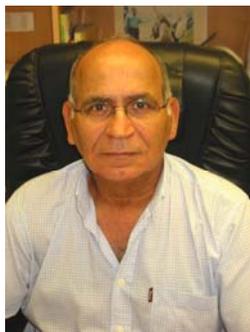




# Spring 2009 Newsletter

## President's Message

First, I would like to wish you all success and prosperity in 2009. During 2008, many of us celebrated together at the most successful 5<sup>th</sup> International Weed Science Congress in Vancouver. The Canadian Weed Science Society (CWSS) together with the Weed Science Society of America (WSSA) joined forces to organize an unforgettable event. Thank you again.



In Vancouver, we all enjoyed not only the beautiful city and the surrounding unique landscape, but also a high quality scientific program assembled by Prof. Carl Hurlle, Dr. Dale Shaner and Dr. Chris Hall. I gladly inform you that Prof. Hurlle is progressively recovering from the unfortunate accident, and has resumed enjoying indoor and outdoor physical activities. I would like to express my gratitude to our former President Dr. Bernal Valverde for his sincere and outstanding service to IWSS for many years. I am confident that he will continue to serve the society and that we will all benefit from his experience.

I would like to welcome Prof. Albert Fischer, our new Vice President and Prof. Nilda Burgos, the new Secretary/Treasurer to the Board of IWSS. Albert is a weed scientist from UC Davis, California who served the society as Secretary/Treasurer in the last four years. He was actively involved in the organization of the 5<sup>th</sup> IWSC and efficiently managed the financial matters and the IWSS webpage. Prof. Burgos, a weed scientist from University of Arkansas, assumed the duties of Secretary/Treasurer for the next four years.

Dr. Jerry Dole, our faithful and efficient Newsletter Editor has recently retired from the University of Wisconsin after many years of service to IWSS. We all appreciated his work and wish him long life and happy retirement. Thank you very much, Jerry. Dr. Mike Owen from Iowa State University has kindly agreed to serve as the new Newsletter Editor. Please send him any relevant information and help bridge information gaps for our members.

One of the earliest decisions of the new Board was to establish a new and independent webpage that will

be built and maintained by a professional webmaster. Daniel Cloutier, a weed scientist, who is also the EWR webmaster, accepted our invitation. The new user friendly webpage (<http://www.iwss.info>) will replace the old one. You are welcome to send your comments and suggestions to the webmaster ([webmaster@iwss.info](mailto:webmaster@iwss.info)).

After a long discussion and in light of the inadequate financial situation of the Society, the Board has decided to raise the membership dues to US\$30. We know that some members from the developing world may have difficulty with this, so we will seek ways to help these individuals on a personal basis.

The Board of Directors has also decided that the Newsletter will no longer be sent to members by mail. It will be posted on the webpage and will be distributed electronically via e-mail to all members.

The organization of the 6<sup>th</sup> IWSC in China is already on its way. Prof. Zhang from the Chinese Academy of Agricultural Science in Beijing, is still sorting up the best venue in China, so new information will be sent to you soon.

We would like to facilitate our contacts with all National and Regional Weed Science Societies throughout the world, and be involved in their activities. We encourage all the presidents or secretaries of the societies to contact me or any member of the Board with your questions or suggestions. We have already been approached by weed scientists from several countries who want to establish new National Weed Science Society in their countries, and we are committed to support them.

Together with the EWRS and WSSA Boards, we strive to encourage young students to join us and be active in weed research. This is critical. Besides presenting opportunities for financial betterment, we aim to show the young generation that there is a future in our profession and demonstrate that we offer a unique contribution to science and to a better world and safer environment. We can and should meet these challenges ahead.

I invite all of you to become active members of the society, send suggestions for improvement and comments. We are looking forward to fruitful years ahead,

Regards,  
Baruch Rubin

## Recent Events and Items of Interest

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### Central America

#### Honduras

##### Herbicide Application and Mode of Action International Seminar

On October 6-7, Zamorano University sponsored an international seminar on Herbicide Application and Mode of Action of Herbicides. This was a pre-congress seminar part of the International Integrated Pest Management Congress held in Tegucigalpa, Honduras from October 8-10. Instructors for the seminar were Dr. Steve Weller from Purdue University, Dr. Mike Owen from Iowa State University, Dr. Abelino Pitty, Mr. Rogelio Trabanino and Gloria Arévalo, all from Zamorano University. Ninety-five agricultural professionals took the seminar and they came from Dominican Republic, Panama, Costa Rica, Nicaragua, Honduras, El Salvador, Guatemala, Mexico, Venezuela and Ecuador. A future seminar is being planned for Guatemala this year.

