Asian-Pacific Weed Science Society

September 2018 NEWSLETTER Volume 8: Issue 2

MESSAGE FROM THE EDITOR

Dear Colleagues

I am pleased to bring out the second Newsletter of the APWSS for the Year 2018 in this month of September. As most of you are aware, as part of becoming the Editor of the Society, I have the responsibility of establishing a new Journal for the Society.

The need for the Journal has been felt for several years, particularly because the cost of publishing in the existing lead journals of Weed Science is considered unaffordable to Weed Scientists of most emerging economies and developing countries.

Nevertheless, this is a huge task, and needless to say, I have been busy. Here is a brief summary of progress with regard to the on-line Journal:

- We have settled on calling our Journal '**WEEDS'** with a by-line to qualify ownership (i.e. *Journal of the Asian Pacific Weed Science Society*).
- I've been investigating the best options for an 'open access' platform and having discussions with the service providers, overseas.
- We are now in the process of putting together a business case for approval by the Ex-Co. My favoured option, after a reasonably thorough investigation, is to have 'Scholastica' as the on-line platform for an annual subscription of US $ 1200 ($ monthly, US $ 99).
- The platform is managed from Chicago, USA, and has more than 600 journals and highly reputed societies as customers. Members are encourages to check the following Links:
  - **https://scholasticahq.com/browse-journals**
  - **https://scholasticahq.com/publishing-features**
- Contributed and peer-reviewed journal articles will cost about US $ 20-25 for individual submitting authors, with some exceptions for invited papers.
- We intend to peer review articles and papers and publish four issues of the journal per year, commencing in 2019.
- We are in the process of inviting and appointing a strong Editorial Board to maintain the high quality of peer review required.

Keep a lookout for Author Guidelines, Peer Review and other process related information.

On the behalf of APWSS, I thank the contributors from different countries for their involvement in this Newsletter with interesting news items.

My thanks also go to Dr. A. N. Rao, General Secretary, Dr. Khawar Jabran, Chairperson of the Young Weed Scientist Forum and Dr. Steve Adkins, Chairman of the Senior Advisory Council, for their support.

Contributions to future Newsletters are welcome from anyone.

We request again Country Representatives to send Country Reports and any other relevant information that we can share among the membership.

Dr. Nimal Chandrasena

1, Kawana Court, Bella Vista, NSW 2153, Australia.

nimal.chandrasena@gmail.com

MESSAGE FROM THE PRESIDENT

Dear APWSS Members

I thank our office bearers for their roles, commitment and energy to maintain our Society's profile and activities. I notice with great interest, the progress that has been made with regard to a new journal.

When the new Journal is launched, in 2019, it will surely lift our Society's profile further, both globally, and in the region. As the Editor has explained, the Journal's primary purpose is to allow our researchers to publish papers without incurring unaffordable journal publishing costs.

The 27th APWSS Conference will be held next year on September 3-6, 2019 in Kuching, Malaysia. The theme of 27th APWSS Conference is "***Weed Science for Sustainable Agriculture and Environment***".

As the Chairman of the Organising Committee, I would like to invite all of you to participate in the upcoming conference. The local organizing committee is now gearing up on the preparation of the Conference. The Conference Website is:

http://www.apwss2019.org/

Basic information such as fee, conference venue, subtopics of the programs regarding the conference and venue has been uploaded. A promotional video 'sneak peek' of our Conference venue is available on the website. The online registration process through the Conference website will be initiated soon.

Weed management is one of the critical issues in the current world of climate change. The weed pressure in the era of climate change is a significant threat to crop production, due to increased temperatures, rainfall shift, drought, flood, sea water intrusions and elevated CO2 levels associated with climate change.

Climate change may bring about a change in the weed flora of different ecosystems, which may affect the reproduction of weeds and weed propagule characteristics. Obtaining a better understanding of weed ecology and biology will help in better weed management. We anticipate that the interactions among conference attending weed scientists, academicians, policy makers, and industry players will result in evolving better weed management solutions.

In line with the Agriculture 4.0, new technologies such as internet of things (IoT), Big Data, use of robotic and automated sensor and advanced information technology need to be developed and incorporated in the weed management strategies.

The Conference will be held in East Malaysia in the city of Kuching. It is the capital of Sarawak and the largest city on the island of Borneo. Affectionately known as Malaysia's cat city, Kuching is famed for Bornean flora and fauna, its tasty Sarawakian dishes, as well as its rich history and diverse multi-racial culture. No matter if you are a foodie, nature lover or culture vulture, Kuching will undoubtedly be the best city to keep you occupied during your stay. We will keep you updated on the conference via our website.

With the assistance from the APWSS Ex-Co, we look forward to building an exciting and rewarding programme for all of you! We look forward to seeing you in 2019 at the 27th APWSS Conference in Kuching, Malaysia.

If anyone needs more details, please contact me directly.

Thank you.

Dr. Abdul Shukor Juraimi

Chairman of the 27th Asian-Pacific Weed Science Society Conference (APWSS 2019)
President, APWSS

ashukorjuraimi@gmail.com

MESSAGE FROM THE GENERAL SECRETARY

Dear Colleagues

I am pleased that Dr. Nimal, Chief Editor of the APWSS has continued to make time to put together another useful Newsletter.

Despite being busy with our own jobs, both of us are trying hard to make our Society more relevant to Members. This task is proving difficult, despite the fact that we live in an era of mobile technology and the internet, which is supposed to make communications easier. Perhaps, we are numbed by information overload.

We seek your active participation in the Society's activities, so that we can sustain the Society and reap benefits from the professional and social interactions promoted by it.

We are continually updating our Website. The proceedings of most of the previous APWSS Conferences are worthwhile reading for our junior scientists, and are available for downloading from the Website: **http://apwss.org/index.htm**

I have provided several items of interest in this Newsletter for Members to read and be aware of. I am particularly keen to promote the 50th Anniversary Jubilee Conference of the Indian

Society for Weed Science (ISWS), which is closely affiliated with the APWSS. I invite anyone who wants to attend to get registered. Please see details elsewhere in the Newsletter.

