

Asian-Pacific Weed Science Society

NEWS LETTER

June 2010

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President-elect

The Country to host the next Conference, and the President-elect will be decided at a future date

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To be announced

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Meritorious Professor of Weed Science & Dean
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Message from the APWSS President

Dear APWSS membership

I would like to thank you all for giving me the chance to be your President for the next 18 months. This will be a fairly short but hopefully productive tenure.

Before I go on and present some of my thoughts on the future, I would like to thank departing Society officers, Past President Professor Buddhi Marambe and General Secretary Professor Gul Hassan, for their leadership and the hard work that they put into our Society over the past 2 years.



Professor Steve Adkins

I would also like to congratulate the incoming General Secretary Dr Nimal Chandrasena and thank him for agreeing to serve the APWSS in this new role.

In the case of Professor Khan Bahadar Marwat I would like to give my deep, unreserved thanks for his leadership as our President for the past 2 years and wish him well in his new role as our Past President.

Two months ago we gathered in Lahore, Pakistan at the 22nd APWSS Conference, a successful event organised by Professors Marwat and Hassan and their dedicated team from the Weed Science Society of Pakistan.

On APWSS standards, this was a fairly small conference but one in which many innovative weed management approaches from Pakistan were showcased.

Unfortunately, due to the security problems Pakistan is now experiencing, only a handful of APWSS country representatives were able to attend the Conference, and therefore due to the lack of a quorum, the Society Executive Committee was unable to meet.

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APWSS New President's message (Continued)

As a consequence of this, the vote to host the Presidency in the term 2011 to 2013 was not taken and therefore the venue for the 24th Conference in 2013 remains undecided.

It is worth noting our history before planning for our future. As you may know the APWSS was established in 1967 during a weed science meeting at the Hawaiian Island of Kawai. In those days the primary role of APWSS was to facilitate the interchange of current weed management information and to promote research in weed science. Initially supported by the University of Hawaii, the biennial conferences have since become a major event for the sharing of research results and for information dissemination to agricultural researchers. Since this time we have grown and at times our membership has been over 600 scientists, coming from 25 countries.

We are now associated to a highly successful journal, *Weed Biology and Management*, which continues to have a high and increasing profile. We have an excellent newsletter going out to all member countries and professionally edited by Dr Nimal Chandrasena. We are beginning to meet the challenges of an increasingly important international Society.

However, there are many challenges ahead of us in the APWSS. We as a professional scientific society, have much to offer in the efforts to alleviate the problems caused by population growth and climate change, especially in our region of the world. By 2050 the population in our part of the world will have increased dramatically and recent estimates suggest we will need to double our food production.

We are on the cusp of a new 'green revolution', which will be fuelled by both traditional plant breeding and advanced biotechnological approaches. Genetically modified (GM) and traditionally modified crops will be the outcome of these activities with GM crops becoming much more widely planted in our region.

We need to develop 'climate change-ready' and 'GM crop-ready' weed management strategies that can be introduced as and when required. Within the natural environment we need to conserve biodiversity and tackle head-on the increasing number of invasive weeds of our grasslands, forests and national parks.

As part of meeting the challenges of the next 40 years we need to re-invigorate and raise the profile of the APWSS. To do this, we must become more involved in coordinated activities in our region and in our national societies and share advice on how best we may be able to help.

A start will be to set up a APWSS web site, to consolidate and then expand our membership and to improve communication through our newsletter.

We should look at the possibility of setting up dedicated focus groups to take a more-in depth look at some of our regions more pressing weed science needs, and look at running more short courses with international input.

We also wish to help new countries develop their own Weed Science Societies and become part of the APWSS family. This is already taking place in Nepal and Fiji.

The new officers of the APWSS are committed to serving our Society and to improve communication and collaboration among weed scientists of our region. However we will need you to help us meet the new challenges. So, contact us with any ideas you may have.

From our national affiliated weed and plant protection Societies we need to hear from you as to who are the new national correspondents, and for you to nominate senior scientists from your country you would like to see suit on an APWSS Advisory Committee.

Such a Committee of APWSS Officers, National Correspondents and selected Senior Scientists need to update our Society Constitution (the Society Rules as they are presently referred to) and decide on the 2013 Conference location.

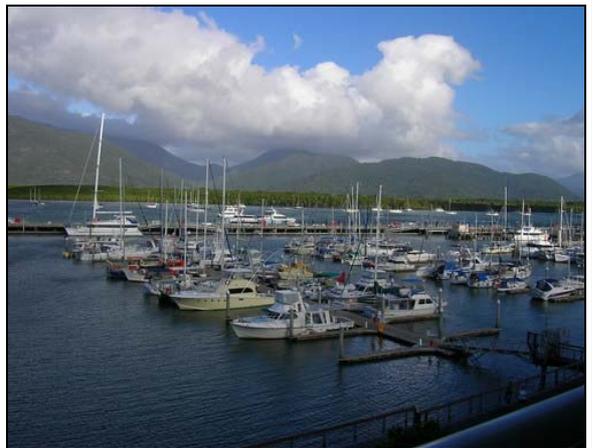
Finally, don't forget the 23rd APWSS Conference, which will take place in Cairns, Australia September 2011.

Cairns is one of the topmost attractions of tropical Australia (see photos and announcement!).

A dedicated team has already started the long chain of activities that are required to deliver an exciting and forward-looking conference.

I look forward to seeing you all in 2011!

Steve Adkins, APWSS President, June 2010



Cairns Harbour, Tropical Queensland



Cairns Harbour, Tropical Queensland

23rd Asian-Pacific Weed Science Society Conference

Weed Management in a Changing World

The Sebel Cairns, Queensland, Australia
25 – 30 September 2011

23rd Asian-Pacific Weed Science Society Conference – Destination Announced!

The Asian-Pacific Weed Science Society (APWSS) Conference will be held at the Sebel Cairns, in North Queensland, from 25 - 30 September 2011.