Abelino Pitty

#### Costa Rica

##### Integrated Weed Management for the Humid Tropics

Thanks to the support of the Swedish International Development Cooperation Agency (SIDA), a workshop on "Integrated Weed Management for the Humid Tropics" was conducted in Nueva Guinea, Nicaragua, August 20-22, 2008. The workshop was coordinated by Dr. Ramón León from EARTH University, Costa Rica. The participants were academic personnel from the Bluefields Indian Caribbean University (BICU) and the Universidad de las Regiones Autónomas de la Costa Caribe Nicaragüense (URACCAN), agronomists from the Ministry of Agriculture and Forestry, and growers from different parts of the Atlantic Autonomous Regions of Nicaragua. The participants concluded that it is important to develop specific and effective weed control tools for regions and growers with limited access to herbicides and machinery. They considered that tillage is not an option for most of the growers in the region and that the only herbicides that the growers can afford are glyphosate and paraquat. For this reason, they expressed great interest in learning more about biological weed control options that are cheap and last longer. In addition, it was determined that growers use very low planting densities for crops such as maize and cassava, and that using higher densities would greatly reduce the need for weed control during the

growing season in a relatively cheap way. Finally, the participants agreed that when there is no access to herbicides, knowledge about weed biology is critical to generate viable solutions to weed problems.

Ramon Leon

### South America

#### Brazil

In September 2008, Dr. Fabiane Lamego concluded her dissertation research titled "Elucidation of the mechanism of ALS resistance in the poliploid species *Bidens subalternans*". The research was collaborative works between Dr. Ribas Vidal from Federal University of Rio Grande do Sul, Brazil and Dr. Nilda Burgos from University of Arkansas, USA. For the first time in Brazilian science, the mechanism of herbicide resistance in an important weed species was determined. The research got an award at the IWSS Meeting 2008 in Vancouver and was sponsored by Brazilian government – CNPq and University of Arkansas.

Fabiane Lamego and Dr. Ribas Vidal

#### Venezuela

The **XII Congress of the Venezuelan Weed Science Society** (SOVECOM; <http://www.sovecom.org.ve/>) was held at the auditorium of the Ag. Economy Department at the Agronomy Faculty of the Central University of Venezuela on 2-5 December, 2008. The central theme was: **Weeds and Society**. The attendance included 160 researchers, field practitioners, growers and students involved in weed science and agricultural production. The following activities were conducted at this event:

- (a) Pre-congress course on using the free statistical software R in Weed Science on December 1 and 2 with Dr. Jens Streibig and Dr. Bernal Valverde as instructors who are internationally renowned researchers,
- (b) Venezuelan (Dr. Joscelyne Ascencio, Dr. José Vicente Lazo, Dra. Thaura Ghneim, Dra. Catalina Ramis, Dr. Federico Troncone, Dra. Isaura Moleiro and Dr. Marjorie Cásares) and international (Drs. Albert Fischer, Bernal Valverde, Robert Barreto and Zaida Lentini) researchers offered 11 guest lectures. During four days, participants exchanged knowledge, expectations, and visions on recent advances in education and technology transfer, taxonomy, biology ecology and weed interference, non chemical weed management, chemical control, and weed resistance to herbicides
- (c) Twenty research papers and three special topics were orally presented

(d) A discussion forum on Weeds and Society was conducted

(e) At a general meeting of SOVECOM members, the new Board of Directors was appointed (Olga Arnaude, President; Trinidad Pérez, Vice-president; Álvaro Anzalone, Treasurer; Dulce Bolívar, Secretary; Jesús Caripe, José Gregorio Muziotti, Roland Mendt (†), David Rincón (†), Elio Rodríguez Tineo and José Vicente Lazo.

Albert Fischer

## Asia

### Thailand

Weed scientists from seven countries in South and Southeast Asia met on November 4-7, 2008 at the Rama Gardens Hotel in Bangkok, Thailand to discuss about the magnitude of weedy rice infestation, current and best management practices, efforts to address the weedy rice problem at the national level and the possible activity to tackle the weedy rice problem through a regional collaboration.

