

Asian-Pacific Weed Science Society

NEWS LETTER

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APWSS Conference announced

The 22nd Asian Pacific Weed Science Conference has been announced, to be sponsored by APWSS and the Pakistan Weed Science Society

The Venue will be:

Government College (G.C.) University, Lahore, Pakistan

The Theme is:

Judicious Weed Management- Road To Sustainability

The Dates are:

19-23 OCTOBER, 2009

A website has been set up for the Conference in Pakistan, www.wssp.org.pk

All Members and interested parties are encouraged to participate by sending in papers for consideration by the Organizing Committee

Introduction

Agriculture faces unprecedented environmental vagaries and as such, Weed Scientists are confronted with innumerable challenges. Vegetation managers are facing new problems due to changing behaviour of weeds, which has invited the human attention to mould their attitudes into a manageable form.

Bio-diversity and conservation advocated by ethno-botanists and dominance of a single species (crop) as desired by the weed managers are the diverging views of the two schools of thought.

Convergence of the two ideas has however, been conceptualized to be the recommended *modus operandi* for optimising the dynamic behaviour of weeds in the agro-ecosystems, without affecting biodiversity and sustainability.

Contents of this Newsletter:

- **22nd APWSS Conference 2009 announced**
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Background

The Weed Science Society of Pakistan was established in 1987 with its head office at the National Agriculture Research Center (NARC), Islamabad. It has been publishing an official Journal, *The Pakistan Journal of Weed Science Research*, since its inception.

With the creation of Weed Science Department in NWFP Agricultural University Peshawar, the first in the country, the head office of the Society as well as its Journal was shifted here. The Society in the recent past has organized three conferences.

Lahore (population- 1998: 5,143,495), the capital of Punjab province, is the second largest city of Pakistan, it lies in the upper Indus plain on the Ravi River. It was the capital of the Ghaznavid dynasty in the 12th century and was captured by the Mughal Babur's troops in 1524; it was later under Akbar and Jahangir.

Ruled by Sikhs in the early 19th century, Lahore passed on to the British in 1849. After the Indian independence, Lahore became part of Pakistan in 1947. It is the site of the mosque of Wazir Khan (1634); a mosque built by Aurangzeb; and the Shalimar gardens, laid out in 1641. It is the seat of Pakistan's oldest educational institution, the University of the Punjab (founded 1882). The Government College, presently a University, was a constituent college since inception of the Punjab University.

Topics to be covered

<ul style="list-style-type: none">• Weed biology, weed ecology and systematics• Integrated weed management• Weed physiology• Chemical weed control• Biological weed control• Parasitic weeds• Herbicide resistance• Weed seed dormancy and soil seed banks	<ul style="list-style-type: none">• Species shift and herbicides• Invasive weeds and agro-biodiversity• Aquatic weed management• Allelopathy• GMO's• Weed management in agronomic and horticultural crops• Weed management in turfs and forests
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IMPORTANT DATES

Abstract Deadline	April 30, 2009
Acceptance of Abstract	May 30, 2009
Full Paper Submission	June 30, 2009
Conference	October 19-23, 2009

Registration Fees

Early registration: US \$ 300

Late registration: US \$ 350

Students: US \$ 150

Excursion

Tours will be arranged to various historic sites around Lahore, e.g. Wahga border (Indo-Pak), Changa Manga, Shalimar gardens, Jinnah garden (Lawrence garden), Badshahi Masjid, Lal Qilla of the Moghal era and various sites of interest for Buddhists, Sikhs and Hindu interests.

Special tours will be arranged based on interests of participants to Islamabad, Taxala and Himalaya.

A Special Report from Thailand on Weedy Rice

Following on from the article on Weedy Rice in Vietnam from Dr. Duong Van Chin, published in our last Newsletter, a special report on the problem has been provided by **Dr. Chanya Maneechote**.

Chanya has been a very active APWSS Member for a long time and is a Principal researcher in the Weed Science Group at the Plant Protection Research & Development Office, of the Department of Agriculture, Bangkok, Thailand. Those requiring additional information are encouraged to contact her directly (mchanya@asiaaccess.net.th).