Two other matters, which are worthy of repeating are related to the New APWSS Constitution and the Executive Committee. With the Editor's permission, I would like to retain the following information for the benefit of our new Members:

APWSS NEW CONSTITUTION

I wish to remind Members again that we now have a new 'interim' Constitution, which was adopted by the Ex-Co in 2017. I encourage all Members to read it on the Website and provide any feedback you may have. It is still not too late!

Please note that the Society will move to ratify and adopt the New Constitution at the forthcoming Kuching Conference, in 2019.

- **https://apwss.org/apwss-membership.htm**
- **https://apwss.org/index.htm**

APWSS EXECUTIVE COMMITTEE:

The APWSS Ex-Co are:

President	Dr. Abdul Shukor Juraimi
Vice President	Dr. Chanya Maneechote
General Secretary	Dr. A. N. Rao
Editor-in-Chief	Dr. Nimal Chandrasena
Treasurer	Dr. Michael Renton
Past President	Dr. Hiroshi Matsumoto
Chair, Senior Advisory Council	Dr. Steve Adkins

Details of Country Representatives, who form the Ex-Co are available on our Website. However, these will need updating as some representatives have changed with time. I have written to the Member Countries to nominate their Representatives.

I also encourage all of the APWSS Members, especially the younger Weed Scientists to become the Life Members of the APWSS and strengthen the Society – going forward. If anyone – Members or Readers - need more information about the Society and its activities, please feel free to directly contact me.

Thank You.

Dr. Adusumilli Narayana Rao (A. N. Rao)

Consultant, ICRISAT Development Center (IDC) & International Rice Research Institute (IRRI), ICRISAT, Patancheru, Hyderabad- 502324, India, email: **anraojaya1@gmail.com**

APWSS 'YOUNG WEED SCIENTISTS FORUM' – AN UPDATE

Dr. Khawar Jabran

As I said in the previous Newsletter, we now have a 'Young Weed Scientist Forum' under the auspices of the Society.

We are still in early stages of establishing a vibrant forum. Reminding our Members and readers again - the purpose is to give a special 'voice' to the young Weed Scientists of the region and create opportunities for professional grooming in Weed Science, training and expressing themselves. It is also very much a part of succession planning for the Society's future.

Suggested and proposed by Dr, Nimal, accepted by the APWSS Ex-Co, and then, endorsed by the APWSS General Body in 2017 at Kyoto, the Forum is now written into the New APWSS Constitution.

I am privileged to have been asked by Dr. Nimal to be the Forum's First Chairperson, an honour, I readily accepted. We are now in a phase of recruiting Young Weed Scientists to be part of this new effort and in formulating the Forum and its intended activities.

Needless to say, we will benefit greatly from the guidance of the senior members in the Society, particularly, the Senior Advisory Council and the Ex-Co. The more participants we have, the more vibrant, the Forum will be.

The following is a brief summary of the objectives and an anticipated future program of 'Young Weed Scientists Forum'.

Objectives

- Provide APWSS's Young Weed-Scientists a Forum, through which they can easily communicate with each other, co-ordinate any activities, exchange information, and learn about future opportunities.
- Arrange special Training Programs for the Young Weed Scientists to enhance their scientific thinking and approach.
- Increase linkages among young and senior Weed Scientists and facilitate young Weed-Scientists obtaining assistance from Seniors to strengthen any aspect of their professional life (i.e. thesis writing, research proposals, or improving research manuscripts).
- Arrange activities, such as on-line lectures, and special sessions at future APWSS Conferences.

Future program

A number of activities are being planned that are in accordance with the objectives of Young Weed Scientists Forum of APWSS.

1) An important aspect is to have an on-line-space for the Young Weed Scientists Forum on the website of APWSS. This may take some time, but will be achieved with the assistance of our General Secretary, Dr. A. N. Rao, who looks after the Website.
2) I am proposing the establishment of social media pages for the Young Weed Scientists Forum. I intend to have a plan to make the platform, pages, and provide its details in the Newsletter soon. This will help to bring closer the Young Weed Scientists and increase coordination/cooperation between them. Also, this may serve as a place where they can post/ask/discuss their research and other related questions and receive response from fellows and senior colleagues.
3) The same on-line-space can then be used to convey messages to the Young Weed Scientists, such as those related to various scholarships/post-doctoral opportunities, jobs, etc. It will also be a linkage mechanism where Young Weed Scientist could benefit from linkage to the Seniors. We will also seek the guidance of our Seniors on moderation of discussions.
4) Following a suggestion from Dr. Nimal, I will be requesting the future APWSS Conferences to allocate a special time for hosting the APWSS Young Scientist Forum within the Conference programme. To initiate this new approach, we plan to request the Malaysian Conference Organizers of the 27th APWSS Conference to dedicate a full Plenary Session for the Young Weed-Scientists, possibly, on Day 2. This will allow some of the upcoming Young Scientists to demonstrate their research to the full Conference audience.
5) We are also likely to request a pre-Conference Workshop (2-3 h) to articulate a plan of action and recruit junior members to the Forum. Stay tuned.
6) For the Young Weed Scientists Forum, presentations are likely to be selected by a panel, based on merit and country representations.
7) With regard to publishing in the official APWSS Journal, when it is launched in 2019, I am moving to request our Ex-Co to consider waiving the fee for **one** article from our Young Weed Scientist Members (or a partial e.g., 25-50% waiver) per Calendar year.
8) Of course, this would require a clear definition of who would be classified as a "Young Weed Scientist". Your ideas are welcome on what might be a suitable cut-off age.

Young Weed Scientists - please stay tuned for your participation in upcoming APWSS conference in Malaysia, the special session for Young Weed Scientists at the Conference, travel awards, and other exciting activities!

If any Member needs more information and wants to get involved, please contact me directly.

Thank You.