Country reports containing vital information about weedy rice and its management in the seven countries namely, Vietnam, Malaysia, Thailand, Philippines, China, Sri Lanka and India were presented by the participating weed scientists. Three resource persons, Dr. Nilda Burgos, weed scientist from the University of Arkansas, Dr. Ricardo Labrada, Weed officer of FAO and Dr. Madonna Casimero, International Rice Research Institute weed scientist, also participated in the workshop. The group also visited a weedy rice infested rice area in Chainat province and met with a farmer group that had been active in initiating community actions to reduce weedy rice infestation in their district. During the workshop, a proposal for a regional collaboration on weedy rice management was developed which will be submitted for funding. If funded, this initiative will be the first regional collaboration among weed scientists to tackle weedy rice in Asia.

The workshop was sponsored by the FAO-UN and co-sponsored by the Department of Agriculture, Government of Thailand. Dr. Chanya Maneechote, weed scientist of DOA-Thailand did a wonderful job of coordinating the workshop.

Madonna C. Casimero  
IRRI

## Asian Pacific Weed Science Society List of Office-bearers, Senior Advisors and Country Representatives for 2008-09

The APWSS announces the availability of a list that details the officers, senior advisors and country representatives for 2008-2009. For information, contact Dr. Nimal Chandrasena, APWSS Newsletter Editor, [Nimal.Chandrasena@gmail.com](mailto:Nimal.Chandrasena@gmail.com).

Nimal Chandrasena

## Pakistan

The Asian-Pacific Weed Science Society announces the 22<sup>nd</sup> Asian Pacific Weed Science Conference "Judicious Weed Management – Road to Sustainability". The conference will be held on October 19-23, 2009 at G.C University in Lahore, Pakistan. Abstracts should be submitted no later than April 30, 2009 with acceptance of abstracts on May 30, 2009. Papers must be submitted by June 30, 2009. Early registration will be US \$300, late registration will be US \$350 and student registration will be US \$150. See announcement of meeting in this newsletter for more information.

Gul Hassan

## India

### Indian Society of Weed Science 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 was attended by several 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 one day 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 good 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. President appreciated Symposium Coordinator for timely organizing this event and hope that the coming together of academic and industry will be able to formulate a policy to fight resistance. He appraised the house for the significant work done by weed scientists on isoproturon resistance management through an integrated approach and the large scale adoption of zero tillage in wheat which not only helped in lowering the menace of *Phalaris minor*, but also saved money on field preparation (direct saving to farmers') and significant environmental benefits. The President was hopeful that with the support from pesticide manufacturers, regulators, and policy makers, the weed scientists will be able to find a just solution for the affected wheat farmers.

The inaugural paper was presented by Prof. R. K. Malik, Symposium Coordinator on 'Conservation Agriculture & Herbicide Resistance Management in RWCS'. He discussed the history of resistance evolution in 1992 and the scientific impetus for innovative technology adoption due resistance onslaught; release of new herbicide molecules with the help of pesticide industry and regulatory authority for emergency registration for new molecules to lower the menace of isoproturon resistance, where the farmers were forced to harvest wheat as green fodder or to plough up wheat fields. He cautioned that farmers' lack of initiatives for changing usual practices may lend them in problem again. Also vigilance is required by the regulatory authorities, policy makers and advisors to grasp the seriousness of the resistance scenario, failing that the gain of increased wheat production will be nullified. He informed that GR<sub>50</sub> levels for effective herbicides recommended in 1998 have already increased with very high proportion in some biotypes and this is happening since 2003-04.

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 plantations, 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 save on cost of field preparation (fuel burning), but also enriches the soil

increasing enhanced water percolation. Resource conservation technology has a direct effect on soil weed bank of weeds and in the long run also restores soil productivity.

Though it was realized at the time of recommendations of new herbicides that they are no exception and as it has happened in the world, resistance may occur with these herbicides in India. However, they lasted more than their expected shelf life. Dr. Malik requested Indian herbicide manufacturers to persuade their parent (multinational) companies to check their inventory and come with a new molecule for the control of this dreaded weed. Herbicide resistant wheat is one of the options, but that does not seem a reality in the very near future in our situation. When there is shortage on food across the globe, we can not afford the losses due to resistant *P. minor* lowering wheat production. Understanding the seriousness of the situation, a team work involving academia, industry, regulators and planners need to work in tandem to meet the challenges of herbicide resistant weeds.

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. Dr. Gogoi highlighted the significant role played by weed scientists with the examples of two important weeds; *P. 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.