The Weed Society of Queensland (WSQ) and the Council of Australian Weed Societies (CAWS) proudly support the Conference.

The conference returns to Australia for the third time in 2011 and will focus on the theme "Weed Management in a Changing World". There will be presentations on the role of genetically modified organisms in weed management, climate change, water availability, biosecurity, population growth and the utilisation of weeds.

The Conference will provide a forum in which results can be shared, information disseminated to agricultural researchers and cooperation encouraged.

Field trips will be organised to demonstrate weed issues affecting North Queensland and activities undertaken to reduce their impact. These will be selected based on their applicability throughout the Asia Pacific region.

There will be ample time available for networking and discussions during breaks in the program and through a social program incorporating a Welcome reception, Conference dinner and Field Trips.

For more information or to register at discounted rates please visit the website www.apwss2011.com.

Report on 22nd APWSS Conference, Lahore, Pakistan, March 2010

Professor Gul Hassan (hassanpk_2000pk@yahoo.com), the out-going Secretary of the APWSS, provided the following brief report.

The 22nd APWSS Conference was successfully held at Lahore, Pakistan.

In total 150 Abstracts were submitted for oral presentations and about 3/4th of these were presented at the conference. For presentations, delegates from nine countries participated in the conference.

Apart from Pakistan, there were delegates from USA, Australia, India, Indonesia, Iraq, Bangladesh, Jordan and Sudan. Due to the peculiar security situation in Pakistan, many participants from abroad were hesitant to attend, but the local participation was very encouraging. Almost all the authors who had submitted their abstracts were at the conference to present their papers.

Field Excursions

The last day of the conference i.e. 12th March was devoted to the field excursion, but instead it was decided to visit the Indo-Pak border at Wagha on the late afternoon of 11th.

During all weekdays, there is a special Flag ceremony in the morning and evening. All the participants enjoyed the very sentimental event participated by people from both countries.

Some of the participants rated this experience as one of the most enjoyable visits of their life.

Receptions

The Conference hosted the welcome reception, lunches and dinners on all conference days and the closing Gala dinner at the Government College University, Lahore, Pakistan.

Sponsors

Conference activities were partially sponsored by the KPK Agricultural University, Pakistan, Government College University, Lahore, Pakistan, Jaffer Brothers Pak. Ltd., Excel Crop Care Ltd., India and International Weed Science Society.



A photo showing the inaugural session of the Conference

Best Paper Awards

The Young Scientist Awards were made with the generous sponsorship from Messrs Excel Crop Care Ltd., India. The awards were named as "Excel Young Scientist Awards". Awards were handed over to the young and deserving scientists, selected by a Committee, based on the quality of the papers presented at the Conference. The Winners of the First, Second and Third Prize are given below:

- **Dr. Irfan Rashid** (University of Kashmir, J&K, India) - Plasticity facilitates *Anthemis cotula* to invade diverse habitats.
- **Mr. Ikramullah Khan** (University of Queensland, Australia)- Weed seed spread by vehicles: A Study from Southeast Queensland, Australia.
- **Mr. Rahamdad Khan** (KPK Agricultural University, Peshawar, Pakistan)- Proximate and mineral composition of major winter weeds found in Northwest Pakistan.

Mr. Abdul Malik Sheikh of Jaffer Brothers Pak. Ltd. on behalf of Dr. Abhijit Bose of the Excel Crop Care Ltd., India, who could not attend conference due to unavoidable circumstances, presented the awards to the winners at the closing ceremony of the Conference, held on 11th March 2010.

Travel Awards

The APWSS Executive Committee gave two fully covered Travel Awards to the Invited Speakers Prof. Dr. Robert L. Zimdahl, Colorado State University, Fort Collins Colorado and Prof. Dr. Jamal R. Qasem, University of Amman, Jordan. A fully covered was also extended to Prof. Dr. Haji Baki Bakr of the University of Malaya, Malaysia, but could not show up due to visa problem. In addition, concessions in Registration and Lodging were also awarded to many other local and foreign participants.

Closing Session

After 5-days of successful deliberations, the 22nd APWSS was officially closed by the closing announcement made by the out-going president Prof. Dr. Khan Bahadar Marwat. Several participants and representatives of the principal sponsors made remarks at the closing sessions thanking the organizers for conducting a successful event.

Professor Steve Adkins; the President APWSS invited the weed scientists to Australia in 2011 to attend the 23rd APWSS Conference.

The proceedings ended with the awards ceremony, a cultural show and fellowship dinner, which were held at the Government College University, Lahore, Pakistan.



Photo of 22nd APWSS Conference attendees, Lahore, Pakistan

17th Australasian Weeds Conference, Christchurch, NZ, September 2010

Trevor James (trevor.james@agresearch.co.nz), the Chair of the Organizing Committee would like to remind APWSS Members that the dates for the **17th Australasian Weeds Conference**, to be held at Christchurch, New Zealand are getting closer.

This is the first time that this conference will be held in New Zealand and is a great opportunity to hear some great keynote speakers, presentations, panel discussions, as well as participate in weed-focused field trips. The theme of the Conference is 'New Frontiers in New Zealand'.

The New Zealand Plant Protection Society Inc and the Council of Australian Weed Societies Inc are joint sponsors of the Conference.

Important dates are:

- **19 June 2010:** Early-bird registration closes
- **1 September 2010:** Late registration fee applies
- **21 September 2010:** Last date for cancellation refund
- **26-30 September 2010:** Dates of the Conference

Contact details for further information are:

17th Australasian Weeds Conference Secretariat

Professional Development Group,

PO Box 84 Lincoln University, Canterbury 7647, New Zealand

Phone: +64 (0)3 325 3661; Fax: +64 (0)3 325 3685; Email: info@17awc.org

The Website: www.17awc.org is available for more information.

1st IOBC International Workshop on Biological Control and Management of *Parthenium hysterophorus*

In 2009 a Working Group on Parthenium weed biological control was formed under the auspices of the IOBC, currently under the convenorship of Drs R. Muniappan, K. Dhileepan and W. Mersie.