Dr. Khawar Jabran

Assistant Professor, Faculty of Agriculture & Natural Sciences, Duzce University, Turkey.
khawarjabran@gmail.com; khawarjabran@duzce.edu.tr

APWSS SENIOR ADVISORY COUNCIL

During the 50th Anniversary 26th APWSS Conference in Kyoto, we established a Senior Advisory Council, primarily to retain Organizational traditions, memory and continuity and undertake specific strategic actions to promote the Society's vision and goals.

The Senior Advisory Council is comprised of five senior APWSS Members who have been individually, active members for more than 25 years continuous.

The Ex-Co proposed Dr. Steve Adkins to be the Chair of the First Council. The other four members of the Council are:

- Dr. Aurora Baltazar, Philippines
- Dr. Anis Rahman, New Zealand
- Dr. Baki Bin Bakar, Malaysia
- Dr. Prasanta Bhowmik, USA

The primary functions of the Senior Advisory Council are to:

1) Act as the overall custodian of organizational memory, and provide leadership in maintaining traditions and continuity. This includes providing guidance and advice to the Ex-Co on all matters related to the Society.
2) Participate, and/or undertake, by mutual agreement, in any activity that supports the objectives of the Society.
3) Provide leadership and drive forward agreed strategic actions that will consolidate APWSS's global position. This includes international liaison and engagement with other Societies on any matter related to Weed Science.
4) Undertake and lead any strategic action aimed at promoting the achievement of the Society's goals and objectives across the Asian-Pacific region and other regions. This would include assisting other countries, particularly affiliated societies in promoting effective weed management through training courses, workshops, special symposia, or by the production of publications and undertaking special commissions.
5) Regularly receive and evaluate information on APWSS activities from the Ex-Co and provide feedback for any improvements if required.
6) Undertake tasks assigned by the Ex-Co, particularly with respect of identifying individuals whose services are to be recognized (i.e. Special Recognition Awards; Life-time Achievement awards).
7) Participate at the biennial Executive Committee meetings or any other meetings, as deemed necessary to support the achievement of Societal objectives and goals.

The five members of the Senior Advisory Council have full voting rights on any matter for which a majority consensus is sought by the Ex-Co.

Please note that Dr. Steve Adkins will provide a fuller update on the activities he has been undertaking on behalf of the Senior Advisory Council and how he sees this new role in the next Newsletter. Please contact Steve Adkins if any member needs further clarifications; Steve's e-mail: **s.adkins@uq.edu.au**)

6TH CONFERENCE OF WEED SCIENCE SOCIETY OF BANGLADESH (WSSB), 2018

(**by Dr. A.N. Rao**, **anraojaya1@gmail.com**)

The 6th Conference of Weed Science Society of Bangladesh (WSSB) was held at Bangladesh Rice Research Institute (BRRI) in Gazipur on 12 May 2018. The theme of the conference was "*Weed management in Bangladesh- Present status and future needs*".

- Dr. Md Giash Uddin Mian, Vice-Chancellor of BSMRAU was the chief guest.
- Dr. Abul Kalam Azad, Director General of BARI, Dr. Md Ansar Ali, Director (Administration and Common Service) of BRRI, Dr. F H Ansarey, Managing Director and Chief Executive Officer of ACI Ltd, participated as invited special guests.
- Dr. Md Khairul Alam Bhuiyan, WSSB General Secretary and Senior Scientific Officer of BRRI Agronomy Division, presented the keynote address.
- At this Conference, 19 scientific papers were presented, discussing how crops yields could be increased significantly with proper weed management, using integrated approaches.
- Discussions were also held on developing innovative, economic and eco-friendly weed management technologies and approaches to address challenges of sustainable agriculture.
- The Conference suggested that, in the future, more emphasis should be given to mechanical and biological weed control.
- Researchers suggested the adoption of low cost weed control measures to increase economic gain, and application of herbicides at the right time and doses.

- Deliberations at the Conference also mapped out the future research program for developing eco-friendly and sustainable weed management practices in Bangladesh, to attain sustainable food production and development goals in the country.

Information source:
http://en.prothomalo.com/economy/news/175513/Weed-management-to-boost-food-production-by-22pc

CELEBRATING 50 YEARS OF INDIAN SOCIETY OF WEED SCIENCE (ISWS) – THE GOLDEN JUBILEE INTERNATIONAL CONFERENCE, NOV 2018

(**by Dr. A.N. Rao**, **anraojaya1@gmail.com**)

The Indian Society of Weed Science (ISWS) (http://isws.org.in/), a non-profit, professional society, promotes research, education, and extension outreach activities related to weeds; provides science-based information to the public and policy makers; create awareness of weeds and their impacts on managed and natural ecosystems in the country.

A bit of History

ISWS was established in 1968. Dr. R.S. Choudhry (Varansi, Uttar Pradesh) and Dr. M.K. Moolani (Hisar, Haryana) were the first President and Secretary, respectively, of ISWS. Dr. M. K. Moolani, Dr. V.S. Mani and Dr. H. R. Arakari, were pioneers who contributed towards the early development of Weed Science in India. The Head Quarters of the Society was firstly, in Hisar (1969-1980 and 1992-2005), and then, Bangalore (1980-1992), prior to moving to a permanent location at the Directorate of Weed Science Research (DWSR; formally, National Research Centre for Weed Science, which was established in 1989) at Jabalpur, Madhya Pradesh. The official Logo of the society was designed by Dr. Bibhas Ray in 1977, the then Chief Agronomist of Farm Chemical Ltd, New Delhi.

The Society has been publishing the '*Indian Journal of Weed Science*' (Quarterly) from 1969 (**http://isws.org.in/IJWSn/Journal.aspx**) and ISWS Newsletters (six monthly).

ISWS was affiliated to the Asian Pacific Weed Science Society in 1973. Indian Weed Scientists are active participants of all the APWSS conferences. During half century of its existence, the ISWS has organized several national symposia, biennial conferences and workshops, on several themes and issues of Weed Science and Weed Management, in different parts of the country.