The Weedy Rice Problem in Thailand

Thailand is the world's largest exporter of rice, with 31 percent of the global market. It annually exported 9 million tons of rice, out of a total 29 million tons produced. In 2008, the total area of rice production in Thailand was 11.2 millions ha with 1.5 millions ha of direct-seeded rice.



Dr. Chanya Maneechote

Origin and distribution of weedy rice

In 2001, weedy rice (*Oryza sativa f spontanea*) was first observed in two areas of the Central Plain of Thailand. The first area was in Kanchanaburi, northwest of Bangkok, where high yielding varieties (HYVs) are wet-seeded in a double-rice cropping system. It flowered approximately 2 weeks earlier and its panicles were 30-50 cm above the rice crop.

In Nakorn Nayok and Prachinburi, northeast of Bangkok, it was found in deep water rice (2-5 m water depth), where seeds of traditional deep water varieties are dry sown to germinate after the initial rains. At present, weedy rice is recognized as a national problem, because the area of infestation has increased from 100 ha in 2001 to >300,000 ha in 2007.

Characteristics of weedy rice (Table 1)

Weedy rice is the product of hybridisation between cultivated rice (*Oryza sativa* L.) and its ubiquitous wild relative (*O. rufipogon* Griff.). Weedy rice is a formidable noxious weed, as it seems to have inherited the high reproductive capacity from modern rice varieties, and seed shattering and dormancy of wild rice, which contribute towards build up and persistence of its seed bank in the soil.

Three different groups of weedy rice are classified according to appearance: "Khao Harn" (with awn and shatter), "Khao Deed" (rice with no awn and shatter) and "Khao Daeng" (red rice and no shattering).

Unlike the cultivated rice seed, weedy rice seed becomes viable even while in milky stage and can stay viable for a long time buried in the soil and mud.

Table 1- Some characteristics of three types of weedy rice

Characteristics	Khao Harn	Khao Deed	Khao Daeng
Awn on seeds	yes	no	no
Seed shattering	50-70%	80-100%	no
Plant height	Taller than crop rice	Taller and shorter than or as tall as crop rice	Taller than or as tall as crop rice
Hull color	Black, brown, yellow and straw	Yellow and straw	Brown
Pericarp color	White and red	White and red	Red

Magnitude of the problem

In response to rising labor cost that comes with economic growth, direct seeding is rapidly replacing transplanting. Mechanical harvesters spread weedy rice seed over long distances, as well as from field to field. Instead of flowering and producing seed once a year like traditional rice varieties and local wild rice, weedy rice produces seed year round just like photoperiod insensitive modern rice varieties.

Weedy rice therefore propagates every time a rice crop is grown, which may be as often as five to seven times in two years in an irrigated and most productive rice land.

Rice yield and quality losses

A crop cut survey found grain yield decreasing linearly with increases in percent infestation. Farmers lose 1.1% of yield for every 1% increase in infestation. Although the effect on rice yield at low levels of weedy rice infestation of 5-15% may be imperceptible, contamination of red rice, crumbly endosperm and spikelets with awn or off-type shape, size or color may all result in price reduction.



A serious infestation of weedy rice (Khao Harn) in a rice field in Thailand

From light infestation of 5-10%, farmers who carry on with routine crop management, which includes application of selective rice herbicides, find their fields completely taken over by weedy rice within three to four crops. By the time infestation reaches 40%, yield is about halved, and with 80-90%, infestation the entire crop is lost.

Farmers' perception of the problem

Weedy rice seed can be transferred into a farmer's field from a neighbour's heavily infested field by the combined harvester or in seed contaminated with weedy rice. It looks quite harmless at an initial invasion, and often farmers take no action to remove them from the fields. Until the reduction of rice yield is 30-50%, farmers tend to not recognize weedy rice as a noxious weed. This is why weedy rice has become so wide spread throughout the irrigated areas of Thailand within a few years.

