PJTSAU), Hyderabad. Good number of participants from India and overseas attended this training programme. This training programme was very much useful to the participants in data handling, analysis, and proper interpretations to make useful conclusions especially to those handling with dose response analysis. The training programme was Dr. Samunder Singh, Secretary, IWSS.

National Conference on Golden Jubilee of Green Revolution

National Conference on Golden Jubilee of Green Revolution was held on 27th November, 2015, at New Delhi. Speaking as Chief Guest, Shri Radha Mohan Singh, Union Minister of Agriculture and Farmers Welfare, recalled extreme food shortages during pre-green revolution period and complimented agriculture research fraternity for transforming country to a food surplus nation. He highlighted the important role of science and technology in bringing quantum jump in agricultural productivity and production in agriculture during green revolution and also sustaining the momentum thereafter. He paid

his tributes to Nobel Laureate Dr. Norman E. Borlaug for helping India during food crisis and also felicitated Padma Vibhushan Dr. M.S. Swaminathan for his central role in realizing the dream of green revolution. Agricultural Minister also honored Dr. N.G.P. Rao and Dr. M.V. Rao along with stalwarts and veteran scientists including the farmers and institutions that played important role in bringing green revolution in the country.

Agriculture Minister elaborated upon various government schemes launched recently for improving agricultural conditions and socio-economic conditions of farmers. He said eastern region of the country is heading towards second green revolution by the support of government and hard work of scientists and farmers. He stressed upon various steps for mitigating the impact of drought and other natural calamities and said special measures are being taken to increase the area and productivity of pulses and oilseeds to meet the escalating demand. He urged scientists to take country forward by taking inspiration and motivation from the success of green revolution.

Agricultural Minister released a special commemorative stamp on Golden Jubilee of Green Revolution and special publications brought out on the occasion.

Prof. M.S. Swaminathan, Chairman, MSSRF, Chennai presented keynote address on the occasion by presenting the journey of green revolution and present day challenges being faced by agriculture and food sector. He highlighted the excellent synergy between technology and public policy that made green revolution a stupendous success. He also appreciated farmers for cooperating in national demonstrations of new varieties and adoption of same on wide scale that immediately catapulted wheat production in the country. Dr. Swaminathan recalled contributions of many fellow scientists and paid tributes to Dr. Borlaug for his help, support and guidance. He elaborated upon various scientific initiatives that can help nutritional security and freedom from hunger.

Earlier, Dr. S. Ayyappan, Secretary, DARE and DG, ICAR and President, NAAS made a presentation on Journey of Green Revolution depicting the transformation from ship to mouth to right of food. He said innovations, inputs and incentives in agriculture need to be given prime importance to sustain the food security and move towards evergreen revolution and nutritional security.

He also elaborated upon various opportunities that can be availed for addressing the current challenges and make agriculture demand driven and profitable.

Past Presidents of NAAS, NAAS fellows, veteran and emeritus scientists, senior officials of ICAR and Ministry of Agriculture, representatives of international agricultural research organizations, Vice-Chancellors and representatives of Agricultural Universities and policy planners participated in the event.

The National Conference was jointly organized by National Academy of Agricultural Sciences, Indian Council of Agricultural Research and Indian Agricultural Research Institute.

Contributed by: *Dr. Gita Kulshrestha, Former Head and Professor*
Division of Agricultural Chemicals, IARI, New Delhi-110012

Research Notes

Microwave Energy to deliver Chemical-free Weed Control

The technology that heats the common kitchen microwave oven has been adapted to deliver a chemical-free solution to weed problems.