ISWS has organized the 8th APWSS Conference at Bengaluru in 1981 and the more recent, 25th APWSS Conference ('Silver Jubilee' Conference), at Hyderabad in 2015.

Celebrating its 50 years journey, ISWS is now in the process of organizing a memorable ISWS Golden Jubilee International Conference, to be held during 21-24 November, 2018.

The venue is the ICAR - Directorate of Weed Research (DWR), at Jabalpur, INDIA. The theme of the conference is: *Weeds and Society - Challenges and Opportunities*.

Sub-themes of the conference include: Weed biology, ecology and climate change; Weed management in rice-based cropping system; Sustainable weed management in cereals, pulses, oil seed crops, commercial crops, fibre and fodder crops; Weed management in rainfed agriculture; Weed management in fruits, vegetable, medicinal, spices, floriculture crops and landscape horticulture; Management of problematic weeds in crops and non-crops situations; Non-chemical weed management including biological control; Herbicide resistance in weeds and herbicide tolerant crops; Herbicide residues, monitoring, mitigation and effect on non-target organisms; New herbicides, and low dose herbicides, including nano-herbicides, herbicide compatibility with other agro inputs

Other subjects include: Socio-economic implications, improving profitability of farming by new techniques, weed utilization and adoption and Weed threats to plant biodiversity in forests, wasteland and aquatic ecosystem.

The programme of the ISWS Golden Jubilee International Conference includes plenary and lead lectures by invited experts, selected oral and poster presentations, exhibitions, field visits and excursions. Satellite symposia are planned on:

i. Invasive weeds and climate change;
ii. Herbicide resistance in weeds and herbicide tolerant crops;
iii. Emerging challenges and opportunities for education and research in weed science.

The ISWS Golden Jubilee Conference will provide an excellent opportunity to all stakeholders dealing with different aspects of weeds, to share their ideas and learn from international experiences.

Agricultural scientists, teachers, students, extension workers, administrators, policy makers, non-governmental organizations, executives from the herbicide industry, and those associated with environment and biodiversity conservation, are invited to participate in the Conference.

About 500 delegates are now expected to participate in this Conference. Dr. Jonathan Gressel (Israel), Dr. Jonathan Storkey (U.K.), Dr. Yoshiharu Fujii (Japan), Dr. K. Dhileepan (Australia), Dr. B. S. Chauhan (Australia), Dr. Mithila Jugulam (USA), Dr. Prasanta C. Bhowmik (USA), Dr. Amit Jhala (USA), Dr. Prashant Jha (USA) are a few of the invited international speakers at this international conference.

Registration for the ISWS Golden Jubilee Conference is open now. Details are given in: **http://isws.org.in/Conference/Doc/Conference_brochure_2018.pdf.**

A wide range of hotels with tariffs ranging from US$ 40 to 200 (INR 2000 to 12000) per person per day are available in the city within a distance of 10-15 km from the Conference venue.

Further details can also be obtained from: Dr. V. P. Singh, President, ISWS (Email: **singh.virenderpratap@gmail.com**) or from: Dr. Sushil Kumar, Organizing Secretary, Golden Jubilee International Conference (Email: iswsjbp@gmail.com, **sknrcws@gmail.com**.

A BRIEF LOOK AT WEED RESEARCH ACTIVITIES UNDERWAY IN THE TROPICAL AND SUB-TROPICAL WEED RESEARCH UNIT AT THE UNIVERSITY OF QUEENSLAND, AUSTRALIA

By: Ali Ahsan Bajwa, Nadeem Iqbal and Kusinara Wijayabandara

School of Agriculture and Food Science, The University of Queensland, Gatton, QLD, Australia

The Tropical and Sub-Tropical Weed Research Unit within the School of Agriculture and Food Sciences, at the University of Queensland, led by Professor Steve Adkins, has a long tradition in the training the young weed scientists of the Asia-Pacific region. The present focus of the group's research is dealing with some of the most problematic environmental weed species, including parthenium weed and mikania vine.

However, significant work is also underway on major agricultural weeds, such as wild oats, fireweed and pimelea. The group has been undertaking basic, as well as applied, research on seedbank dynamics, seed biology and dispersal, invasive traits, ecological impacts, competitive ability, allelopathy, biological control and integrated management of noxious weed species.

The key focus has been on understanding weed biology and ecology in relation to changing management practices and climate to enable sustainable management strategies to be developed. Over the last three decades, the group has attracted over 50 aspiring weed scientists from 20 countries from the Asia-Pacific region to undertake research on weeds that are a common threat to Australia and their home country. Here we present an overview of three projects that are being undertaken in our group now. The results of these studies provide pragmatic solutions to manage some of the most problematic weeds worldwide.

Looking into the future of an invasive giant, parthenium weed (*Parthenium hysterophorus* L.)

Ali Ahsan Bajwa
(Pakistan), PhD Scholar
(Final year)

Email: **a.bajwa@uq.edu.au**

Supervisory team:
Professor Steve Adkins and
Dr Bhagirath Chauhan

Invasive alien species have always been a serious problem for agriculture and the environment around the globe. Climate change has been suggested to be a major driver for the range expansion of many invasive plant species mainly through increasing their growth, reproductive potential and dispersal ability. However, studies investigating the impact of climate change elements on the biological behaviour of invasive weed species are lacking.