Once paddy fields are heavily infested with weedy rice, most farmers prefer to use a transplanting machine with chemical control. Pre-planting, early-post application of herbicides is also recommended for management. In addition, the weed wiper technique with herbicides was also introduced to replace the expensive labor of panicle cutting.

Internal policies implemented for the control of spread of the problem

Since the first case of weedy rice infestation was discovered in 2001, a collaborative research team of the Department of Agriculture (DOA) and the Chiang Mai University, under the Rice Project financially supported by CCRP, and McKnight Foundation, has developed strategies for the integrated methods for weedy rice control.

The integrated methods include the use of clean seed, eradication of the weed prior to sowing, panicle topping off, hand pulling, clean-up combine harvesting machines, use of transplanting machines, crop rotation and herbicides. Obviously, these strategies need to be rapidly adopted by local expert farmers and then transferred to their neighbours.

A national campaign to combat weedy rice was firstly started in 2005 by the Department of Agriculture and Department of Agricultural Extension (DOAE). About 10,000 people (farmers, researchers, extension people and private sectors) were trained. In addition, a national symposium on "Weedy Rice" was organized by Plant Protection Research and Development office, DOA to coordinate all sectors working on weedy rice. By 2007, public awareness has already been increased by the dissemination of 35,000 weedy rice booklets, 1000 posters, 5000 pamphlets, and 100 CDs.

'Weedy rice free village' project

As source of clean seed is limited, 'weedy rice free village' project was initiated in 2006, in Kanchanburi, Pathum Thani and Chainat provinces. The objectives are to help farmers eradicate weedy rice until the paddy fields are clean enough for source seed production.



Photo showing some successful farmers (in blue shirts) who have joined the 'weedy rice free village' project in Chainat Province, with Chanya and Anuruddika Abeysekera (Sri Lanka), during a field visit (Nov 2008)

Later, these weedy rice free villages are to be certified by the Department of Rice as "Rice Seed Community Centres". Consequently, the sources of clean seed are expected to increase; at the same time, the weedy rice problem is expected to diminish in those areas.

Instead of growing three rice crops per year, the farmers replace one crop with one legume crop to improve soil fertility and kill weedy rice plants.

In addition, they also use other control methods (i.e. integration of the use of clean seed, transplanting machines, herbicides, hand pulling and panicle removal, and proper cleaning of the machines).

Concluding comments

During the past five years, weedy rice has been emerging as a serious threat to rice farming in Asia. The impacts of weedy rice have varied from yield losses of cultivated rice from 5% to completely abandoning the paddy land by farmers due to the high population density.

Weedy rice infestations have been reported to increase with direct seeding. With the recent trend in Asian countries from transplanting to direct seeding, the area affected in different countries is highly variable, but is likely to increase. Thailand has more than 300,000 ha seriously affected by weedy rice, while more than 500,000 ha are also infested in the Mekong Delta.

In Vietnam, Malaysia, Sri Lanka and Philippines there are substantial areas of rice being affected, since direct-seeded rice areas increase year after year.

There is growing concern in Asian countries that the current agronomic practices in rice could make weedy rice the most troublesome rice weed in the 21st century.

Editor's Note:

Please see information on the FAO and Thailand's Department of Agriculture sponsored recent Workshop on Weedy Rice, held in Thailand, under News on Key Events.

17th Australasian Weeds Conference to be held in Christchurch, NZ in 2010 announced

The 17th Australasian Weeds Conference, sponsored jointly by the New Zealand Plant Protection Society Inc and the Council of Australian Weed Societies Inc, has been announced. This would be held in Christchurch, NZ. The theme of the Conference is 'New Frontiers in New Zealand'.

The dates for the Conference are- **26-30th September 2010**. Contact details for further information are as follows:

The Conference Secretariat,
Professional Development Group,
PO BOX 84, Lincoln University, Canterbury, 7647, NZ

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

Weed Science Society of Bangladesh formed

Dr. Rezaul Karim, from Bangladesh, has informed APWSS that the **Weed Science Society of Bangladesh** (WSSB) has been formed on 9th August 2008. Members requiring more information on this development should contact Dr. Karim directly (rkarimbau@yahoo.com).