The 1st IOBC International Workshop on Biological Control and Management of *Parthenium hysterophorus* is to be held in conjunction with the 8th IOBC International Workshop on Biological Control and Management of *Chromolaena odorata* and Other Eupatorieae, in Nairobi, Kenya from the 1st – 5th November 2010.



Parthenium hysterophorus



A close-up of the plant

The Meeting will include the USAID-funded IPM-CRSP Partners Planning Workshop for the project 'Abating the weed (*Parthenium hysterophorus* L.) damage in eastern Africa using integrated, cultural and biological control measures'.

Parthenium weed is spreading in Africa and Asia, causing similar problems to those already experienced in Australia and India, by impacting on agriculture (crops and grazing), biodiversity conservation, and human and animal health.

- Research on Parthenium weed and its management has been conducted over several decades in Australia and India. In Africa, awareness of Parthenium weed is limited, but currently some research efforts on the impacts and management of this weed are being undertaken in South Africa, Ethiopia and Uganda, through various nationally supported programmes and/or international initiatives, such as USAID IPM CRSP and GEF/UNEP.
- Research on the weed is also being undertaken in Pakistan, Bangladesh, Nepal, China, Sri Lanka and Vietnam, and research in Australia and India is still ongoing.
- In 2009 an International Parthenium Weed Network (IPaWN) was initiated, coordinated by the University of Queensland, Australia.
- The intended purpose of the upcoming workshop in Kenya is to bring together international researchers working on Parthenium, to disseminate information on the weed and its management, to increase collaboration amongst researchers regionally and globally, to optimise resources for the control of this weed, and for technology transfer (e.g. supply of bio-control agents to other countries).

Additionally, it is hoped that this workshop will raise awareness of Parthenium weed for countries that are at risk, or that are in the early stages, of invasion by this weed.

This workshop will be held in conjunction with the **8th IOBC International Workshop on Biological Control and Management of *Chromolaena odorata* and Other Eupatorieae**, which is organized under the auspices of the IOBC, and will be hosted by CABI.

These workshops were initiated in 1988 to facilitate the management and biological control of *Chromolaena odorata* in resource-poor tropical and subtropical countries.

In 2003 the scope of the workshop was expanded to include closely related species such as *Mikania micrantha*, while retaining an emphasis on the tropics.

Kenya has been selected as the host country for this 8th workshop, the third held in Africa, because *C. odorata* has recently been recorded there and in other countries in East Africa for the first time.

This region has been shown to be highly climatically suitable for *Chromolaena* as well as for *Parthenium*. Other species of invasive alien Eupatorieae that could be included in this workshop include *M. micrantha* and *Ageratina adenophora*.

Suggestions for discussion on further species (tribe Eupatorieae) are welcome.

For further details of the 1st IOBC International Workshop on Biological Control and Management of *Parthenium hysterophorus*, the Second Announcement and Expression of Interest, please refer to <http://www.arc.agric.za/home.asp?pid=5229>.

Abstracts are due to be submitted by the end of July 2010.

Contact for further information:

Lorraine Strathie, Agricultural Research Council – Plant Protection Research Institute, Private Bag X6006, Hilton 3245, South Africa, E-mail: Strathiel@arc.agric.za.

Parthenium weed research in Australia: New management possibilities

Steve Adkins (s.adkins@uq.edu.au) sent the following article, highlighting recent research and future management options and possibilities.

Parthenium weed (*Parthenium hysterophorus* L.) is a weed of global significance and has become a major weed in Australia and many other parts of the world. Its main impacts are upon agricultural and natural ecosystem production and biodiversity, and on human and animal health.

No single method alone has proven effective in its management; however integrated management approaches have impact.

Within Australia this weed has been present for more than 50 years and during this time a biological control program has been developed utilizing 11 agents.

The Tropical & Sub-tropical Weed Research Unit (TSWRU), at the University of Queensland has contributed to an understanding of its basic biology, ecology and management and in 2009 created the International Parthenium Weed Network (IPaWN) to support the growing international interest in this weed.

The mission of IPaWN is to link International experts devoted in the creation of awareness of the threat and to act as a platform for the sharing of information on this weed and its adverse impacts upon agro-ecosystems, human health and the environment.

A current research project at TSWRU has the aim of developing a sustainable management method for Parthenium weed and consists of three components:

- 1) Reproductive biology and seed spread** – a study aimed at appreciating the invasive potential of the weed by understanding seed production and quality, and the long distance dispersal of seed on vehicles, in water and in or on animals.
- 2) Competitive displacement of Parthenium weed** – a study aimed at assessing the value of competitive plants used to displace the weed in core infestation areas.
- 3) Weed seed spread and kill** – a study aimed at assessing weed seed spread by vehicles, and the most efficient way of removing these seeds or killing them.

1) Reproductive biology and seed spread

A) Reproductive Capacity:

Seed produced under two temperature (28-35°C - Warm or 18-25°C - Cool) and two soil moisture levels (Field Capacity - Wet or half FC - Dry) showed that Warm/Wet conditions produced the highest number of seeds, while the Cool/Wet conditions produced the lowest number of seeds per plant. However for each condition a proportion of the seeds were empty (unfilled).

The greatest number of unfilled seeds was produced under the two Cool conditions. This data confirms the long held belief that Parthenium weed plants grown under a range of environmental conditions are capable of producing vast amounts of highly viable seed.

B) Seed Dispersal:

The spread of weed seed (including Parthenium weed seed) on vehicles was studied over a 3-year period. Materials washed off vehicles, taken from five sites in central Queensland, at four different times of the year (Autumn, Winter, Spring and Summer) were analyzed for viable seed.

The seed found included those from both monocotyledonous (grasses, sedges) and dicotyledonous (broadleaf) species. The viable monocot seed outnumber the dicot seed 2:1 with Parthenium weed seed representing c. 2% of the total. The total number of Parthenium weed seed from two collection locations was higher than that from other sites and was highest in the summer.