The first paper in this session was presented by Dr. U. S. Walia, Prof. and Head of Agronomy department, PAU Ludhiana 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. Losses caused by *P. minor* were greater (58%) than *Avena ludoviciana* (54%) or broadleaf weeds (26%) in wheat under Punjab conditions. In a 1994 study, where 30 biotypes were compared for isoproturon resistance, only 4 were found susceptible to recommended rate of isoproturon, whereas 26 biotypes were not controlled even by double the recommended rate of isoproturon, necessitating the adoption of clodinafop, fenoxaprop and sulfosulfuron which were costing 4

times higher than isoproturon. Results from the last 3 years exhibited reduced control of *P. minor* by all the three herbicides (clodinafop, fenoxaprop and sulfosulfuron); however these biotypes were effectively controlled by trifluralin (1.0 kg) and pinoxaden (50g/ha). Atlantis (mesosulfuron+iodosulfuron) and Total (sulfosulfuron+metsulfuron) which were recommended only two years back were also found less than satisfactory. Survey conducted with approximately 300 farmers' of Punjab on the method of herbicide application and efficacy of new herbicides revealed that only 30% farmers were using proper nozzles for spraying, every fifth farmer was resorting to under-dosing and using non-recommended herbicide or brand and the satisfactory control was reduced to 40% which is eye opening on the failure of recommended herbicides.

Dr. Samunder Singh, Weed Scientist from CCS Haryana Agricultural University presented the latest resistance scenario for Haryana state. He exhibited that we are coming to the full circle for *P. minor* resistance with the new herbicides repeating the story of isoproturon (IPU) failure on large scale during 1992-93. Also the ad-hoc recommendation of diclofop made in 1994 for the control of IPU resistant *P. minor* which had to withdraw due to cross-resistance. Though it may not be exact repetition of past events as farmers and weed scientists are more aware and there are more avenues for meeting multiple resistances than we had with IPU failure, 15 years back. IPU has lost its usefulness in rice-wheat rotation areas due to resistance in *P. minor* and is also fading from other areas of the State. Since the resistance was due to increased metabolism and *P. minor* being mostly self-pollinated; IPU can not be useful even if used after a gap of many years.

Wheat herbicides were applied to 5.2 m ha during 2006 in India; sulfosulfuron covered maximum treated area, whereas decrease in the use of clodinafop and fenoxaprop was recorded. This may reflect decreased efficacy with the later two herbicides. Pot studies with R and S biotypes of *P. minor* with herbicides of different modes of action applied at two growth stages, revealed decreased efficacy with delayed application irrespective of resistance level with IPU. Several biotypes regenerated under pot studies with recommended rates of herbicide confirming field studies which does not auger well for these herbicides (clodinafop, fenoxaprop, sulfosulfuron and even Atlantis). Seed collected from farmer's fields during 2005-06 and 2006-07 where poor efficacy of these herbicides was reported (farmers' complaints), were subjected to several herbicides and many of them defied clodinafop and fenoxaprop confirming the fear of their

failure at farmers' fields. Clodinafop resistant *P. minor* biotype in a farmer's field in Fatehabad district was effectively controlled by pinoxaden herbicide. Efficacy of pinoxaden was enhanced by tank mixture with carfentrazone; though there was temporary crop suppression, but it recovered in a fortnight time. Several biotypes collected from fields where IPU resistance was detected during 1992, are again facing multiple resistance to new herbicides. Quizalofop (100 g/ha) – a non selective wheat herbicide was found to control IPU resistant *P. minor* biotypes. All these herbicides are prone to cross- or multiple resistances as has been reported from different parts of the world. The same biotype could be resistant to more than one herbicide from the same chemical family due to alteration at target site enzyme. The resistance has not yet been characterized in *P. minor* biotypes with new herbicides, though one biotype from Punjab was found to have target site resistance to clodinafop as confirmed by Syngenta (UK). The low level of resistance to these new herbicides could also be due to enhanced metabolism as has been observed in Australia. It is better to have more herbicides in the market from different chemical families to lower the chances of evolving cross-/multiple resistances in *P. minor* biotypes.