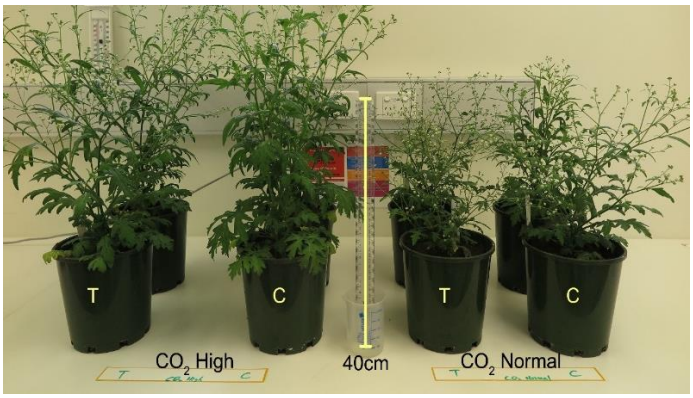
As part of my PhD project, I am studying the impact of two atmospheric carbon dioxide (CO_2) concentrations (ambient, 400 ppm and elevated, 700 ppm) and two soil moisture levels (100 and 50% of soil water holding capacity, WHC) on the growth and biomass production of two Australian parthenium weed biotypes (Clermont and Toogoolawah).

The two biotypes chosen for this study are known to have a contrasting invasion history, Clermont is highly invasive, while Toogoolawah is non-invasive.

The study is being conducted in two identical controlled environment growth chambers operating at 25/15°C day/night temperatures, 12/12-hour photoperiod and a 50% relative humidity with a continuous supply of CO_2. Results show Clermont to produce significantly more branches, leaves and flowers and attained greater height and biomass as compared with Toogoolawah, across all the moisture and CO_2 levels applied. This is consistent with its high invasiveness.

Elevated CO_2 significantly increased all measured parameters for both biotypes at both moisture levels as compared to the ambient CO_2 treatment. A 50% WHC reduced the parthenium weed growth and biomass production as compared with the 100% WHC treatment. However, the extent of decline was significantly less for Clermont than for Toogoolawah, and at the elevated CO_2 than at ambient CO_2 concentration.

In conclusion, future projected levels of atmospheric CO_2 and increasing droughts may enhance the growing and dispersal ability of parthenium weed in the sub-tropical and tropical environments of Australia and presumably in other locations around the world.



The Toogoolawah (T) and Clermont (C) biotypes of parthenium weed grown at normal (400 ppm) and elevated (700 ppm) CO_2 levels in controlled conditions growth chamber.

Addressing the challenge of resistant weeds in glyphosate-tolerant cotton in Australia

Nadeem Iqbal (Australia)

PhD Scholar (Final year)

Email:
n.iqbal@uq.edu.au

Supervisory team:
Professor Steve Adkins,
Dr Bhagirath Chauhan,
Dr Sudheesh Manalil

Weeds are one of the major threats to the successful production of cotton in Australia reducing yields by between 34 to 90% if uncontrolled. Many weeds, including redroot amaranth (*Amaranthus retroflexus* L.), green amaranth (*Amranthus viridus* L.), giant pigweed (*Trianthema portulacastrum* L.), windmill grass

(*Chloris truncata* R. Br.), feather top Rhodes grass (*Chloris virgata* Sw.), fleabane (*Conyza bonariensis* L.), sowthistile (*Sonchus oleraceus* L.), and sesbania (*Sesbania cannibana* (Retz.) Pers.) are damaging to cotton production in Australia. For one of these weeds, little information is known about its biology and ecology. Hence, laboratory and greenhouse trials were conducted to study *S. cannibana* under different environmental factors, including light (intensity and photoperiod), temperature, and substrate salt, osmotic, and pH levels.

It has been discovered that *S. cannibana* has the capability to germinate and emerge under various environmental and edaphic conditions. One biotype, originating from a higher rainfall environment had a better germination and emergence rate, compared with a second biotype coming from a lower rainfall environment.

In other studies, it has been observed that *S. cannibana* had the capability to endure and reproduce under extraordinary high water stress conditions both in terms of the intensity and frequency of water stress. Furthermore, it was also found that *S. cannibana* could grow and produce a reasonable biomass under moderately to high saline conditions, both in a soil and a hydroponic medium.

The growth response of *S. cannibana* under different climatic conditions also revealed that as *S. cannibana* is a C_3 plant, it has the capacity to produce higher biomass under an elevated CO_2 growth condition (700 ppm) compared to an ambient CO_2 growth condition (400 ppm).

In another part of the study, two field experiments were conducted to compare different weed management strategies. One experiment, evaluating different chemical control approaches revealed pre-emergence (PRE) herbicides such as pendimethalin and metolachlor gave better weed suppression and improved cotton lint yield in contrast to multiple applications of glyphosate.

Control treatment

Application of pendimethalin

Application of PRE-herbicides will help minimize the development of glyphosate-resistant weeds in the Australian cotton industry. In a second experiment, it was found that a narrow crop row spacing (50 cm) resulted in greater weed suppression and higher cotton lint yields as compared to cotton crops grown at 100 cm.

These findings will be of use to those developing new sustainable, and efficient weed management approaches.

Beauty is the beast: Fireweed (*Senecio madagascariensis* Poir)

Kusinara Wijayabandara (Sri Lanka)

PhD Scholar (Second year)

Email: **k.wijayabandara@uq.edu.au**

Supervisory team: Professor Steve Adkins, Dr Shane Campbell and Dr Joe Vitelli (QLD Department of Agriculture and Fisheries)

This project is focussing on the development of new management strategies for fireweed (*Senecio madagascariensis* Poir) that are cost-effective, sustainable and assist in preventing further spread of this serious weed.

Fireweed, a weed of National significance in Australia, is one of the worst weeds of coastal pastures in south Eastern Australia. It is native to southern Africa and Madagascar and was first identified in Australia in the Hunter Valley region of New South Wales in about 1918.

In other regions of the world, it has invaded pastures in Hawaii, in mainland United States of America, parts of Argentina, Uruguay, Brazil and Japan. Due to the presence of toxins; pyrrolizidine alkaloids in the plants leaves, fireweed is highly toxic to certain animals including cattle and horses, where it causes hepatopathy, delays the development of young animals and in some cases, causes mortality.

Many management techniques have been used to control fireweed (e.g. cultural, physical, chemical and biological) however no method alone has been effective. Since the seed biology of this invasive species is implicated in its success, initially the project is looking at the germination requirements and determining the longevity of the seed in the soil seed bank.