International Parthenium Weed Network (IPaWN) launched !!!

The International Parthenium Weed Network (IPaWN) was recently launched following an overwhelmingly positive response to a circulation about the value of setting up such a group. This network will be devoted to creating awareness about the parthenium weed threat, and to sharing information on how to reduce its adverse impacts and how best to manage it. The Network already has over 100 members from 25 countries.

IPaWN is an initiative of the Tropical and Sub-tropical Weed Research Unit (TSWRU), at The University of Queensland, Australia. With research involvement in three continents, TSWRU has started to develop information packages on parthenium weed and send it out to more than 70 countries that have, or are at threat of getting, this menace.

Mission: IPaWN's mission is to coordinate and disseminate information regarding the global invasion of parthenium weed, its management, and its diverse impacts on agro-ecosystems, the environment and human and animal health.

Goal: The creation of an online community to support international collaboration on the parthenium weed problem and its management.

Objectives:

- To facilitate the exchange of information about parthenium weed and its management.
- To link different regional working groups, institutions and other stakeholders with an interest in parthenium weed and its management.
- To document new out-breaks of the weed and to recommend strategies to reduce further spread in those regions.
- To identify topics deserving of new research and to provide access to on-line resources such as identification kits, best practice documents, etc.

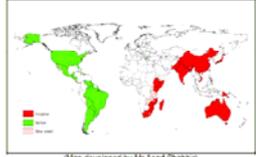
Meetings: IPaWN meetings are likely to be timetabled to coincide with major international conferences such as the International Weed Science Congress, the Asian-Pacific Weed Science Conference and the International Parthenium Weed Management Conference.

International e-newsletter: It was decided that the Australian Parthenium Weed Research Group and the Pakistan Parthenium Action Research Group would produce a joint electronic newsletter entitled 'International Parthenium News'. Hence this is the first issue of International Parthenium News.

Worldwide Distribution of Parthenium Weed

Parthenium weed has now invaded more than 20 countries around the globe (Figure 1), including five continents and numerous islands. Recent developments have indicated that African countries are at high risk of invasion. Parthenium weed is now also present in eight provinces of China and spreading at an alarming rate. The areas that are now most under threat are south east Asia, the Pacific and western Africa.

Figure 1. Known worldwide distribution of parthenium weed by country, as at November 2009.



(Map developed by Mr Asad Shabbir)

'International Parthenium News' newsletter. The first issue of the newsletter has been published and distributed.

For further information, please contact the Network and Newsletter. The contacts are Professor Steve Adkins and Mr. Asad Shabbir (asad@uq.edu.au), TSWRU, School of Land, Crop and Food Science, The University of Queensland, St Lucia, 4072, QLD. Australia.

C) Seed Banks:

The species composition and the dynamics of the soil seed bank during a 15 year period of active weed management was studied at two sites (Moolayember Creek and Clermont) central Queensland. The 2008 Autumn samples collected from both sites show that reduced but still large populations of Parthenium weed existed at both sites. Management had reduced seed banks from c. 30,000 to c. 5,000 seeds per m² in 8 years but no further reductions had occurred within the last 8 years. The reduced Parthenium weed seed bank was replaced with those of new annual weeds. Very little improvement in the size of the seed bank of palatable grasses occurred.

D) Community Biodiversity:

The impact of Parthenium weed upon community biodiversity and composition, both within the above-ground and within the soil seed bank have been assessed at a pastoral site near Kilcoy, southern-central Queensland in 2008 and 2009. The summer study of 2008/09 revealed that the community biodiversity (as measured by the Shannon index) had been lowered by only moderate infestations of Parthenium weed (2 plants per m²). Of all species, it was the broadleaf plants that were most affected by the presence of Parthenium weed.

2) Competitive displacement of Parthenium weed

A) Displacement potential:

Twenty selected species were grown individually with Parthenium weed, in different densities and in different combinations for 40 days in pots in a glasshouse. After this time the above ground dry biomass was determined and, using the experimental design of Rejmanek *et al.* (1989) and the reciprocal yield model analysis of Spitters (1983), a competitive index (CI) value was determined for each plant species against Parthenium weed. Twelve plant species were found to have a low competitive ability (competitive indices < 1.0) while 8 were more competitive (> 1.0). On two 1,800 m² trial sites in central Queensland evenly infested with Parthenium weed, a five times replicated field trial was run. The results showed five species (three introduced and two native) to be competitive against Parthenium weed at both sites.

B) Climate Change Trials:

A series of trials was conducted, using two controlled environment chambers, to assess the effect of elevated CO₂ on the competition of displacement plants with Parthenium weed. The trials were undertaken under two CO₂ conditions; those of today's atmosphere (380 ppmv) and those predicted for 2050 (550 ppmv CO₂). The competitive ability of purple pigeon grass and bull Mitchell grass was reduced under the 2050 CO₂ condition as compared to the present day indicating that their competitive ability against Parthenium weed will reduce in the future.

C) Biological Control Agents and Competition – Glass-house study

A glasshouse experiment was set up to quantify the combined effect of a biological control agent (*Zygogramma bicolorata*) on the competitive ability of two pasture plant species (bull Mitchell grass and butterfly pea) against Parthenium weed. Both species became more competitive in the presence of the biological control agent.

D) Biological Control Agents and Competition – Field Study

In a field trial it was shown that buffel grass could suppress the growth of Parthenium weed by as much as 37%. When a suite of natural biological agents was present the growth of Parthenium weed could be suppressed by 26%. When the two were present together the two could reduce growth by 47%. It was also noticed that when both agents were present together, the biomasses of the competitive plant increased.

3) Weed seed spread and kill

A) Seeds on Vehicles

A number of vehicles that had been travelling into rural areas were cleaned of all mud upon return to the city. The mud samples from different parts of the vehicles were kept separate, and spread onto sterile soil layers in trays in a glasshouse.