An executive committee of 23 members has been appointed at an Annual General Meeting (AGM) on 8th November 2008 after a National Conference and Seminar organized by the Society.

At the AGM, Dr. Md. Hazrat Ali, Professor of Agronomy and Dean, Faculty of agriculture, Sher-e-Bangla Agricultural University, Dhaka and Dr. S.M. Rezaul Karim, Professor of Agronomy, Bangladesh Agricultural University, Mymensingh, have been elected as the President and the General Secretary, respectively, of the new Society.



Dr. S. M. Rezaul Karim



Photograph shows the inaugural meeting; Dr. Md. Hazrat Ali, President (L) and Dr. S. M. Rezaul Karim, General Secretary (R)

Weeds are taking heavy tolls on B'Desh's cereal production

The 1st National Conference and Seminar of the Weed Science Society of Bangladesh (WSSB) was held at the Bangladesh Agricultural Research Council (BARC), Auditorium, Dhaka, Bangladesh on 8 November 2008.

The seminar was on 'Weeds and Food Security'. Agriculture researchers and academics of different agricultural institutes from across the country attended the seminar organized for marking the first national conference of the WSSB.

The Chairman of Bangladesh Public Service Commission (PSC) Dr Saadat Husain attended the seminar as the Chief Guest. The Dean of Agriculture of the Sher-e-Bangla Agriculture University and convener of WSSB- Prof. Hazarat Ali chaired the meeting.

The Seminar presentations indicated that unrestricted growth of weeds is causing enormous loss to food production, environment, livestock and human health. The annual yield losses due to weeds in Bangladesh are on average 37.3%. Yield losses in different crops are as follows: Food crops- major cereals- 32.2 %; minor cereals- 41.3 %; Pulses- 31.2 %; Oilseed- 40.8 %; Fiber crops- 39.2 %. The financial losses per year amount to around Taka 6,000 crore.

Presenting the keynote paper in the seminar, Professor Karim said that *Parthenium hysterophorus*, considered by many as the 'worst weed' of last century in India, has invaded Bangladesh and has emerged as a new threat to food production.

Dr Saadat Husain discussed the importance of development of a comprehensive weed management system and introduction of quarantine regulation to prevent noxious weeds from entering to the country with imported food grains. His views was that Bangladesh would achieve the character of a self-reliant nation in food production if the country can improve the existing manual systems of weed management and add 1.5 million metric tons of rice to its existing bulk.

Prof. Karim emphasized the seriousness of the adverse impacts of weeds on the country's food security, environment, and bio-security, stating that the level of nutrition and taste in food are also decreasing as some exotic weeds are damaging the quality of soil.

He said Bangladesh losses approximately 7.18 million metric tons of cereals, including 2.53 million metric tons of food grains every year due to unwanted growth of major weeds in crop fields, and added that the government should take immediate steps to formulate weed laws and set up weed quarantine regulations to identify and control noxious weeds.

On the new threat of Parthenium in Bangladesh, the Seminar discussed the large infested area in the Jessore district and adverse impacts on livestock, which include inflamed udder, fever, and rashes in cows and buffalo and ulceration in the mouth and digestive tract. Adverse effects in humans include asthma, bronchitis, dermatitis, hay fever, swelling and itching of mouth and nose and constant cough.

Among other important matters discussed are:

- The present status of weed research in Bangladesh, which is sporadic and insufficient; syllabus and curriculum on Weed Science needs to be updated.
- Status of herbicides and technology- There are about 78 herbicides being used to kill weeds in Bangladesh, but these are mostly in the tea and rubber plantations, and their residual effects are not ascertained properly.

The Seminar urged the Government to establish a Weed Research Center, a national weed control committee, frame quarantine rules and weed legislation, with special attention to eradicate weeds like Parthenium.

News about Key Events

FAO Regional Meeting on Weedy Rice Management, held in Bangkok, Thailand

FAO, jointly with the Weed Science Group, Plant Protection Research and Development Office, Department of Agriculture, Ministry of Agriculture, Thailand, organized a regional meeting on weedy rice management during 4-7 November 2008, at Rama Gardens Hotel, Bangkok, Thailand.

