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## From the editor

*Dear APWSS colleagues,*

*We start this newsletter with a message from our President and update on 24<sup>th</sup> Asian Pacific Weed Science Conference, taking place in Bandung, Indonesia 22-25 October. This is followed by different country reports and weed news items. Many thanks to all contributors, especially Dr AN Rao for his significant contribution to this issue.*

*Enjoy the read!*

*Asad Shabbir*

## Message from the APWSS President, Professor Steve Adkins

Dear APWSS membership,

Welcome to another informative issue of the APWSS Newsletter. Six months ago I attended the 4th Tropical Weed Science Conference in Chiang Mai, Thailand organised by one of our affiliate country societies, the Weed Science Society of Thailand. At the conference, a number of speakers brought to our attention the increasing problems of herbicide resistance in our



region and the need to improve our knowledge about the mechanisms of its development, spread and persistence within our agro-ecosystems. Other discussions focussed on research related to weed management as a response to the ongoing changes in our tropical weed flora, notably the spread of the weedy rice problem. There was also a focus on allelopathy and some discussion of the possible development of crops that can suppress weeds. There was also discussion for the need for long-term management strategies to be developed as well as the short-term control solutions that are often the only approaches adopted. This very successful Conference attracted more than 200 delegates from over 20 countries, from around the APWSS region and other parts of the world.

I am very pleased to inform you that the preparations for the 24th APWSS Conference are progressing very well. We are going to meet in Bandung, a beautiful and historic city near Jakarta and well connected by major transport routes to several International destinations. As reported elsewhere in this Newsletter, the Conference Chair Dr Denny Kurniadie and Program Chair Dr Baki Bin Bakar are now finalizing the main topics and creating the sessions. We anticipate a very good attendance and this will be an event not to be missed!

Can I also remind you of our new, improved web site ([www.apwss.org](http://www.apwss.org)) onto which most of our important information items are being placed, including our Newsletter and information on our working group, the International Parthenium Weed Network. We will continue to put out a new newsletter every six months but to do this our newsletter editor; Dr Asad Shabbir will need to receive items from you.

This will be my final Newsletter report as your President. I have to say that I have been enormously honoured to head up such a successful and important society over the past few years. As is the tradition, a new executive will be elected at the 24<sup>th</sup> APWSS Conference in Bandung. I would like to take this opportunity to thank all members of the APWSS Executive Committee for their support and commitment to the APWSS, and to the Organising Committee of the 24th Conference, with the hopes of seeing you all once again in Bandung.

## 24<sup>th</sup> Asian-Pacific Weed Science Society Conference – In Final Preparation!

The next Asian-Pacific Weed Science Society (APWSS) Conference will be held at the Padjadjaran University Convention Hall Bandung Indonesia from 22 to 25 October 2013. The Conference is proudly supported by the Weed Science Society of Indonesia (WSSI), Faculty of Agriculture at Padjadjaran University, the APWSS, and major sponsors include Syngenta, DOW Agrosiences, DuPont, Monsanto and Clariant. The Conference theme is "**The role of Weed Science in Supporting Food Security by 2020**".

Until now the committee has already accepted more than 100 papers for oral presentation and more than 50 papers for poster presentation. There will be sessions organized on the topics of 1) sustainable weed management in the Asian Pacific region, 2) weed solution for the Asian Pacific region, 3) threats and risks within the Asian Pacific region, and 4) economics of weed control in the Asian Pacific region. The Conference will provide a forum in which new research results will be shared, information disseminated to agricultural researchers and educators, and future cooperation encouraged. There will be ample time available for networking and discussions during the breaks in the program and through a social program incorporating a Welcome Dinner and Field Trips.

We remind all participants and presenters to pay their registration fee early to gain a fantastic early bird rate. Registrations will be accepted by bank transfer.

### 1. Bank Transfer

**Beneficiary:** Himpunan Ilmu Gulma Indonesia (HIGI)

**Beneficiary Bank:** Bank Negara Indonesia Branch PTB

**Account No:** 260520090

**Swift Code:** BNI NI DJA

**Address :** Himpunan Ilmu Gulma Indonesia (HIGI)  
Jurusan Budidaya Pertanian  
Fakultas Pertanian Universitas Padjadjaran  
Jl. Raya Bandung Sumedang Km 21 Jatinangor  
Post code 45363

Please do write "**APWSS2013**" and **The Participant's Name** in the place of "Message" (*Very Important*).