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). Under dosing and faulty application also contributed for the failure of these herbicides as happened earlier with IPU, meaning thereby we have learned no lessons. He stressed that we need to have several strategies for the control of resistant biotypes like, early sowing, optimum dose and proper allocation methods, herbicide mixture, integration of non-selective herbicides (paraquat & glyphosate) with pre-emergence herbicides for effective control of resistant *P. minor* in zero tillage and for delayed sown wheat by killing the first emerged flush of *P. minor*. Crop and herbicide rotation and Cultural practices (competitive var., crop density, sowing time, planting pattern, method of fertilizer application, tillage systems, soil moisture, stale seed bed/ Dab system) should effectively where possible to lower the menace of *P. minor*. Issues of straw management also need to be tackled effectively as its retention,

removal and burning has significant effect on soil seed bank of *P. minor*.

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 herbicides 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
2. Evolving partnership (HRAC)
3. Flag issues with policy makers about intending resistance problem

- ✚ There is a great need to follow standardized methodology and similarity of use by all the weed scientists working with herbicide resistance. This is required for better confirming and comparing the results on herbicide resistance among the workers.
- ✚ Dose response analysis (Probit/logit analysis) should be followed for resistance studies 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 for better spread of the response curve. Initial screening studies can be done by using three application rates of herbicides as full (recommended), 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.
- ✚ Some herbicides at low rates may not be effective against *P. minor* and that should not

be construed resistant biotypes. Always compare with recommended rates of herbicides.

- ✚ It is always better to exchange samples and keep the line of communication open among the groups working on resistance detection and management.
- ✚ Seed collection of putative resistant biotypes of *P. minor* and their storage is also important in the resistance studies. It has been observed that the newly harvested seeds of *P. minor* have dormancy, but the same is broken by the time of next season.
- ✚ Seed should be stored in the lab preferably at 15°C for its longevity. Any seed stored for more than 4 years may have reduced germination (viability) and should be avoided particularly for PRE or PPI herbicide studies.
- ✚ 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 of control strategies.
- ✚ 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.
- 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 farmers 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.

➤ The pesticide industry also enquired if the SAU's have enough resources for the survey or need any support. However, the Symposium coordinator was more interested to take help from the industry in data analysis and was of the view that many SAU have plenty of funds for this exercise.

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

- ✓ PPI/PRE herbicides fb POE applications where the problem is very serious
- ✓ Application techniques are most important in the management of *P. minor* as proper coverage with flat fan certainly helps in improved control.
- ✓ Media campaign for popularizing spray techniques (nozzles, volume of water and optimum dose and time) will be carried out with the help from the industry.
- ✓ Company's collaborations are also required in delaying or managing the resistance, particularly through new herbicide molecules.
- ✓ 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.
- ✓ Varieties for early canopy cover should be preferred. Role of variety is significant in the competition with weeds.
- ✓ Early sowing better in *P. minor* problem areas as wheat can smother late emerging *P. minor* plants.
- ✓ 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.
- ✓ Techniques for exhausting soil seed bank of *P. minor* be studied for its effective control.

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. It was decided to have another meeting in the near future with industry for furtherance of the cause of solving farmers' problems in the rice-wheat cropping system.

Samunder Singh

## Japan

### Root parasitic weeds sniff out a novel class of plant hormones

More than 60 years ago, strigol, the first germination stimulant for root parasitic weed, *Striga lutea*, was isolated from root exudates of cotton, a nonhost of the parasite (Cook et al., 1966). It took nearly 3 decades before the second and third germination stimulants, sorgolactone (Müller et al., 1992) and alectrol (Hauck et al., 1992), were characterized, and then the fourth one, orobanchol, appeared as the first *Orobanche* germination stimulant (Yokota et al., 1998). All of these stimulants are structurally related and belong to the same chemical class called strigolactones. To date, more than 10 strigolactones have been isolated (Yoneyama et al., 2009).

As in the case of the first strigolactone, strigol, not only hosts but also nonhosts of parasitic weeds produce and release strigolactones. Why do plants produce and exude strigolactones which facilitate detection of their presence by their enemies? Akiyama et al. (2005) answered this question by unraveling another role of strigolactones as host recognition signals for symbionts, arbuscular mycorrhizal (AM) fungi. However, even nonhosts of AM fungi such as *Arabidopsis* (Brassicaceae) and white lupin (Fabaceae), exude strigolactones (Goldwasser et al., 2008; Yoneyama et al., 2008), indicating that strigolactones are essential for normal growth and development of plants.