Following wetting to field capacity seedlings emerging and seedling identification were undertaken for 30 weeks. A mean of 267 viable weed seeds were found on each vehicle and this includes both dicot and monocot species. Most seeds were to be found under the vehicle and on the wheel arches. A second source of seeds was in the vehicle cabin.

B) The efficacy of a hand held spray unit in removing mud from a vehicle

The efficacy of washing vehicles using hand held spray units was assessed using different kinds of mud. During each study a vehicle was for either 10, 15 or 20 minutes. It was observed that most mud could be removed from vehicles but washing had to occur for at least 20 minutes of washing. When the mud was of a lighter texture, the washing time could be reduced.

C) Seed Kill

Seed of 6 weed species, with differing sizes and shapes, were selected for study and air dried. Parthenium weed seeds (small) were all killed by 125°C applied for 1 hour. However, when partially imbibed (or fully imbibed) seeds were studied, they were killed by 75°C applied for 1 hour.

It was found that the fruit layer(s) did not protect Parthenium weed seed from the effect of heat, while a mud coat on the seed did provide some degree of protection from the heat.

New Book on Glyphosate Resistance in Crops and Weeds

Vijay Nandula (VNandula@drec.msstate.edu) sent the following item, announcing a forthcoming book on Glyphosate Resistance in Crops and Weeds, which should be of great interest to APWSS members.

Glyphosate Resistance in Crops and Weeds: History, Development, and Management

Vijay K. Nandula (Editor)

978-0-470-41031-8 • Hardcover • 344 pages • August 2010 • \$99.95

Presents the latest technology and strategies for managing glyphosate-resistant weeds

Glyphosate-resistant (GR) crop technology has revolutionized crop production in many parts of the world, offering such benefits as reduced fuel costs and improved soil conservation; however, GR weeds are becoming one of the most pressing problems in crop protection, threatening the sustainability of glyphosate and GR crop technology.

This book details the development of glyphosate resistance, offering interdisciplinary approaches for managing GR weeds and reducing their spread.

Glyphosate Resistance in Crops and Weeds features contributions from leading experts in the many disciplines needed to fully understand GR crops and weeds.

The authors have reviewed and analyzed all the latest research findings as well as the latest technologies developed to manage GR crops and weeds.

Coverage includes:

- Developmental processes of first and subsequent generations of GR crops
- Separate chapter on the economic impact of GR weeds
- Strategies for effectively managing glyphosate resistance
- Regional management issues surrounding GR weeds around the world
- Genetics and genomics of glyphosate resistance
- Methods of testing for glyphosate resistance

References guide readers to the primary literature for further investigation of individual topics. A compilation of commonly used terms in herbicide resistance and their definitions is also provided.

With the productivity and health of croplands threatened around the world by GR weeds, this review of glyphosate resistance is essential for agricultural chemists, weed scientists, plant scientists, crop consultants, and agronomists.

VIJAY K. NANDULA, PhD, is an assistant research professor at Mississippi State University. His current research focuses on monitoring, documenting, and characterizing the herbicide-resistant weed populations in Mississippi, centering on their level of resistance, mechanisms, multiple resistance, and biology.

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Diquat-Hydrogel: Update on recent research for the control of submerged aquatics

Peter Harper (peter@bettersafe.com.au), from Bettersafe Pest & Weed Management, the distributor of Hydrogel for submerged aquatic weed management in Australia, sent the following information.

Hydrogel® – a Winner for the Environment

Bettersafe Pest & Weed Management, in partnership with Dr. Nimal Chandrasena (Nimal.Chandrasena@alsglobal.com), Principal Consultant at Australian Laboratory Services (ALS Water Sciences Group (former Ecowise Environmental, Australia) has been engaged in research, developing Diquat-Hydrogel for submerged aquatic plant control.

In 2009, 'Hydrogel' was the Episode Winner and winner of People's Choice on the Australian ABC TV's New Inventors Programme. This was in recognition of the potential environmental benefit that can be achieved with the use of Hydrogel for aquatic weed management.

The use of Hydrogel, essentially, an inert substance, Guar Gum), decreases the amount of herbicide - Diquat (Reglone®), required in water to manage submerged aquatics.

The gel droplets sink rapidly on to submerged plant beds, releasing Diquat at in the vicinity of target plants. This allows cost-effective 'spot treatments', targeting both containment of large infestations of an undesirable species, and eradication of small patches or colonies.

Research to optimise the effectiveness of Hydrogel treatments to manage a variety of submerged aquatic species is continuing in both glasshouse aquaria and mesocosms, and in demonstration trials, based in NSW and Queensland.

Hydrogel® provided cost-effective control of large infestations of submerged aquatics - Lagarosiphon (*Lagarosiphon major*), Egeria (*Egeria densa*) and Hornwort (*Ceratophyllum demersum*) in drainage canal, wetlands and large lakes.

All three species are susceptible to Diquat and combined with Hydrogel, good to excellent control is guaranteed.

Recent trials in shallow ponds indicate that dense infestations Hydrilla [*Hydrilla verticillata* (L. f.) Royle] infestations could also be reduced by approximately 50-70% with one or two treatments. However, in deeper and larger lakes, Hydrilla control has been variable.

Among the main factors that reduce the effectiveness is the wind-generated turbulence in large lakes, which leads to the possible removal of the active herbicide dose from the treatment zone.

In relatively smaller lakes and ponds of various sizes and depths, Hydrogel® treatments are extremely reliable, and can cost effectively control infestations of the following species:

- Pondweeds (i.e. Curly Pondweed - *Potamogeton crispus*; Sago Pondweed - *P. pectinatus*; Claspingleaf Pondweed – *P. perfoliatus*; Red Pondweed - *P. cheesmani*)
- *Myaca fluviatilis* (*Myaca*)
- Thin-leaves Naiad (*Najas tenuifolia*)
- Floating mats of filamentous green algae, and
- Charophytes – *Chara* and *Nitella*

Analyses of water samples from treated locations indicate that Diquat residues rapidly dissipate from treated waterbodies after Hydrogel® treatments. This fact, combined with the reliability of the treatments and reduced herbicide loads due to targeted treatments, make Hydrogel® an important tool for managing nuisance growth of aquatic plants.