### 2. Payment On-site

Cash and credit card (Visa, MasterCard) will be accepted at the Conference venue.

### 3. Notes

To avoid problems in money transfer, please keep your remittance invoice or receipt. Personal cheques are not acceptable.

For International Participants		
	Full	Student
Super early bird registration (registered and paid on or before 22 Augst 2013)	US\$ 185	US\$ 85
Early bird registration (registered and paid on or before 22 Sept 2013)	US\$ 210	US\$ 110
Standard registration (registered and paid after 22 Sept 2013)	US\$ 235	US\$ 135

### Attention Please!

Registration cost does not include your bank wire transfer fee. This needs to be added to the Registration Fee

In order to avoid the high costs of bank wire transfer fees, you can **pay your registration fee together with your colleagues**. The bank wire transfer fee for transfers below US \$ 1000 are similar.

### Field Trips

A series of field trips will be organized and will demonstrate aspects of weed control in rice and will visit the Tangkuban Perahu Mountain and Tea Plantation.



### KEYNOTE AND INVITED SPEAKERS

1. Steve Adkins (University of Queensland, Brisbane Australia, Keynote)
2. Albert Fischer (University of California Davis, USA, Invited)

3. Yoshiharu Fujii (Tokyo University. of Agriculture and Technology, Japan, Invited)
4. Kwang Ho Park (Korean National College of Agriculture, Invited)
5. Trevor James (AgResearch Hamilton, New Zealand, Invited)
6. Aurora Baltazar (University of the Philippines Los Banos, Invited)
7. A.R. Sharma (Weed Science Research India, Invited)
8. Soekisman Tjitrosoedirjo (SEAMEO BIOTROP, Indonesia, Invited)
9. N T Yaduraju & AN Rao ICRISAT, India.

## PRIZE

The best oral presentation for student

1. The best poster for student
2. The best oral presentation (for young scientist < 40 years old)

We recommend you to select your hotel and book the hotel early in order to obtain the best rate. You can book the hotel directly or book it through us.

For more information or to register please visit the website [www.apwss2013.com](http://www.apwss2013.com).

## International funding for research on Parthenium in Nepal, Bharat Babu Shrestha

Parthenium (*Parthenium hysterophorus* L; Asteraceae), a native of Central America, is an environmental invasive weed of tropical to subtropical Asia, Australia, Africa and the Pacific. The weed was introduced to South Asia during 1950s and currently it is found in all seven countries in this region. In Nepal, the presence of this weed was noticed during the 1960s but a big population outbreak occurred in 1990s. Now it is among the most dominant components of the vegetation in fallow land, grasslands and within the roadside vegetation of the urban and peri-urban areas in the southern part of Nepal. Through the road networks, the weed has been rapidly expanding northward into the mid hills at higher elevations. This rapid expansion of parthenium weed has emerged as a new environmental problem within Nepal but the

anticipation and realization of the impending impacts of this weed have not been well explored. The Central Department of Botany of Tribhuvan University is a leading institution in conducting research on the ecological impacts of parthenium weed in Nepal. Since 2006, nine MSc theses have been completed on aspects of parthenium weed invasion as well as the ecological and socioeconomic impacts of this invasion. Recently the Department received an international grant from the International Foundation of Science (IFS), Sweden to conduct ecological research into the parthenium weed invasion in Nepal. This project will map the distribution of the weed and two of its biocontrol agents (*Zygogramma bicolorata* and *Puccinia abrupta* var. *partheniicola*) throughout Nepal and the data will be used to identify future suitable habitats potentially at risk of invasion by a predictive modeling approach. Suitable habitats for parthenium weed are those regions with a high vulnerability to its invasion and ecological damage while the suitable habitats for the biocontrol agents refers to the regions where the biocontrol agents may be effective in managing the weed. The data obtained from this research study will be useful for the development of a management plan to control this weed within Nepal. Dr. Bharat Babu Shrestha of the Department is the coordinator and principle investigator of this project.