The main goal was to formulate a regional project as a starting point of collaboration among Asian countries to find solutions for effective control of weedy rice.

Twenty representatives from China, India, Japan, Malaysia, Philippines, Sri Lanka, Thailand, USA and Vietnam attended the meeting.



Representatives attended the regional meeting on weedy rice management (4-7 Nov 2008, Bangkok)

Front row from left: Nilda Burgos (USA), Anuruddika Abeysekera (Sri Lanka), Ricardo Labrada (FAO-Rome), Peerapong Chaowasetthakul (Thailand), He Changchui (FAO-Bangkok), Chanya Maneechote (National Co-ordinator, Thailand), Madonna Casimiero (IRRI), Nudchaya Na Songkla (Thailand)

Back row from left: Wanida Tarntawin(Thailand), Apinporn Phuengwattanapanich (IRRI-Bangkok), Azmi Man (Malaysia), W. M. A. D. B. Wickremasinghe (Sri Lanka), Piao Yongfan (FAO-Bangkok), Liu Qing Yu (China), Liang Diyun (China), Duong Van Chin (Vietnam), Somkid Popan (Thailand), Sansanee Jamjod (Thailand), R.M. Kathiresan (India), J. P. Mishra (India), Masahide Hirokawa (Japan), Kukiath Soithong (Thailand), Edwin C. Martin (Philippines)



Photograph shows some of the attendees during a field visit.

Given the significance of the weedy rice problem, the meeting encouraged all interested parties, scientists and institutions in the region to co-operate and develop effective management plans. Those requiring additional information on the outcomes of the deliberations should contact Chanya Maneechote (mchanya@asiaaccess.net.th).

China holds its 16th National Conference on 'Efficacy and Safety Evaluations of Herbicides and Plant Growth Regulators'

Dr. Zhang Hongjun (hongjun-zh1975@163.com) and Zhang Wenjun of the Institute for Control of Agrochemicals, Ministry of Agriculture (ICAMA), Beijing 100125, inform that China has held its 16th National Conference on 'Efficacy and Safety Evaluations of Herbicides and Plant Growth Regulators'.

In China, according to its Pesticide Act, the registration of new pesticides requires mandatory field trials to evaluate the bioactivity of herbicides and pesticides against weeds and pests and for safety to crops. Once every two-years, a national conference is organized by ICAMA to review the field trial results of new pesticides that are under evaluation in field trials.



Photograph showing the inaugural session of the 16th Conference

The 16th conference was held successfully in Xiaoshan city of Zhejiang province of China. There were over 600 participants, including experts, attending the conference from the whole country.

During the conference, the results of field evaluations of 25 herbicides and 3 plant growth regulators, which are to be applied in wheat, barley, corn, cotton, rice, pineapple, sugarcane, fruit tree, and lawn, were discussed.

During the conference, the weaknesses of some products and application techniques were also discussed. Among the compounds evaluated to be effective in field trials were the following:

- Pinoxaden
- Bromacil
- Oxaziclomefone
- cyhalofop-butyl
- Penoxsulam
- Pyrifthalid
- Pyribenzoxim
- Pretilachlor
- pyrithiobac-sodium
- metamifop
- tralkoxydim
- sulfentrazone
- amidosulfuron
- iodosulfuron-methyl-sodium
- saflufenacil
- prodiamine
- prohexadione calcium
- 1-methyl-cyclopropene

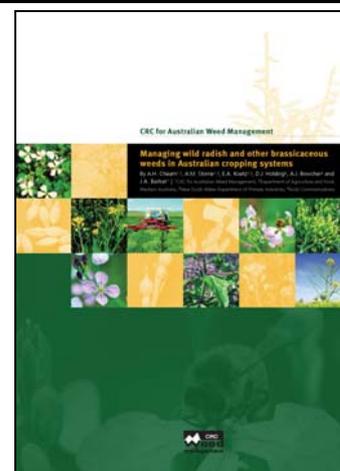
News from Members and Countries

News from Australia

New publication '*Managing wild radish and other brassicaceous weeds in Australian cropping systems*'

A new publication in Australia brings together the latest research information on brassicaceous weeds, which include some of Australia's worst broadleaf crop weeds. Increasing resistance to herbicides and the lack of chemical control options in broadleaf crops highlighted the need for a single publication in a practical format that spells out current management tactics and explains how to keep pressure on the weed seedbank.