Clients have benefited from savings in cost, increased confidence in treatment outcomes, and reduced risks of undesirable impacts on non-target species and aquatic ecosystems.



Peter Harper treating a recreational pond almost fully infested with two *Potamogeton* species and covered in filamentous green algal scum.



The same ponds after 2 months. Control of *Potamogeton* species and algae was 100%.



Applying Hydrogel from a boat to control submerged beds of *Hydrilla*; Control of *Hydrilla* from a single treatment was variable

There is further scope for expansion of using the Hydrogel® technique to control submerged aquatic weeds, and protect precious waterways.

The method is versatile, and experiments are underway in 2010-11, aiming to test other aquatic herbicides, like Bi-Active Glyphosate, Imazamox, Penoxulam, Flumioxazin and Bispyribac-sodium.

These may broaden the spectrum of aquatic species that can be more cost-effectively managed.

Opportunities are also there to optimise treatment regimes - either by dose adjustments, or changing the frequency of treatments in a given waterbody to maximise benefits.

For more information, please visit the Website: www.Hydrogel.com.au

The ABC TV's winning episode is available for viewing by clicking on the following link:

www.abc.net.au/tv/newinventors/txt/s2494979.htm

For additional information and research partnerships, please contact:

Peter Harper (peter@bettersafe.com.au) from Bettersafe Pest & Weed Management, or Dr. Nimal Chandrasena (Nimal.Chandrasena@alsglobal.com).

News from India

The following are excerpts from activities of the Directorate of Weed Science Research (DWSR), Jabalpur, India, reported by Partha Choudhury (parthatinku@yahoo.com), Senior Scientist of DWSR.

New Director General of ICAR

Dr. Sabbana Ayyappan becomes the new Secretary, Department of Agricultural Research and Education and Director General, Indian Council of Agricultural Research. The unique combination of strong research aptitude and dexterity in research management led Dr. Ayyappan to hold key positions in ICAR.

He joined as Scientist in 1978 at Central Inland Fisheries Research Institute, Barrackpore. In 1996, at a young age of only 41 years, he became Director of Central Institute of Freshwater Aquaculture, Bhubaneswar.

Subsequently, in 2000, Dr. Ayyappan was appointed as the Director of Central Institute of Fisheries Education, in Mumbai.

In 2002, he became Deputy Director General (Fisheries) at ICAR, New Delhi till his present assignment.



Dr. Subbana Ayyappan

A national consultation on weed utilization

The Directorate organized a national level consultation programme on October 20-21, 2009. The theme of the consultation was "Utilization of weed plants for useful purposes".

Under the main theme, there were following sub-themes on which deliberations were made:

1. Utilization of weed plants for soil and water conservation;
2. Utilization of weed plants for alternative livelihood opportunities;
3. Utilization of weed plants for industrial uses; and
4. Utilization of weed plants for strengthening research.

About 50 delegates from different research institutes and universities all over India attended this national consultation.

Dr. A.K. Singh, Deputy Director General (NRM), ICAR, New Delhi, the Chief Guest of this programme explained the utility of this programme by citing some examples on the use of weeds.

There were four technical sessions covering various themes with 16 invited and 20 contributory presentations besides the Plenary Session.

After the Plenary Session, chaired by Dr. Gautam Kallu, Vice Chancellor, JNKVV, Jabalpur and co-chaired by Dr. Jay G. Varshney, Director, DWSR, Jabalpur a series of recommendations were evolved.

Dr. Sushil Kumar coordinated the programme.

XIX Biennial Workshop of DWSR Coordinating Centres

The XIX Biennial Workshop of Coordinating Centres of the Directorate of Weed Science Research was held at Indira Gandhi Krishi Viswavidyalaya (IGKV), Raipur, Chhattisgarh on February 23-24, 2010.

Shri P. Joy Oomen, Chief Secretary, Government of Chhattisgarh inaugurated the function. Dr. M. P. Pandey, Vice-Chancellor, IGKV, Raipur chaired the inaugural session.

- Dr. Jay G. Varshney, Director, DWSR made it clear in his address that creation of awareness on weed control among the farmers is essential to solve food security problems in the country. He emphasised the need to improve the management of invasive alien weeds and weedy rice, weed management under rainfed agriculture and under climate change.
- Sh. K.S. Iyengar, Joint Secretary, NCPH, Ministry of Agriculture, Govt. of India and special guest of this programme mentioned the essence of new technology. Dr. M. P. Pandey emphasized on research in weed management under rainfed rice ecosystems.
- The Chief Guest, Shri Oommen in his address viewed that there is need for developing eco-friendly ways of weed management. The solution to problems need to be effectively communicated to the tribal farmers who are moving forward to adopt new technology and organized agriculture.
- The workshop was spread over three technical sessions and the salient research findings and recommendations of each technical session were discussed in plenary session.
- Dr. M. P. Pandey, Chairman of the sessions, suggested to initiate studies on exploitation of genetic variability on weed suppression and also to work on GM approach.
- Dr D. P. Singh, Co-chairman of the session expressed his satisfaction on new research proposals particularly on the effect of climate change and herbicide residues in the food chain.

Biennial Conference of Indian Society of Weed Science

The Biennial Conference of Indian Society of Weed Science (ISWS) was held at IGKVV, Raipur, CG on 25th-26th Feb, 2010. The theme of Biennial Conference was "Recent advances in weed science research- 2010".

Shri Chandrashekhar Sahu, Honorable Minister of Agriculture, Veterinary, Fishery and Labour in the State of Chhattisgarh inaugurated the conference.