The luxurious growth of parthenium weed in fallow land of the Chitwan valley, central Nepal (Photo: BB Shrestha)

## 12th Queensland Weeds Symposium

– *Weeds Everyone's Business*

This Symposium was very successful in covering a wide range of issues and demonstrations. There were



two days of oral and poster presentations at the Boat Club, Urangan and a one day field trip to Tiaro and places in between, including demonstrations at the Maryborough Equestrian Centre/Show grounds.

There were 160 participants from across QLD, northern NSW, NT, WA and Tasmania, with representatives from local governments, landcare groups, natural resource management groups, State agencies (Biosecurity QLD, QLD Parks & Wildlife Service, Road Tek), companies (herbicide services, equipment providers, mining, environment consultants, power infrastructure), Universities and CSIRO.

The following papers were considered to be the most practical and applied and were locally relevant to the Fraser Coast. There were many other subjects including communication, planning, incentives, and threats to other parts of the State.

**Cat's claw creeper:** Control along the Mary River, including two insect species for biocontrol. Contact Ross Smith, Greater Mary Association, Tiaro Tel 4193 9048. Also, Liz Snow, Research Experimentalist, Biosecurity QLD Tel: 3255 4455

**Herbicide resistance:** Resistance has developed from successive use of some herbicides e.g. glyphosate. Use of glyphosate for future weed control along roadsides, railways, pipelines and irrigation channels is at risk. Contact Dr David Thornby, Dept of Agriculture, Fisheries and Forestry (DAFF), Toowoomba Tel: 3255 4473.

**Unmanned helicopter:** The Yamaha unmanned helicopter was demonstrated; potential for use over inaccessible areas and dense weed infestations, and for rapid herbicide application. Contact Mike Johnson, Yamaha Tel: 02 9827 7593.

**Improved basal application of herbicides:** Improved herbicide application for woody weeds was demonstrated, namely ThinLine application. Contact: Chris Love, Dow Agrosiences Tel: 3377 0831

**Water weed control locally:** A new water weed harvester used by Fraser Coast Regional Council for maintaining its lakes and waterways was demonstrated (remembering that this was a demo to people from across QLD & other parts of Aust). Contact: Col Zemek, FCRC, Hervey Bay Tel: 4197 4474.

**Hymenachne control project locally:** FCRC is leading a project to control hymenachne (a Weed of

National Significance) in Black Swamp Creek, near Hervey Bay. Contact Juliet Musgrave, FCRC, Hervey Bay Tel: 4197 4474 (as for Col).

**Weed seed spread:** The number of weeds seeds on vehicles, their variation across the seasons, their location in the different parts of the vehicle, and the effectiveness of washing down has been studied. Large numbers were found (209 viable seeds per utility) and short wash times were not adequate to clean clay soil from vehicles. Contact: Prof Steve Adkins, University of Queensland Tel: 3365 2072

Weed seed spread by vehicles is a risk for mining companies traversing a variety of properties. Arrow Energy reported on the work done to develop clean down procedures and their implementation for the company fleet. Contact: Peter Austin Tel: 4841 2863/0408 489 616

**Hudson pear at Cracow:** A cactus at Cracow known as "Cracow pear" was found to be Hudson pear, a Class 1 declared species to be eradicated from Qld. The mapping of the Hudson pear to locate all plants and provide the basis for the control project was reported. Contact: Moya Calvert Tel: 3255 4457