Weeds are one of the major threats to agricultural production and to the natural environment. Herbicide resistance and environmental concerns already limit the chemical options available for weed management. In looking for alternative weed treatments, Dr Graham Brodie, of the University of Melbourne, found that microwave treatment is immediate, chemical-free and leaves no residue at the treatment site. Dr Brodie's research during 2011-12 was conducted as part of the Australian Government's National Weeds Research and Productivity Program, administered by the Rural Industries Research and Development Corporation (RIRDC). He has developed a fully operational prototype machine that can successfully focus microwave energy at ground level, killing weeds within seconds

Interest in the effect of microwaves on plant health dates back to the 1920s, but it was not until recently that studies shifted away from attempting to treat seeds in the soil and instead targeting plant seedlings. The concentration of microwave energy collapses the structures within the weeds that carry water through their stems. Depending on the amount of energy applied, irreversible wilting and subsequent death occurs within just seconds of the microwave exposure. Dr Brodie's research initially tested a 600-watt kitchen microwave, before developing the 8-kilowatt field unit that has been tested in the paddocks at the university's Dookie campus.

A series of four microwave horn antennae, each just 11cm wide and transmitting 2kW of microwave energy, were fitted to a trailer to focus their transmission solely onto the weeds in the inter-row space of agricultural field crops. Dr Brodie said that in a broad scale agricultural operation numerous antennae could be mounted on a tractor trailer at spacings in line with

whatever crop was being treated. Treatment could take place regardless of the weather conditions, would successfully kill herbicide resistant species, and would not limit production schedules with withholding periods at the site once treatment is completed, he said.

"There is potential to develop an industrial 15kW unit which could operate in broad acre situations at near the speed of current chemical spray applicators, with each weed requiring less than a second of exposure to the microwave transmission. Microwave weed management has the potential to be applied throughout the country to manage weeds not just in agricultural enterprises, but on public land, sporting facilities and in landscape gardening. A smaller 1-2kW unit could also be designed for use by householders if the market supported the concept" Dr Brodie said.

Note: The prototype microwave system is now operational and can be demonstrated to interested parties who may wish to use the technology in commercial systems. More information on the National Weeds Program is available at www.rirdc.gov.au/weeds.

Contributed by: *Dr. Gita Kulshrestha, Former Head and Professor*
Division of Agricultural Chemicals, IARI, New Delhi-110012

Events

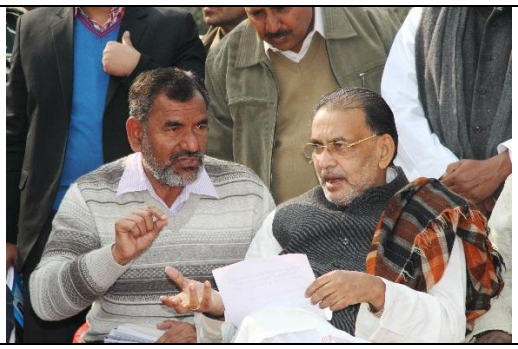
ICAR-DWR undertakes technology demonstration on water hyacinth at Motihari

Large areas of water bodies in both rural and urban areas in India are severely infested with aquatic weeds. Large lakes (>400 acres) in Motihari city of Bihar are infested with water hyacinth, which have spoiled the aesthetic value of the area and also created various other problems. A team of scientists under the leadership of Dr. A.R. Sharma, Director, ICAR-Directorate of Weed Research (ICAR-DWR), Jabalpur along with Dr. Sushil Kumar, Principal Scientist (Entomology), ICAR-DWR; Dr. D.K. Roy, Professor (Agronomy), AICRP on Weed Management, Rajendra Agricultural University, Pusa, Bihar surveyed the lakes in the Motihari city on 26.11.2015.

Moti lake

Kararia lake

Inauguration of cleaning of lake under "Swachh Bharat Mission"



Dr. A.R. Sharma explaining methods of water hyacinth management to Hon'ble Union Agricultural Minister Shri Radha Mohan Singh

It was found that Moti lake and Kararia lake are heavily infested with water hyacinth (more than 75% area) with only small areas in between where the water is visible. A few other weeds like Alternanthera, water nuts, lotus are also seen. Water quality in the lake was very poor for any domestic / recreational use and for fish growth due to draining of the city waste waters, and poor maintenance of the lake over the years. Encroachments from the sides are further spoiling the aesthetic value of the lake. There is also heavy siltation and dumping of waste material on the sides. The lakes have become a breeding ground for mosquitoes and other diseases due to the presence of water weeds, dirty waters and waste materials. Previous efforts for cleaning of the lakes and developing it as Model spot for the city dwellers and visiting tourists have not yielded any fruit.