Further experiments are underway to look at the mechanism of seed dispersal and dormancy, and the impact of chemical control to control plants and to deplete the soil seed bank.

5th Anniversary Report: Multitrophic Interactions and Biocontrol Research Laboratory, Presidency University, Kolkata, India

By: Puja Ray, Assistant Professor,
Multitrophic Interactions and Biocontrol Research Laboratory, Department of Life Sciences, Presidency University, Kolkata-700073, INDIA

Now five years old, Multitrophic Interactions and Biocontrol Research Laboratory, at Presidency University, Kolkata, India, has been trying to grow as a group, improve research facilities and funding for research and training.

Most of our research revolves around studying invasive weed species with emphasis on the biological control of aquatic weeds. We have been largely focusing on the multitrophic interactions between weeds and their arthropod and fungal biocontrol agents.

Studies on multitrophic interaction may hold great importance in weed biological control and can introduce a new era of progress in weed management research. Additive or synergistic effects among herbivores and phytopathogens are necessary to achieve biological control of hardy weeds. Enhancing biological control mechanism of invasive species through integration of arthropods and microbial agents and understanding the ecological and biochemical interactions between them has been the key emphasis of our group.

Another significant area that we have been trying to look into is the exploitation of fungal metabolites as bioherbicides. Secondary metabolites are often bioactive, usually of low molecular weight, and are produced as families of related compounds at restricted parts of the life cycle of the fungus, with production often correlated with a specific stage of morphological differentiation.

The structure of many of these compounds has been a challenge to much ongoing research in natural product chemistry.

Fungal metabolites, if they are sufficiently bio-active, can be much benign and innovative alternative to the escalating ecological and health-related problems caused by the synthetic chemicals, which are currently, widely used.

Further, the group has been trying to incorporate studies related to biochemical and molecular mechanisms involved in insect, plant and pathogen interactions; mycoherbicide formulation, non-target impacts of weed management strategies, impact of climate changes on native and invasive species biodiversity and ecology.

The Multitrophic Interactions and Biocontrol Research Group, Presidency University, Kolkata, India, led by Dr. Puja Ray

Editor's Note: Here is a group of the next generation of Weed Scientists, who would benefit from the APWSS Young Weed Scientists Forum. I encourage them to immediately join up with Dr. Khawar Jabran and set-up the initial group.

ABUTILON THEOPHRASTI: A RECENT PROBLEM IMPORTED TO NEW ZEALAND

By: Trevor James and Anis Rahman

AgResearch, Ruakura Research Centre, Hamilton, New Zealand

Velvetleaf (*Abutilon theophrasti*), an annual plant in the family Malvaceae, is also known as Velvet weed, butterprint, Chinese Jute, button weed and Indian mallow. Originally from Southern Asia, it is now a problem weed in many countries in North America, Europe, Asia and Africa.

It is highly competitive with allelopathic properties and thus, has become the foremost broadleaf weed in maize and soya bean crops of USA.

Velvetleaf is easily identifiable by its tall, erect habit and large alternate heart-shaped leaves which are soft and velvety to the touch and have a musky odour. It has small yellow to yellow-orange flowers, about 3 cm across, which appear from spring through autumn.

The plant has distinctive black seedpods, about 2.5cm in diameter, containing about 40 large, hard black seeds. Individual velvetleaf plants produce up to 15,000 seeds so a small problem can quickly become a large one.

Abutilon theophrasti flowers and leaves

Velvetleaf was first imported into New Zealand around1948 as a potential fibre source but did not become naturalised and spread at that time. In 2015, six lines of fodder beet seed contaminated with velvetleaf seeds were imported into New Zealand and planted on over 600 properties through most of the country.

Abutilon infestation in Maize fields

Now some 250 paddocks in both North and South Islands have been found to contain the weed. A reduction in real GDP of $62 million was estimated to occur in 2016, increasing to $237 million by 2030 if the weed is not controlled.

Our Research So Far

Laboratory experiments on depth of emergence have shown that velvetleaf seedlings emerged equally well from up to 100 mm depth. They took 5 days to emerge from the top 20 mm but required up to 8 days from the 80 to 100 mm depth. Temperature gradient studies revealed that up to 20% of seeds germinated at 5°C, with germination increasing at rising temperatures reaching a peak between 20°C and 40°C.

Abutilon infestation in cropping fields

Field observations on seedling emergence profile showed that a majority of the plants emerged during November and December but germination started in October and small numbers continued to emerge through until March.

Initial research on chemical control has shown that post-emergence herbicides, such as bromoxynil, dicamba, mesotrione and topramezone, provided almost complete control of velvetleaf in glasshouse experiments.

In field trials also, most of the plants present at spraying could be controlled adequately (with dicamba being the most effective), but subsequent germination resulted in a final population of about 90% of the original with most treatments. This ability to germinate throughout the warmer months coupled with other biological and ecological characteristics exhibited in the laboratory experiments make it particularly persistent in cultivated fields and extremely difficult to manage with herbicides alone.

In pastures, plants up to 100 mm could be controlled with flumetsulam, and those up to 200 mm, with 2,4-D, but subsequent germination could not be curtailed.

Current Research Programme

Our current research programme for velvetleaf is aimed towards enabling the Ministry of Primary Industries (MPI) to achieve the objective of its long term management strategy of (i) progressive containment and (ii) eventual eradication.

This is being done through:

1) Further experiments on the ecology and population dynamics to determine its habitat limitations and rate of spread in New Zealand. This research includes velvetleaf seed germination requirements, growing degree days to maturity, seed longevity and seed bank depletion rates.
2) Development of innovative management tools that include alternative cropping choices, improved soil seed bank depletion practices and herbicide/non-herbicide control options in pasture and cropping. Currently there are few chemicals registered for control of velvetleaf in New Zealand.
3) A 'proof of freedom' decision support system. A tool that can be used by MPI and Regional Councils to declare sites free of velvetleaf. It is hoped that such a tool could also be used with little adaption for other plant species. This will include aids, such as sniffer dogs and UAV detection.