## The Weed Society of Queensland launched its 'Weeds of Southern Queensland' app, Associate Professor Steve Walker

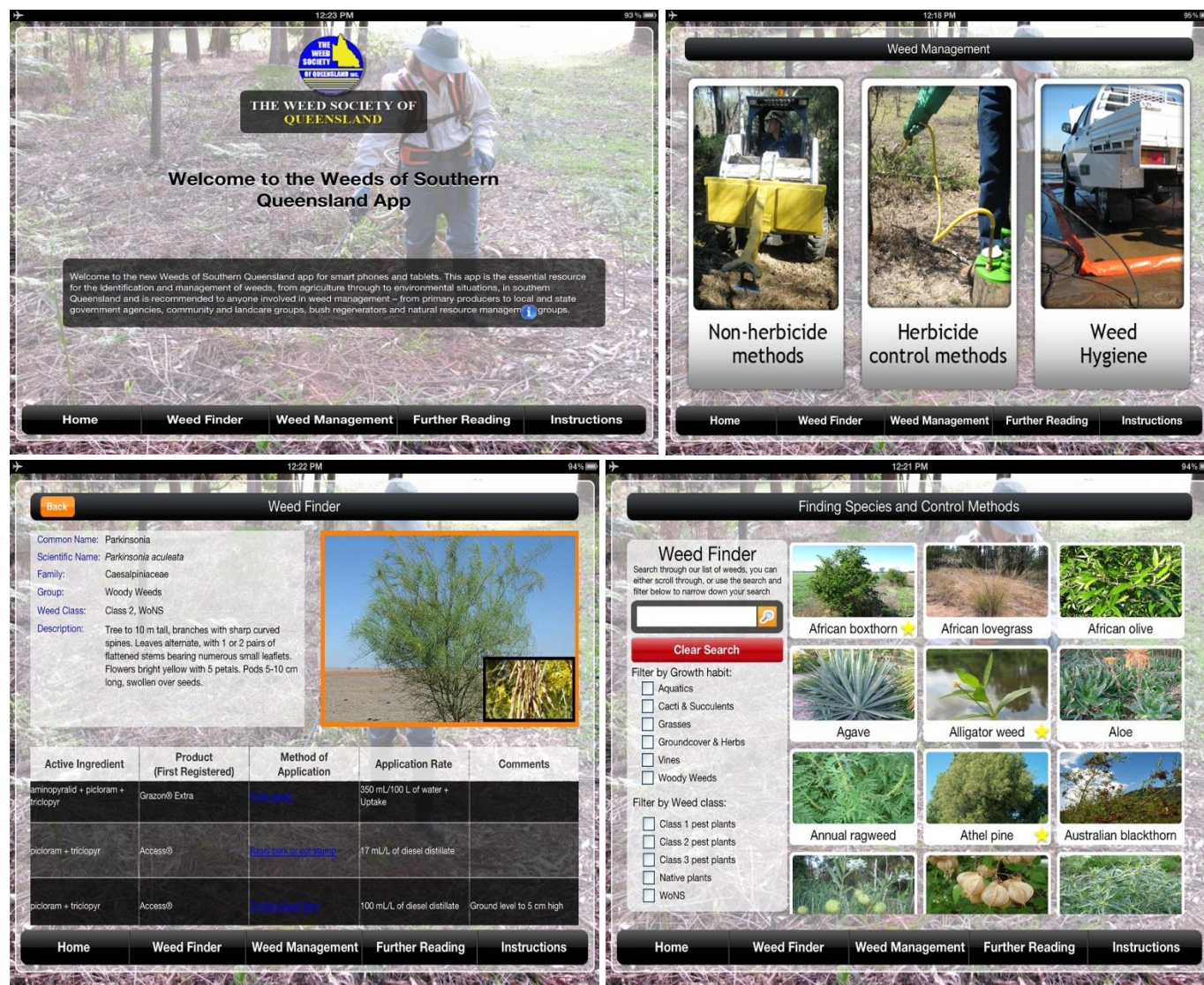
In 2011, the Weed Society of Queensland, which is part of the Council of Australasian Weed Societies, published the 3<sup>rd</sup> Edition of the book 'Weeds of Southern Queensland'. This proved to be exceedingly popular and the Society had to print a second run. Subsequently in November 2012, the Society launched this highly popular publication in App form, and thus extending its appeal to users and the broader public.

The app contains photos and information for 132 weeds present in Southern Queensland, along with details of control and treatment methods. Weeds of all types are covered including woody weeds, cacti and succulents, vines, groundcover and herbs, grasses, and aquatics. There is an extensive section on weed management techniques and weed hygiene. Declared weeds are listed, together with a page on landholder obligations for control of these Class 1, Class 2 or Class 3 weeds.

This weed identification and treatment guide was designed for use by the widest possible audience, from council weed control officers through to people keen to remove weeds from their rural retreats. The book includes details of a range of techniques that can be effectively used by everyone, including information on the herbicides registered for use in different situations.