Last year, studies on enhanced shoot branching mutants of pea, *Arabidopsis*, and rice, demonstrated that strigolactones are members of a novel class of plant hormones regulating shoot branching. These mutants have defects in either biosynthesis of strigolactones or their perception (Gomez-Roldan et al., 2008; Umehara et al., 2008). It is likely that AM fungi first exploited strigolactones released to the rhizosphere as a clue of living host roots in the close vicinity approximately 400 million years ago. Root parasites then took advantage of this symbiosis and developed an efficient detecting system of potential host roots by exploiting these signaling molecules. Now we know strigolactones have three distinct activities; germination stimulation of root parasite seeds, promotion of AM symbiosis, and inhibition of shoot branching. The next challenge would be the manipulation of strigolactone biosynthesis or the

development of chemical regulators to reduce parasitism but promote AM symbiosis without affecting normal plant status.

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Koichi Yoneyama

## USA

### New CAST Issue Paper: Gene Flow in Alfalfa

CAST has a special publication titled “Gene Flow in Alfalfa” that will be available within a few weeks. All of CAST’s Commentaries and Issue Papers, both those already published and the future ones, are available free-of-charge from the CAST website at [www.cast-science.org](http://www.cast-science.org).

Linda M. Chimenti, Managing Scientific Editor, CAST

## Call for Symposium & Workshop Proposals – 2010 Meeting

**Weed Science Society of America (WSSA)** and the **Society for Range Management (SRM)** are holding a joint nation meeting at the Sheraton Denver Hotel in Denver, Colorado, on February 7-11, 2010; the theme for this meeting is ***Working Landscapes-Providing for the Future***.

As we are still gearing up for the 2009 joint meeting of WSSA and SWSS in Orlando on February 9-13, 2009, this 2010 symposia and workshop call may seem a bit early, however, this timing is necessary to meet the unique needs of the 2010 joint meeting with SRM. This call for symposia will close on May 1, 2009, a bit earlier than in previous years. Please contact John Jachetta for specific information concerning the submission of symposium or workshop topics. (317) 337-4686 or [jjjachetta@dow.com](mailto:jjjachetta@dow.com).

John Jachetta

## Using Pesticides Correctly

The University of California now offers free copies of the 2008, 7-page title PESTICIDAS: USO SEGURO Y EFICAZ EN EL HOGAR Y EN JARDINES, by C.A. Wilen. Content is described as, “Los pesticidas son toxicos para las plagas que se busca controlar cuando se usan correctamente. Pero si no se siguen las instrucciones de la etiqueta correctamente, puede danir a las plantas y la salud humana, y contaminar el suelo, aire o agua. Copies can be freely downloaded or accessed as a webpage (html or PDF) from <http://tinyurl.com/75uyen>.

## Europe

### Italy

**Job Opportunity: Agricultural Officer** (Standards Commission on Phytosanitary Measures of the International Plant Protection Convention (IPPC), FAO, Rome ITALY \* Help develop international phytosanitary measures; manage projects, prepare and present information; develop, edit and proofread a range of technical documents (English); assist with IPPC capacity building; engage in liaison with various organizations. \* REQUIRES: Degree in plant science, biology, or related field relevant to phytosanitary standards; five years of relevant experience; experience organizing large scale international meetings; demonstrated ability to develop and effectively edit technical documents; working knowledge of English, French, or Spanish and limited knowledge of one of the other two. Vacancy

announcement no: 2122-AGP. See:  
[http://www.fao.org/VA/PROF/2122AGP\\_en.htm](http://www.fao.org/VA/PROF/2122AGP_en.htm).  
Contact: VA 2122-AGP, IPPC Secretariat, FAO, Viale  
delle Terme di Caracalla, 00153, Rome, ITALY. [VA-2122-AGP@fao.org](mailto:VA-2122-AGP@fao.org).

**Job Opportunity: Secretary**, Commission on Phytosanitary Measures of the International Plant Protection Convention (IPPC), FAO, Rome ITALY \* Take responsibility for all aspects of administering the IPPC; formulate and implement strategic plans; promote IPPC and its aims; manage a range of information dissemination activities; serve as IPPC spokesperson in all situations. \* **REQUIRES:** Advanced degree in natural sciences or agriculture with specialization in a discipline related to crop protection; broad scope of demonstrated managerial competencies; working knowledge of English and limited knowledge of one of FAO's other languages. \* See: [http://www.fao.org/VA/Senior/AG175\\_09e.htm](http://www.fao.org/VA/Senior/AG175_09e.htm). Contact: Director, Human Resources Mgmt., FAO, Viale delle Terme di Caracalla, 00153, Rome, ITALY. [Senior-vacancies@fao.org](mailto:Senior-vacancies@fao.org).