Based on earlier experiences of the Directorate in management of aquatic weeds, an action plan was suggested involving spraying of 2,4-D + glyphosate at low concentrations on the foliage of water hyacinth to reduce the growth, water content, volume and weight of the weed and later on its lifting by using mechanical dredgers like JCB and other machines. It was suggested to convert the biomass into biocompost or vermicompost through suitable manipulations such as inoculation with earth worms, periodic turning, processing and application in the fields. Release of bioagent Neochetina bruchi and application of Alernaria alternata on the residual patches of water hyacinth as a long-term measure besides regular monitoring and removal of the weed biomass was also suggested.

On 25th December 2015, Hon'ble Union Agricultural Minister Shri Radha Mohan Singh, visited the lake and inaugurated the campaign for cleaning the lake. Dr. A.R. Sharma, Director, ICAR-DWR briefed about the

methods of management of this dreaded weed and informed that a technology demonstration on 5 acre area will be undertaken.

Recognitions and Awards

Prof. Gita Kulshrestha, Fellow ISWS and Former Head and Prof. Division of Agricultural Chemicals, IARI, New Delhi was conferred with Dr K.C. Mehta Endowment Award in Plant Protection for the biennium 2011-12 by National Academy of Agricultural Sciences.

Dr Dharam Bir Yadav, Principal Scientist (Agronomy), CCS Haryana Agricultural University, Regional Research Station, Karnal, Haryana, India received the "Potash and Phosphate Institute of Canada (PPIC) Distinguished Teacher Award" for excellence in research/ teaching/ extension for the triennial 2010 to 2012 in 2015 in recognition of his research achievements and technologies developed for resource conservation, efficient use of inputs and production practices for maximizing crop productivity. The Award is instituted by the CCS Haryana Agricultural University, Hisar and was conferred on him on the occasion of 24th Convocation held on 26 July, 2015. The Award carries a cash prize of Rs. 10, 000/-, a citation and a memento.

Dr Dharam Bir Yadav receiving the "PPIC Distinguished Teacher Award" from Sh Manohar Lal, Chief Minister, Haryana

Dr. G.N. Dhanapal, Professor of Agronomy and Scheme Head, AICRP on Weed Management, UAS, MRS, Hebbal, Bengaluru was invited as Chairman to conduct a session on "Ecology, phylogeny and evolution in parasitic plants" in the 13th World Congress on Parasitic Plants held at Kunming, China from 5-10th July, 2015. Also, Dr. Dhanapal visited Bangkok, Thailand while visiting China.

Dr. R.M Kathirasan, professor of agronomy and well known weed scientist of the Annamalai University, Tamil Nadu has been appointed as the Director, Research and Development, Annamalai University with effect from 4th, January 2016.

The ISWS congratulate all for their stupendous achievements.

Obituary

Dr. Robin Bellinder, professor of plant science and a national and international leader in weed management, died Nov. 13 in Ithaca, New York, at age 70. She joined the Cornell University Horticulture Department in 1984 as assistant professor, with a program focused on weed management for vegetable crops. She was appointed professor in 1997. Bellinder led the effort at Cornell to provide fresh vegetables from plots at the Homer C. Thompson Vegetable Research Farm to the Food Bank of the Southern Tier. Since 2004, Cornell has donated more than 1 million pounds of produce from the Thompson farm. She was past president of the Northeastern Weed Science Society and in 2005 was named the recipient of Cornell's College of Agriculture and Life Sciences award for Outstanding Accomplishments in Applied Research. Her research included all aspects of weed management, from traditional herbicides to cultural and chemical alternatives. She pioneered research in the weed suppressive ability of cover crops.

Bellinder traveled throughout Central America and Asia, and after a visit to India pioneered the use of backpack sprayers for small growers. "Anyone who thinks farmers in India should control weeds without herbicides should spend an afternoon in a field there with a hoe," she once said. She was elected a fellow of the Indian Weed Science Society for her contributions to Indian

agriculture. Bellinder was the author of more than 80 research publications and more than 200 publications focused on growers. She received her bachelor's degree from Michigan State University and her master's and Ph.D. from Virginia Tech.