Although the book is dedicated to combating wild radish (*Raphanus raphanistrum*), it also provides options for managing other brassicaceous weeds including charlock (*Sinapis arvensis*), turnip weed (*Rapistrum rugosum*), wild turnip (*Brassica tournefortii*), Indian hedge mustard (*Sisymbrium orientale*) and muskweed (*Myagrum perfoliatum*).



The book describes and explains the significance of selected brassicaceous weeds. It also provides information about herbicide resistance, tactics for managing each weed and advice on how to integrate these tactics into farming systems. Although the book presents weed management systems from an Australian perspective, many of the management tactics discussed are relevant outside Australia.

Written by Aik Cheam, Andrew Storrie, Eric Koetz, Di Holding, Annabel Bowcher and Jennifer Barker '*Managing wild radish and other brassicaceous weeds in Australian cropping systems*' is produced by the Cooperative Research Centre for Australian Weed Management.

It is available in hard copy format, or electronically, free of charge. Details are available on the website www.weedsrc.org.au/projects/project_2_2_3_3.html.

'Weed Seed Wizard' Computer Model helps win war against Weeds

Australian Growers wishing for a magic wand to spirit away their weed problems, now have access to a new 'weapon' to help them wage war on weeds. A recently developed computer simulation tool, **Weed Seed Wizard**, has been designed to assist growers manage the weed seed bank that lies hidden in the soil.

Prototype development has involved a team of 13 Scientists from the Department of Agriculture and Food WA (DAFWA), Queensland Department of Primary Industries, NSW Department of Primary Industries, The University of Western Australia (UWA) and The University of Adelaide.

The project was funded by the Cooperative Research Centre for Australian Weed Management and supported by sponsors, including the Grains Research and Development Corporation (GRDC). Co-project leaders are Dr Michael Renton, mathematical modeller at UWA and Dr Sally Peltzer, Weed Scientist at DAFWA, Albany.

Weed Seed Wizard was created because weed populations are influenced by numerous complex and long-term factors, including dormancy, seed burial depth, soil type, soil moisture, seed species, rainfall, and season. According to Dr Peltzer, a computer model such as the Weed Seed Wizard can build a "reasonable representation" of the way those factors interact and enable growers to experiment with any number of future management strategies. "The model's value is in predicting the amount of weeds appearing each year and the hidden reserves in the seedbank, so growers can be warned early."

The Weed Seed Wizard can show how decisions such as crop choice, sowing date, seeding rate, tillage and grazing management, herbicide applications and harvest options, affect weed germination and density, crop yield and, most importantly, the long term sustainability of a farm.

The trial prototype of Wizard features a graphical user interface that **runs as a stand-alone** application, where the user interface includes windows, and growers can edit the initial conditions of simulated paddocks and amend management options. According to Dr. Renton different weed management scenarios can be viewed and compared side-by-side, so the relative value of options is clear. "Predictions can be specific for individual paddocks and actual weather, using the grower's own records or data purchased from the Bureau of Meteorology".

Weed Seed Wizard is available on the GRDC website at www.grdc.com.au/weedlinks

More information: Dr Sally Peltzer, 08 9892 8504, SPeltzer@agric.wa.gov.au

Dr Michael Renton, 08 6488 1959, mrenton@cyllene.uwa.edu.au

News from India

National Parthenium Awareness Week Celebration held throughout India

R. K. Ghosh, Professor of Agronomy, from Bidhan Chandra Krishi Viswavidyalaya (BCKV), Mohanpur, India, sent the following Report, highlighting Parthenium awareness activities in 2008, conducted in West Bengal and other parts of India.