The app is available for download from the Apple store now: for AU\$1.99.  
<https://play.google.com/store/search?q=wsq+weeds&c=apps>

The following are a few screen shots of the app.



## Herbicides cause depression – results of a study in France

Pesticides are ubiquitous neurotoxicants, and several lines of evidence suggest that exposure may be associated with depression. Epidemiologic evidence

has focused largely on organophosphate exposures, while research on other pesticides is limited. A study conducted in France during 1998 to 2000, using 567 farmers aged 37–78 years revealed that 83 (14.6%) of those farmers self-reported treatment or hospitalization for depression. The hazard ratio for depression among those who used herbicides was 1.93 (95% confidence interval (CI): 0.95, 3.91); there was no association with insecticides or fungicides. Compared with nonusers,



those who used herbicides for <19 years and ≥19 years (median for all herbicide users, 19 years) had hazard ratios of 1.51 (95% CI: 0.62, 3.67) and 2.31 (95% CI: 1.05, 5.10), respectively. Similar results were found for total hours of use. Results were stronger when adjusted for insecticides and fungicides. There is widespread use of herbicides by the general public, although likely at lower levels than in agriculture. Thus, determining whether similar associations are seen at lower levels of exposure should be explored.

Probably, such studies are needed in Asia Pacific region too as the use of herbicides is increasing year by year. Scientific studies on the availability and usage of herbicides in the Asia Pacific region would enable researchers to recommend only those herbicides that are not harmful to the the users.

Basic source: Weisskopf, M.G., Moisan, F., Tzourio, C., Rathouz, P.J. and Elbaz, A. 2013. Pesticide Exposure and Depression Among Agricultural Workers in France. *American Journal of Epidemiology*. (<http://aje.oxfordjournals.org/content/early/2013/07/11/aje.kwt089>)

(News item contribution by Dr. A. N. Rao)

## Lantana is a major weed of forests of Himachal Pradesh, India

Himachal Pradesh a state in the northern part of India, crowned by the rugged peaks of the western Himalaya's. According to a 2005 report published by the Forest Survey of India, the hill state, has 14,752 square km of forested land, 1,097 of which is very densely forested. In a written statement to the Assembly of Himachal Pradesh on April 2, 2013, the Forest Minister Mr. Thakur Singh Bharmouri said "As per the survey conducted by the forest department, 1,852.85 square km of forest are under the cover of weeds." Of the forest area covered by weeds, lantana alone covered 1,562.85 square km of the total affected area. The minister said "To root out lantana, a cut-root stock method has been adopted. After clearing the weed, foliage fodder is being replanted. From 2009 to 2013 lantana was removed from 6,305 ha of forest land in the state. In 2013-14, the Government of Himachal Pradesh aims to clear lantana from 5,000 ha (Source: [http://hillpost.in/2013/04/02/over-1800-sq-km-himachal-forests-under-weeds/64165/latest-news/hp\\_bureau/](http://hillpost.in/2013/04/02/over-1800-sq-km-himachal-forests-under-weeds/64165/latest-news/hp_bureau/))"

*Lantana camera* is native to central and south America and has spread across tropical and sub-tropical Africa,

Asia, Australia in approximately 60 countries. Lantana was reported to have been introduced to India in about 1809, as an ornamental hedge in Calcutta. It then escaped from this site of introduction and has now become a major weed across the whole country.



*Lantana camera*

(News item contribution from Dr. A. N. Rao)

## Alligator weed (*Alternanthera philoxeroides* L.) invaded lakes of Kashmir.

Alligator weed (*Alternanthera philoxeroides*), a perennial, floating emergent, noxious invasive aquatic weed, has recently invaded all the famous fresh water bodies in Kashmir. Although it is supposed to be a subtropical weed native to South America it has recently infiltrated the Kashmiri lakes and has rapidly become a serious threat, like many other noxious invasive weeds. Alligator weed was reported for the first time in Wular Lake in 2008 in a dispersed form, but within 5 years it has spread to all fresh water lakes and forms thick mats, particularly in Dal Lake and in all its tributaries and channels. With the formation of the thick mats, large and extensive rafts are now breaking off and floating on the surface of water allowing the weed to spread widely within the Dal Lake and Nageen water systems. In shallow water, especially at the lake margins, it remains attached to the lake substratum. This weed has a worldwide distribution. In India it is now reported from Assam, Bihar, West Bengal, Tripura, Manipur, Andhra Pradesh, Karnataka, Maharashtra, Delhi and Punjab. It grows even in marshy boggy places and tolerates all abnormal weather conditions.