### United Kingdom

**Pest Management Science** is publishing a special issue on Parasitic Weeds in early 2009. This issue consists of peer-reviewed research papers and reviews arising from the September 2008 OECD and EWRS-sponsored conference '**Managing parasitic weeds: integrating science and practice**'. Parasitic plants severely constrain agriculture, affecting major crops and leading to serious food shortages for the world's poorest peoples, yet the efficacy of available means to control has been minimal. This issue aims to address this pressing problem, with cutting-edge papers on all aspects of parasitic weed biology and control.

Papers will cover the current global status of infestation, molecular biology of plant-weed interactions and control methods, breeding and engineering resistance into crops, and the latest agronomic, chemical and biological control methods and their integration. The issue is edited by **Jonathan Gressel** at the Weizmann Institute of Science in Israel, and **Maurizio Vurro** at the National Research Council in Italy. For more information on the issue, please email Alexandra Carrick ([alcarric@wiley.com](mailto:alcarric@wiley.com)).

The Table of Contents is available from [maurizio.vurro@ispa.cnr.it](mailto:maurizio.vurro@ispa.cnr.it)

Single print copies of this exciting issue are available for sale to readers for 85 US\$ + p&p – a 50% discount on the standard issue price. There will be a limited print run, so please order soon to avoid disappointment. To order, email [cs-journals@wiley.co.uk](mailto:cs-journals@wiley.co.uk) or phone +44 1243 843335.

For more information, contact Maurizio Vurro, Istituto de Scienze delle Produzioni Alimentari – CNR.

Maurizio Vurro

## Australia and New Zealand

### Weed Biocontrol Agents Illustrated

The weed biocontrol program in NEW ZEALAND recently published a highly informative map-style fold out pamphlet, "Biocontrol Agents for Weeds in New Zealand, A Quick Reference." Printed in full color on coated paperstock, the 24-panel, 2008 publication not only illustrates all the weed biocontrol agents currently available in NEW ZEALAND, but includes concise sections on "What is Biocontrol and How Does it Work," "What to Expect," and "Future Agents." Each of the nearly 60 species is shown in a clear, close-up photo along with the weed plant it attacks and a brief description of how it has performed. The pamphlet, designed to fit in a pocket when folded, is among the most effective and comprehensive information tools currently available for weed biocontrol and clearly has far broader application than just NEW ZEALAND. -> L. Hayes, Landcare Research, PO Box 40, Lincoln 7640, NEW ZEALAND. Fax: 64-03-321-9998.

[HayesL@landcareresearch.co.nz](mailto:HayesL@landcareresearch.co.nz). Voice: 64-03-321-9694.

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## Guest Editorial Comments and Opinions

### Misdirected priorities by ignoring weeds

It is another case of trying to solve a secondary problem before the primary problems are solved. *Striga* plagues much of African maize, and *Striga* has permanently opened stomates (N. Shah, N. Smirnov, G. R. Stewart Photosynthesis and stomatal characteristics of *Striga hermonthica* in relation to its parasitic habit *Physiologia Plantarum* 69: 699-703, 1987). What good is drought tolerance with a parasite with open stomates sucking it dry?

Additionally, much of the water stressing is due to untimely control of non-parasitic weeds, which steal much of the water (and minerals) from the crop.

**The *Striga* and non-parasitic weed problems should be solved first.**

A possible solution would be to put the drought tolerant genes into a maize that has both imidazolinone and glyphosate resistances. The corn seed could be treated with the imidazolinone, which controls *Striga* for 10-12 weeks, and also has a zone clear of other weeds near the corn plant. A mid-season glyphosate spray would control late attaching *Striga* and the competing weed population. By using both, weed evolution of herbicide resistance would be vastly delayed. This would require cooperation between two chemical companies that in the past have refused to cooperate to generate such maize.

As described below, without recognizing the primary problems leading to water stress, the drought tolerance technology will not be worth too much on the ground.

#### Increasing Africa's Grain Harvest

- Editorial, Voice of America, Feb 10, 2009

Maize is the most widely grown food crop in Africa. It is the main food source for 300 million Africans. It is severely affected by drought, and Africa is a drought-prone continent. The effects of drought are especially devastating to small-scale farmers in sub-Saharan Africa, where crop yields diminished by inclement weather are common.