Dr. M.P. Pandey, Vice-Chancellor, IGKV, Raipur was the Chairman of the function. Dr. Jay G. Varshney, Director, DWSR and President of ISWS, Jabalpur, emphasized the need for strategic management of invasive weeds in his presidential address. Dr. Varshney cautioned the participants that if proper weed management strategies could not be developed in time, agriculture in the country would suffer.

There were four technical sessions on various sub themes, two concurrent poster sessions, a Scientist-Extension officers-Farmer Interface meeting and a plenary session during the conference. There were 274 delegates. A total of 13 lead papers and 3 oral papers and 162 posters were presented in the sessions.

The two-days of discussions focused on the causes of aggravated weed problem and their control measures. The import of grains and improper weed management practiced by the farmers are favouring weeds.

Climate change will also pose great threat, as the higher concentration of CO₂ will favour the growth of weeds. Adoption of phytosanitary measures, transgenic technology, safer weed management practices, and remote sensing technology may help the farming community to combat the weed menace.

National consultation on biological control of weeds

A consultation programme was organized on 17-18 March 2010 at this nodal centre for weed research in India with the view of encouraging the interactions among the scientists and subject matter specialists in the field of biological control of weeds. Renowned entomologists, and plant pathologists, having vast experience in the field of biological control of weeds attended the programme.

There were three technical sessions over two days.

At the onset of this programme, Dr. C.D. Mayee a renowned plant pathologist and the Chairman of ASRB was felicitated and welcomed by Dr. Jay G. Varshney, Director, DWSR.

- In his inaugural address, as Chief Guest, Dr. Mayee, discussed the importance of weed management for food security. At the same time he was also concerned about biodiversity. He advocated the use of certified seed to avoid the weed contamination. According to him the understanding on the mechanism of herbicide tolerance within weeds can well be utilized for further research to combat the weed menace.
- In the Technical Session – I on "Policy issues relating to biological control of weeds", Dr. Jay G. Varshney, Director, DWSR presented his lecture on "Challenges in weed science". He reviewed the importance of weed management in maintaining the quality and quantity of yield of the crops. One of the key points he addressed was the invasion of alien weeds, their sources and the means of their management.
- In this context he explained the successful progress of National Invasive Weed Surveillance Programme being run by the Directorate in 10 states of the country. Dr. Varshney also emphasized on weedy rice as the future threat in rice production and emphasized on its control right at this early stage.
- Mr. Selvaraj, GM, NABARD, had his presentation on the "Role of NABARD in the microfinance for agriculture and related small scale industries".

- Dr. C. T. Abraham, Professor and PI, DWSR Centre, KAU, Kerala; Dr. C. Chinnusamy, Professor and PI, DWSR Centre, TNAU, Tamil Nadu; Dr. C. Kannan, Senior Scientist, DWSR, Jabalpur; Dr Shreeramkumar, Senior Scientist, NBAII, Bangalore; Dr. Bhumannaver, Principal Scientist, NBAII, Bangalore and Dr. Sushil Kumar, Senior Scientist, DWSR, Jabalpur, shared their experiences on the effective uses of different microorganisms to control weeds.
- Dr. R.J.Rabindra, Director, NBAII explained different policy issues and strategies in classical biological control of weeds in India.
- Dr. C. Kannan coordinated the programme.

News from New Zealand

The following information was obtained from the New Zealand Plant Protection Society (NZPPS) Newsletter forwarded by Dr. Anis Rahman.

An Illustrated Guide to Common Weeds of New Zealand Third Edition

Ian Popay, Paul Champion, Trevor James (2010)

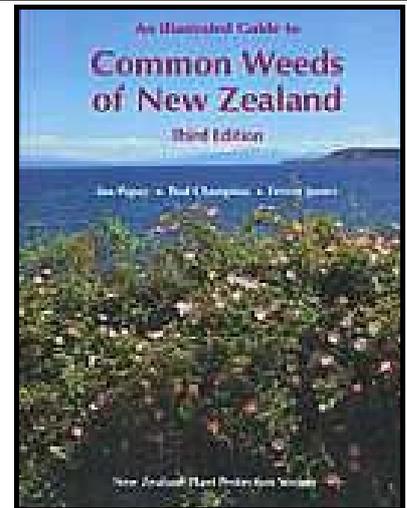
ISBN 978-0-473-16285-6

This popular and indispensable guide to the identification of weeds in New Zealand is now in its third edition.

The 2010 edition is still written for a wide audience, with simple text and a user-friendly approach, but at 448 pages it is bigger and better than ever.

Covering just over 600 species, and with more than 1,500 stunning new photographs, this guide is an excellent aid to identification.

RRP \$55.00. Order from [Manaaki Whenua Press](#).



NZPPS investment in organics publication pays off – supporting science communication

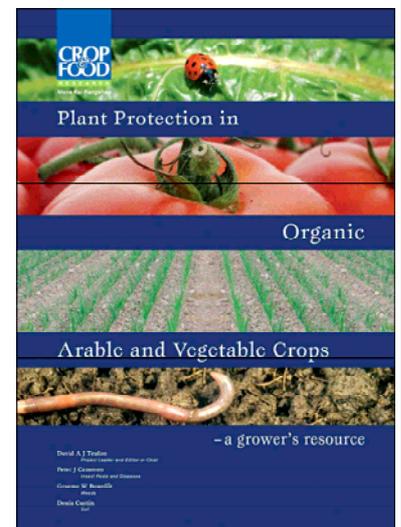
One of the roles of the NZPPS is to encourage the exchange of information on bio-protection. To achieve this, the society makes funds available to support communication and publishing initiatives. The results of these investments have been so successful that the society is keen to support more ventures. A recent investment in a book on plant protection in New Zealand-grown organic arable and vegetable crops has now paid off.

A number of years ago, the society lent \$10,000 to Plant & Food Research (then Crop & Food Research) to support the production of a book that would plug a gap in the information available on the management of pests, weeds and diseases in organic crops.