Another aquatic weed of concern in the lakes of Kashmir is Azolla (Sci name), a water fern which was reported first in the year 2004. It has already

deteriorated the essence, charm, water quality and promoted eutrophication, as well as wiping out many medicinal and highly nutritional aquatic plants. In addition, it has been responsible for the loss of many underwater life forms from the Kashmiri lakes, including Manasbal, Wular, Nageen, Dal, Hokher Sar, Anchar lakes. The presently used management methods of surface removal are resulting in the rapid spread of this noxious weed. The state and National Government authorities have a serious role to play in curtailing the invasion of this notorious aquatic weed in Kashmir and other states of India.



Alligator weed (*Alternanthera philoxeroides*)

(Source link:

<http://www.greaterkashmir.com/news/2013/Jul/9/another-deadly-invasion-9.asp>)

(Contributed by Dr. A. N. Rao, India)

## Weedy rices may become more weedy with transgenes introduction—a study shows

A genetic-modification technique used widely to make crops herbicide resistant has been shown to confer advantages on a wild form of rice, even in the absence of the herbicide. The findings of Wang *et al.*, (2013) suggest that the effects of such genetic modification have the negative potential of extending beyond the farms and into the wild populations of weeds. Several types of crops have been genetically modified to be resistant to glyphosate, an herbicide first marketed under the trade name Roundup. This glyphosate resistance enables farmers to wipe out most weeds from the fields without damaging their crops.

Glyphosate inhibits plant growth by blocking an enzyme known as EPSP synthase, which is involved in the production of certain amino acids and other molecules that account for as much as 35% of a plant's mass. One of the genetic-modification techniques used, in the Roundup Ready crops is the insertion of genes into a crop's genome to boost its EPSP-synthase production. These genes are usually derived from bacteria that infect plants. The extra EPSP synthase lets the plant withstand the effects of glyphosate. Biotechnology labs have also attempted to use genes from plants rather than bacteria to boost EPSP-synthase production, in part to exploit a loophole in US law that facilitates regulatory approval of organisms carrying transgenes not derived from bacterial pests.

Few studies have tested whether transgenes such as those that confer glyphosate resistance can, once they get into the weedy or wild relatives through cross-pollination, make those plants more competitive in survival and reproduction. It is generally believed that such transgenes will confer disadvantages in the wild in the absence of selection pressure (the herbicide), because the extra machinery would reduce the plants fitness. However, now a study led by Lu Baorong, an ecologist at Fudan University in Shanghai, challenges the view and shows that a weedy form of the common rice (*Oryza sativa*), gets a significant fitness boost from having glyphosate resistance, even when glyphosate is not applied. In their study, published in *New Phytologist*<sup>1</sup>, Lu and his colleagues genetically modified the cultivated rice species to over express its own EPSP synthase and then cross-bred the modified rice with a weedy relative. Which was?? The team then allowed the cross-bred offspring to breed with one another, creating second-generation hybrids that were genetically identical to one another except in the number of copies of the gene encoding for EPSP synthase. As expected, those with more copies expressed higher levels of the enzyme and produced more of the amino acid tryptophan than their unmodified counterparts. The researchers also found that the transgenic hybrids had higher rates of photosynthesis, grew more shoots and flowers and produced 48–125% more seeds per plant than non-transgenic hybrids, in the absence of glyphosate. Making weedy rice more competitive could exacerbate the problems it causes for farmers around the world whose plots are invaded by the pest, as per the authors of that paper.