At the end of this 3-year project, we hope to develop Farm Management Plans that give farmers cropping options which suit their farms and improved control tools for dealing with velvetleaf. They should also be able to assign probabilities to sites of being 'free of velvetleaf' with the confidence provided by rigorous sampling.

This research programme is being conducted in collaboration with a number of stakeholders from government and regional authorities as well as with agricultural sector organisations, private companies and the farming community.

This will provide us many different vehicles to disseminate information and raise awareness of the problem of velvetleaf.

References

James T.K., Cooper J.M. 2012. Control of the recently-introduced weed butterprint (*Abutilon theophrasti*) in maize. *NZ Plant Protection* 65:64-68.

James T.K., Pene H.M. 2018. *Abutilon theophrasti* – its biology and management in New Zealand. *Proceedings 21st Australasian Weeds Conference* (in press).

SELECTIVE PHOSPHITE (PHI) FERTILIZATION OF PTXD-TRANSGENIC COTTON FOR MANAGING WEEDS

(This research, from the source, was summarised by: Dr. A.N. Rao, anraojaya1@gmail.com)

An increasing number of herbicide-resistant weeds are being reported across the globe and are becoming a global challenge for the production of all major crops. New strategies for weed control are being developed to sustain agricultural production while reducing our dependence on herbicides. One of such approach, as reported by Pandeya et al (2018) was selective fertilization of transgenic cotton, expressing a bacterial phosphite dehydrogenase (PTXD), with phosphite which provides an effective way to suppress weed growth.

ptxD-transgenic plants, expressing the bacterial phosphite dehydrogenase (ptxD) gene. gain an ability to convert phosphite (Phi) into orthophosphate [Pi, the metabolizable form of phosphorus (P)]. ptxD-transgenic plants fertilized with Phi, allow for a selective fertilization scheme, based on Phi as the sole source of P for the crop, while offering an effective alternative for suppressing weed growth.

Recently published research has found that the ptxD-transgenic cotton (*Gossypium hirsutum* L.) plants successfully out competed highly aggressive, glyphosate-resistant monocot and dicot weed species in both artificial substrates and natural soils from agricultural fields.

With over 250 weed species resistant to currently available herbicides, ptxD-transgenic plants, fertilized with Phi, could provide an effective alternative to suppressing the growth of these weeds, while providing adequate phosphorus nutrition to the crop.

Reference

Pandeya, D., López-Arredondo, D.L., Janga, M.R., Campbell, L.M., Estrella-Hernández, P., *et al*. (2018). Selective fertilization with phosphite allows unhindered growth of cotton plants expressing the ptxD gene while suppressing weeds. **www.pnas.org/cgi/doi/10.1073/pnas.1804862115**

8TH INTERNATIONAL WEED SCIENCE CONGRESS (IWSC 2020)

The 8th International Weed Science Congress (IWSC 2020) is now being organized by the International Weed Science Society (IWSS). This Conference will be hosted by Weed Science Society of Thailand at the Centara Grand Hotel at Central World in Bangkok during 22-26 June 2020. The main topics will include:

- Herbicide resistance
- Weed Biology and Ecology
- Integrated Weed Management
- Climate Change Aspects of Weed Science
- Non-Chemical Weed Control
- Application Technology
- Economic and Social Aspects of Weed Management
- Environmental Fate of Herbicides
- Weed Issues in Asia
- New Technology for Weed Management
- Weed 'Omics'

Anyone requiring additional information should contact **Dr. Chanya Maneechote** (chanyaku36@gmail.com)

28TH APWSS CONFERENCE, 2021

Thailand was awarded the honour and opportunity to host the APWSS 2021 Conference. Dr. Chanya (now Vice-President of APWSS) is the primary local organizer of this event. The APWSS Conference will be held at the Imperial Hotel in Chiang Mai, the northern province of Thailand. The First Circular will be distributed to the APWSS members by 2019.

UP-COMING OTHER EVENTS

21st Australasian Weeds Conference" **9-12 September 2018; Venue: Sydney, NSW, Australia**
1st International Conference on Biological Control **27 to 29 September 2018; Venue: Le Méridien, Bangalore**
14th IUPAC International Congress of Crop Protection Chemistry" **19 – 24 May 2019; Venue: Ghent, Belgium**
XIX International Plant Protection Congress - 2019 **10 – 14 November 2019; Venue: Hyderabad, India**

SOME WISE WORDS FROM AN EDITOR:

"…As an author I cannot think of a single time when the reviewers comments have not improved the quality of the paper or report. So when you get a critical review, see it as saving you from a more public mistake. When I review a paper my goal is see the paper or report improve. Sometimes that means that more work may be needed either in the lab or on the manuscript. While this may be frustrating, my goal is not to inflict pain but to improve the quality of the paper…"

EDITOR AND REVIEWER FATIGUE – NOT A MYTH!

Editor's Note:

Something recently caught my eye! It is summarized below for those who toil as Editors and Peer Reviewers.

The Scientific Community has opened a discussion on editorial fatigue, creeping in, and its insidious and adverse effects!

Source:

https://www.nature.com/articles/d41586-018-06602-y?utm_source=briefing-dy&utm_medium=email&utm_campaign=briefing&utm_content=20180907

PEER REVIEWERS UNMASKED: LARGEST GLOBAL SURVEY REVEALS TRENDS

Scientists in developed countries provide nearly three times as many peer reviews per paper submitted as researchers in emerging nations, according to the largest ever survey of the practice. The report (please see source given) — which surveyed more than 11,000 researchers worldwide — also finds a growing "reviewer fatigue", with editors having to invite more reviewers to get each review done. The number rose from 1.9 invitations in 2013 to 2.4 in 2017.