Funds were also contributed by the Ministry for the Environment's SMF fund, FAR, HortNZ and the NZ Flour Millers Association Inc. as well as a range of industry organisations.

The project resulted in the first science-based reference book for the organics industry. Book sales have made it possible to pay back the NZPPS loan.

Importantly, the resource also provided valuable information for growers moving towards a more integrated approach. It describes weed, pest and disease management of eight arable crops and nine vegetable crops, including asparagus, carrots and potatoes.



The 240-page book is available from NZ Plant & Food Research (ph 03 325 6400).

“The loan made it possible for us to commit to producing the book, which we knew would become a valuable resource. Sales have enabled us to pay back the loan, so the arrangement has been a win-win for the authors, the Society, growers and researchers who can now access information that was previously scattered across numerous resources,” said Dr David Teulon, Portfolio Manager Bioprotection, Plant & Food Research and editor of the book.

News from Pakistan

Professor Gul Hassan (hassanpk_2000pk@yahoo.com), from the Peshawar Agricultural University, Pakistan, provided the following brief report.

DR. SAIMA HASHIM EARNS PHD DEGREE FROM JAPAN

Dr. Saima Hashim, Assistant Professor, Department of Weed Science, KPK Agricultural University, Peshawar Pakistan has recently returned from the University of Tsukuba, Japan, after completion of her PhD degree under MEXT (Japanese Government) fellowship.

Indeed, this is an honour for the Department of Weed Science to have a third PhD from the advanced countries. University of Tsukuba is rated among the Top Ten Universities of Japan. Dr. Saima's PhD supervisor Prof. Dr. Hiroshi Matsumoto, is a world renowned Herbicide Physiologist and he has been awarded with life-time Honorary Membership by WSSA.

Dr. Saima's PhD Thesis Research was on the "Mechanism of trifluralin resistance in *Alopecurus aequalis*".

For the first time, efforts were made to elucidate the mechanism of resistance to trifluralin in this weed species. The Resistance was considered to be mainly due to the mutation in alpha-tubulin genes.

The newly identified nucleotide sequences of these tubulin genes have been submitted to the DNA Data Bank of Japan (AB514115 - AB514118) with the name of Dr. Saima Hashim.

She is the pioneer scientist in Pakistan to have gained expertise in this key area of herbicide resistance and she is enthusiastic to address the resistance related farmers' problems in Pakistan.

News about Forthcoming Conferences

11-14 July 2010

50th Annual Meeting of the Aquatic Plant Management Society,
Hyatt Regency Coconut Point; Bonita Springs, Florida, USA.

For more information, contact the organising committee via the Web Site
(<http://www.apms.org/2010/2010.htm>).

12-15 July 2010

15th European Weed Research Society (EWRS) Symposium,
Kaposvar, Hungary. Contact: Secretariat, ewrs@asszistencia.hu or
www.asszistencia.hu/ewrs.

10-12 August 2010

New Zealand Plant Protection Society Conference,
New Plymouth, NEW ZEALAND.

Info: J. Swaminathan, NZPPS, Pri. Bag 4749, Christchurch, NEW ZEALAND.
Fax: 64-3-325-9946. secretary@nzpps.org. <http://tinyurl.com/ygtvzcc>.

16-20 August 2010

9th International Symposium on Adjuvants for Agrochemicals,
Freising-Weihenstephan, GERMANY.

Info: <http://tinyurl.com/yd5beya>.

14-17 September 2010

**6th Neobiota Conference, "Biological Invasions in a Changing World -
from Science to Management,"**
Copenhagen, DENMARK

Info: J. Kollmann, JOK@life.ku.dk. <http://cis.danbif.dk/neobiota2010>.

26-30 September 2010

17th Australasian Weeds Conference
Christchurch, NZ.

Contact: The Conference Secretariat, Professional Development Group, PO BOX
84, Lincoln University, Canterbury, 7647, NZ, or www.17awc.org.

October 2010

**8th International Workshop on Biological Control and Management of
Chromolaena odorata and other Eupatorieae and Workshop on
Management of *Parthenium hysterophorus*.**
Nairobi, Kenya.

Contact: C. Zachariades, ARC-PPRI, Private Bag X6006, Hilton, 3245, South
Africa. ZachariadesC@arc.agric.za.

Editor's Column

I am hoping that this Newsletter brings you useful information on a range of activities.

Yet, some of our Member countries are not well represented in the news, because Country Representatives have not sent any information, despite repeated requests.

As we welcome our new President, it seems that some aspects of APWSS functioning need re-thinking.

Although I am a busy Consultant, without the luxuries of 'time-in-hand' and those of an academic life any more, I have accepted the job of being the General Secretary of the Society, at least for the short period of about 18 months. It will add to my workload, and I had to think hard, before accepting.

Now that I've done this Newsletter, I will be writing to Member Countries and Societies to nominate their proper Representative for our Society.

If anyone is willing to be the Newsletter Editor from now on, at least for 18 months– please nominate yourself!

I am thankful to those members and contributors to this Newsletter, who took the time and effort. It shows commitment of some individuals and some countries - to the APWSS cause.

We thank our Pakistan colleagues for holding our 22nd APWSS Conference, amidst unsettled security conditions in that part of the world. The dedication of the Local Organizing Committee appears to have carried our flag; this is a good example of a 'never-say-die', nothing is impossible attitude. We all should learn from the Pakistan effort!

In the meantime, Steve Adkins and a host of dedicated people are getting busy with preparations for the 23rd Conference, to be held in Cairns, Australia, in 2011.

As usual, I am requesting everybody to think about sharing information regarding weed science and related projects that you are involved with.

Also, kindly distribute the Newsletter as widely as possible, so that we promote collaboration among Weed Scientists particularly in the Asia-Pacific Region, and amongst our Industry Partners.

I look forward to receiving any feedback on the current Issue.

Thank you

Dr. Nimal Chandrasena

Newsletter Editor, APWSS

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