“If the EPSP-synthase gene gets into the wild rice species, their genetic diversity, which is really important to conserve, could be threatened because

the genotype with the transgene would outcompete the normal species. This is one of the best examples of the extremely plausible damaging effects of GM crops on the environment

(<http://www.nature.com/news/genetically-modified-crops-pass-benefits-to-weeds-1.13517>)

The study also challenges the public perception that genetically modified crops carrying extra copies of their own genes are safer than those containing genes from microorganisms. However, Lu's study shows that this is not necessarily the case. The present findings calls for a rethinking of the future regulation of genetically modified crops and the study shows that novel products still need to be careful evaluated.

Source: Wei Wang., Hui Xia., , Xiao Yang., Ting Xu., Hong Jiang Si., Xing Xing Cai., Feng Wang., Jun Su., Allison A. Snow., and Bao-Rong Lu. 2013. A novel 5-enolpyruvylshikimate-3-phosphate (EPSP) synthase transgene for glyphosate resistance stimulates growth and fecundity in weedy rice (*Oryza sativa*) without herbicide. *New Phytol.* <http://dx.doi.org/10.1111/nph.12428> (2013).

## A.N. Rao, joined ICRISAT as Visiting Scientist

Dr. A. N. Rao., a Senior Weed Scientist, who got over thirty five years of research experience gained at International Rice Research institute (IRRI) (IRRI/Egypt; IRRI/Philippines;



IRRI(india); International Crops Research Institute (ICRISAT); Andhra Pradesh Agricultural University (ANGRAU) and several other organizations, has joined ICRISAT as a Visiting Scientist, Resilient dry land systems – ICRISAT and IRRI. Dr. Rao will be based at ICRISAT and transferring the available IRRI rice technologies to the farming community of Karnataka, where direct-seeding is becoming popular.

Indian Society of Weed Science (ISWS) has given the Indian Society of Weed Science prestigious “ISWS Gold Medal Award: 2010-2011” to Dr. A. N. Rao, in recognition of the outstanding contributions he made in the field of Weed Science to both Indian and the International farming communities. Dr. A. N. Rao has more than 100 research papers and popular articles on weed management, published in reputed Journals and

has presented at many National and International Conferences.

## New Executive Council of Indian Society of weed Science

The newly elected Executive Council (EC) (2013-2014) of Indian Society of Weed Science (ISWS) are:

1. Dr. N.T. Yaduraju, President.
2. Dr. T. V. R. Prasad, Vice President
3. Dr. A. R. Sharma, Secretary
4. Dr. Shobha Sondhia

The charge of the ISWS was symbolically handed over to the new EC by outgoing president Dr. T. V. Muniappa to newly elected president Dr. N. T. Yaduraju during the Executive Council meeting of ISWS held on 2/2/2013 at the Directorate of Weed Science Research, Jabalpur, M.P., India (see photograph).





## International Parthenium Weed Network meeting

*Dear members of the International Parthenium Weed Network*

*At the APWSS Conference in Bandung 22-25 October 2013, there will be a meeting of the International Parthenium Weed Network (day and time to be advised). I hope many of you will be attending the Conference and will be able to join the meeting. The meeting is open to anyone interested in parthenium weed including those that may not yet be members of the Network, so if you know of other people who might be interested, feel free to let them know about it.*

*The Group has been quiet active over the past couple of years with our Newsletters on the APWSS web site ([www.APWSS.org](http://www.APWSS.org)) and under the link iPaWN.*

*It would good idea if each country could select one representative to give a brief 5 minute update on the latest situation within their country with respect to weed spread, impacts and management*

*Steve Adkins*

## Upcoming Conferences on Weed Science and Invasive Species Events

### **24th Asian Pacific Weed Science Society Conference**

Dates: October 22-25, 2013

Venue: Bandung, Indonesia

<http://apwss2013.com/>

### **XIV International Symposium on Biological Control of weeds**

Dates: 2-7 March 2014,

Venue: Kruger National Park, RSA

<http://www.isbcw2014.uct.ac.za/>

### **4<sup>th</sup> International Symposium on Weeds and Invasive Plants**

Dates: May 18-30, 2014

Venue: Montpellier, France

<http://invasive.weeds.montpellier.ewrs.org/default.asp>

### **8<sup>th</sup> Neobiota Conference**

Dates: November 3 - 8, 2014

Venue: Antalya, Turkey

<http://oekosys.tu-berlin.de/menue/neobiota/>