(*Information provided by: Dr.A.N. Rao, India*)

Dr. H.S. Gill, retired Senior Agronomist and well reputed weed scientist of the country, died on 28th October 2015 in Ludhiana, India, at the age of 90. Born on 1st February 1926 at Chak 41, J.B. Lyallpur, Punjab, Dr. Gill obtained his Ph.D. degree in 1968 from Ohio State University, Columbus, USA in Crop Physiology with specialization in Weed Science.
He started his career in 1949 as Research Assistant at PAU, Ludhiana and served the University in various capacities as Asstt. Crop Physiologist (1958-1970), Agronomist, weed control (1970-1975) and Sr. Agronomist, weed control-cum-Head, Deptt. of Agronomy (1975-1983). He served the Indian Society of Weed Science (ISWS) in various capacities as councilor, joint secretary, secretary and president; and member in other professional societies of the country and abroad. He represented India in the expert consultative group FAO, Rome during September 6-10, 1982 to develop weed science recommendations for developing countries. He was very actively evolved in teaching and research at PAU, Ludhiana and guided 11 M.Sc. and 9 Ph.D. students. He published 139 research papers in journals of national and international repute. He was awarded with 'ISWS Life Time Achievement Award' 2011-12 for his outstanding contribution in weed science.

(*Information provided by: Dr.M.S. Bhullar, PAU, Ludhiana, India*)

M.Sc. (Ag)/Ph. D. Theses

Puscal Sharma: "Effect of tank mix application of tembotrione and atrazine on weed growth and productivity of kharif maize ". M. Sc. (Agronomy) thesis , 2015.
Supervisor: Dr. B. Duary, Visva-Bharati, Sriniketan, West Bengal

Mukesh Kumar: "Integrated weed management in direct seeded rice". M. Sc. (Agronomy) thesis, 2015.
Supervisor: Dr. B. Duary Visva-Bharati, Sriniketan, West Bengal

K. Arivukkarasu: “Influence of Climate change on the invasive behaviour of certain weed species”. Ph. D. Thesis, 2015, Annamalai University, Annamalai, Tamil Nadu.
Supervisor: Dr. R.M. Kathiresan

Coming Events

27th German Conference on Weed Biology and Weed Control
23 - 25 February 2016
Venue: Braunschweig, Germany
www.unkrauttagung.de

11thInternational Symposium on Adjuvants for Agrochemicals (ISAA 2016)
13-17 June 2016
Venue: Hyatt Regency Monetary Hotel and Spa on Del Monte Golf Course by International Society for Agrochemical Adjuvants (ISAA Society)
For more details: http://www.isaa2016.org

18th International Fresenius AGRO Conference "Behaviour of Pesticides in Air, Soil and Water
20-21 June 2016
Venue: Mainz, Germany
For more details: http://www.akademie-fresenius.de/english/konferenz/output.php?thema=5&kurs=529

7th International Weed Science Congress
19-25 June 2016
Venue: Clarion Congress Hotel Prague, Prague, CZECH REPUBLIC
Contact: Dr. Josef Soukup, Tel. +420 22438 2780
E-mail: soukup@af.czu.cz / iwsc2016@guarant.cz, www.iwsc2016.org

20th Australian Weeds Conference
11-15 September 2016
Venue: Perth, Western Australia
For details: http://www.20awc.org.au/

The ISWS Newsletter is published by the Indian Society of Weed Science (ISWS) and distributed to members and other subscribers. *Indian Journal of Weed Science* is the Official Journal published by ISWS.

The *ISWS Newsletter* welcomes news, letters, and other items of interest from individuals and organizations.

Address correspondence and information to:

Dr. J.S. Mishra
Editor, ISWS Newsletter
Division of Crop Research
ICAR Research Complex for Eastern Region
Patna 800 014, India
Cell: 08409899897; 09494240904
Email: jsmishra31@gmail.com