The ***Global State of Peer Review*** report was undertaken by Publons, a website that helps academics to track their reviews and other contributions to scientific journals. The authors used data from the survey, conducted from May to July 2018, as well as data from Publons, Web of Science Core Collection and Scholar One Manuscripts databases.

- The report notes that finding peer reviewers is becoming harder, even as the overall volume of publications rises globally.
- In 2017, there were more than 40 million reviewer invitations, globally.
- The acceptance of invitation and task completion were both less than 45%, which indicates problems, such as reviewer fatigue.
- Researchers in leading science locations, such as the United States, the United Kingdom and Japan, write nearly 2 peer reviews per submitted article of their own, compared with about 0.6 peer reviews per submission by those in emerging countries such as China, Brazil, India and Poland, the study found.
- Scientists in emerging economies respond fastest to peer review invitations, but are invited least.

The study's main message is that scientists in emerging nations are keen to do peer review, but do not receive as many requests as their colleagues. This is despite the fact that journals find it increasingly difficult to get their articles peer-reviewed.

And although contributions to peer review from emerging economies are lower compared with developed countries, they are rising rapidly.

Peer review in numbers (*Data from the Global State of Peer Review report for 2013–17)*

- **68.5 million hours spent reviewing globally each year**
- **16.4 days is the median review time**
- **5 hours is the median time spent writing each review**
- **477 words is the average length of review reports (approximately, 2 pages)**
- **10% of reviewers are responsible for 50% of peer reviews**
- **41% of survey respondents see peer review as part of their job**
- **75% of journal editors say the hardest part of their job is finding willing reviewers**
- **71% of researchers decline review requests because the article is outside their area of expertise**
- **42% of researchers decline review requests because they are too busy**
- **39% of reviewers never received any peer-review training**

*Editor: I wish to highlight the following paper, recently published in **Weed Biology & Management**. The Group in Kyoto University is led by Tohru Tominaga, who was an Organizer of the 2017 APWSS Conference, held at Kyoto.*

Non-target-site mechanism of glyphosate resistance inItalian ryegrass (*Lolium multiflorum*)

KOHEI KURATA, YUKI NIINOMI, YOSHIKO SHIMONO, MASAHIRO MIYASHITA and TOHRU TOMINAGA*

Graduate School of Agriculture, Kyoto University, Kyoto, Japan

In Shizuoka Prefecture, Japan, glyphosate-resistant Lolium multiflorum is a serious problem on the levees of rice paddies and in wheat fields. The mechanism of resistance of this biotype was analyzed. Based on LD50, the resistant population was 2.8–5.0 times more resistant to glyphosate than the susceptible population. The 5-enolpyruvyl-shikimate-3-phosphate synthase (EPSPS) gene sequence of the resistant biotype did not show a non-synonymous substitution at Pro106, and amplification of the gene was not observed in the resistant biotype. The metabolism and translocation of glyphosate were examined 4 days after application through the direct detection of glyphosate and its metabolite aminomethyl-phosphonic acid (AMPA) using liquid chromatograph-tandem mass spectrometer (LC-MS/MS). AMPA was not detected in either biotype in glyphosate-treated leaves or the other plant parts. The respective absorption rates of the susceptible and resistant biotypes were 37.90 _ 3.63% and 41.09 _ 3.36%, respectively, which were not significantly different.

The resistant biotype retained more glyphosate in a glyphosate-treated leaf (91.36 _ 1.56% of absorbed glyphosate) and less in the untreated parts of shoots (5.90 _ 1.17%) and roots (2.76 _ 0.44%) compared with the susceptible biotype, 79.58 _ 3.73%, 15.77 _ 3.06% and 4.65 _ 0.89%, respectively.

The results indicate that the resistance mechanism is neither the acquisition of a metabolic system nor limiting the absorption of glyphosate but limited translocation of the herbicide in the resistant biotype of *L. multiflorum* in Shizuoka Prefecture.

LEST WE FORGET

Editor's Note:

For the benefit of new APWSS Members, I am reproducing below a part of the APWSS Message we wrote for the 2017 APWSS Conference, at Kyoto, last year, where we celebrated our 50th Year.

I encourage all Members to obtain a copy of the 50th Anniversary Celebratory Volume, which contains articles on APWSS history and other important weed issues.

It can be downloaded free of charge from our Website:

http://apwss.org/apwss-publications.htm

Kauai Island, Hawaii

"…Fifty years ago, during June 12 to 22, in 1967, a group of scientists got together at the East-West Centre, University of Hawaii, Honolulu, Hawaii, under the banner:

*"**Weed Control Basic to Agriculture Development, Asian-Pacific Interchange**".*

At the last day of the "Interchange", at the Prince Kuhio Hotel at Poipu on the Hawaiian Island of Kauai, APWSS was born. The elected first Executive Committee, with Dr. Marcos Vega from Philippines becoming the first President, the Society was given a mandate to:

Prince Kuhio Hotel, Kauai

*"…**Promote the scientific discipline of weed control, particularly in the Asian and Pacific Regions, by pooling and exchanging information on all aspects of Weed Science…**" and "…**become a major, regional Weed Science Society**…"*

Marcos Vega – First APWSS President

As with any group, as diverse and far-flung as in the Asian-Pacific region, advances in weed management have not come automatically and consistently.

The Society, relying on the energies of its individual members, has had to work hard to maintain relevance and momentum. The proof our relevance is evident in 50 years of existence and the continuing success of information-filled APWSS Conferences, which have now reached 26 in number, over that period.

This Golden Jubilee Conference, at Kyoto, Japan, aims to continue the tradition, building on the solidly-established base of member countries and individual members. Please join us to have an impact on the growth of the Society, international collaboration; and, more importantly, be part of the 'inter-change' of Weed Science information – as foreseen by our forefathers!..."

Donald Plucknett

The three founding fathers of APWSS are all US Scientists: Drs. Donald Plucknett, William Furtick and Roman Romanowski. Dr. Marcos Vega, from the Philippines, was our First President.

Roman Romanowski

Bill Furtick

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