The need to alleviate the devastation caused by frequent droughts led to the formation of a public-private partnership known as Water Efficient Maize For Africa, or WEMA. WEMA is an organization dedicated to reducing crop failure and alleviating hunger and poverty by developing drought-tolerant, high-yielding maize varieties that are adapted to African conditions.

At the head of WEMA stands the African Agricultural Technology Foundation, an African-run organization. It is supported by Kenya, Mozambique, South Africa, Tanzania and Uganda. Other partners include Monsanto, a U.S.-based crop biotechnology company and the International Maize and Wheat Improvement Center, a Mexico-based non-profit institution dedicated to the development of improved varieties of wheat and maize. The project is in large part financed by the Bill and Melinda Gates Foundation and the Howard Buffett Foundation, who pledged a total of \$47 million to fund the effort.

"This project, conducted mostly in Africa and for Africans, will result in improved maize hybrids, yielding an additional 25 percent more grain under moderate drought conditions, compared to the best African seed currently available," said Vanessa Cook, Monsanto's WEMA project lead.

The new, less thirsty corn varieties will be developed using a combination of traditional plant breeding as well as molecular techniques, also known as biotechnology or genetic engineering. WEMA hopes to develop the new maize varieties in the next 5 years.

Rajiv Shah, director of agricultural development at the Gates Foundation, said: "Our long-term goal with this project is to give farmers access to crops that can protect them from frequent drought, so they can feed their families, increase their incomes and build better, healthier lives."

"Governments and nations are more likely to become unstable when their populations are hungry and underfed," U.S. Secretary of State Hillary Clinton said. "We are committed to building a new partnership among donor states, developing nations, UN agencies, NGOs, the private sector and others to better coordinate policies to achieve the Millennium Development Goals," she said.

Submitted by:

Prof. Jonathan Gressel, Plant Sciences, Weizmann Institute of Science, Rehovot, Israel 76100

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### Important Announcement Regarding IWSS Membership Fee

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After long deliberations, we, the officers of the International Weed Science Society, have decided to increase our membership fee from \$15 to \$30, starting January 1st 2009. The reasons for this are as follows:

- a) We have moved to a website that is maintained by a webmaster for a minimal fee. This move would make our website more efficient and updates can be made quicker.
- b) We intend to make the abstracts of proceedings, directory of members (with individual consent), available on line with limited access to members only.
- c) We hope to supplement our cash reserve so we can continue to offer assistance to students and junior scientists who will be attending the future congresses.
- d) We also intend to support regional weed science activities (trainings, workshops, invited speakers, etc.) to promote scientific pursuits in weed science and continue our outreach activities.

## 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 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. 11-13 **XII Congresso da Sociedade Espanola de Malherbologia, XIX Congresso da Asociacion Latinoamericana de Malezas, and II Congresso Iberico de Ciencias de las Malezas: “Herbologia e Biodiversidade numa Agricultura Sustentavel”**, Lisbon, Portugal; Contact: Edite Sousa; Voice: +351 21 365 31 88/97; FAX: 351 21 365 32 38; Email: [editesousa@isa.utl.pt](mailto:editesousa@isa.utl.pt).

### 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)

**Special Report from the IWSS 5<sup>th</sup> International Weed Science Congress:**

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**International Weed Science Society version of “Dancing with the Stars”.** Taken from the 2008 IWSS meeting In Vancouver, BC Canada. Who are these graceful members of the IWSS who presume to “trip the light fantastic”?

## IWSS officers

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The IWSS Newsletter is available on the  
Internet at: <http://iws.ucdavis.edu>.

The **IWSS Newsletter** is published in  
Spring and Fall to foster communication  
among and give information to our  
members and others around the globe  
interested in Weed Science.

Thanks to the contributors who helped  
with the Spring 2009 issue.

### Deadline for items for the next Newsletter is **15 August 2009**

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### To join the IWSS

Complete the following information and send your dues to Dr. Nilda Burgos, the IWSS Secretary-Treasurer.

Name: \_\_\_\_\_  
Affiliation: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_  
Zip/Postal Code: \_\_\_\_\_ Country: \_\_\_\_\_  
Email: \_\_\_\_\_

Checks, bank drafts, or money orders in US\$ should be made payable to: International Weed Science Society.

For ease of payment, dues can now be paid by credit card at our webpage following the link: <http://iws.ucdavis.edu/membership.htm>