As in the previous three years (2005 at Village Uttar Chandamari, Nadia; 2006 at Village Goraghacha, Nadia; 2007 at B-4 Kalyani), in 2008, the Parthenium Awareness Camps were held at three different places of West Bengal. The Camps were organized by the Principal Investigator Prof. R. K. Ghosh, under the auspices of the All India Coordinated Research Project on Weed Control (AICRP-WC), BCKV Centre, West Bengal. The occasion was the "National Parthenium Awareness Week, September 6-12".

At Buniadpur, Dakshin Dinajpur, more than 60 Farmers were participated. The Camp was organized by ACRP-WC, BCKV Centre in collaboration with the Sristi Development Organization (SDO), Harirampur on 9 September 2008.

At Majhian, Balurghat, more than 80 Farmers were present. The Camp was organized by ACRP-WC, BCKV Centre in collaboration with Krishi Vigyan Kendra (KVK), Uttar Banga Krishi Viswavidyalaya (UBKV), on 10 September 2008.

At Chandamari, Kalyani, Nadia, more than 100 farmers were present. The Camp was organized by ACRP-WC, BCKV Centre in collaboration with Sannidya Rural Welfare Society on 12 September 2008.

Prof Ghosh discussed the management of Invasive weed *Parthenium* along with its menace and beneficial effects through different slides.



Photograph showing the National Parthenium Awareness campaign.

He reported that out of 17 species of *Parthenium*, *Parthenium hysterophorus* is commonly seen in India. Presently, 10 million ha area infested by this weed in India.

Dr Anal Roy discussed the Parthenium menace on human and Dr. D. Pal explained the opportunities for biological and chemical control of the weed.

Parthenium causes yield losses and could cause harm to humans (skin diseases, allergy, asthma, fever etc.), and domestic animals. Generally, in a year, it becomes abundant three times- in February, June and October.

After germination, *Parthenium* grows horizontally and thus prevents the growth of other plants nearby. Then it grows vertically like most other plants. In a single plant, 15-20,000 seeds (very light) are present and these are easily wind dispersed.

The plant contains Sesquiterpene lactones (Parthenin, Ambrosin & Hymenin), which are possibly implicated in the problems caused to humans and animals. Nevertheless, this plant could also be used for useful purposes, viz. as compost, as green manure, as mulching, in fibre making, in biogas production etc.

The management options include the following:

- In residential areas, this weed should be uprooted during its' vegetative stage and could be used in compost making. The Parthenium compost is known to have a high nutrient content. In roadsides, the seeds of *Cassia tora*, a legume plant could be sprayed during June @ 25 t/ha. This will suppress the Parthenium.
- In parks etc. Marigold (*Tagetes* sp.) could be used. This also suppresses the Parthenium.
- *Zygogramma bicolorata*, a Mexican beetle could also be used to control this weed @ 750 pairs of beetles/ha.
- Glyphosate 41 SL, Glyphosate 71 SG, Gly + 2,4-D mixture Combi 35 SG could be used @ 5 Kg/ha or Paraquat dichloride 24 SL @ 2 Kg/ha as spraying on the vegetative stage of this plant.



Photograph showing Prof. R. K. Ghosh addressing a meeting during the National Parthenium Awareness campaign.

The discussions centered around encouraging the use of *Parthenium* biomass as compost or green manure in its young non flowering stage.

If farmers adopted this method, it was felt that the weed could be managed within 4-5 years in West Bengal.

Prof. Ghosh also discussed other invasive weeds, which are of concern in West Bengal.

These include: *Elatine triandra* (BJP weed), *Oryza rufipogon* (Weedy rice), and *Eleocharis congesta* (Dari gash). Several of the species appear to have been imported through contaminated seeds in recent years.

From now on, **February 2nd Week each year**, has been selected as the **Parthenium Management week in West Bengal**. The awareness campaigns will involve farmers, Government, Institutions and schools, NGO'S, Panchayat and the general public.

The following is a Summary of information sent by Dr. Samunder Singh (sam4884@gmail.com) CCS Haryana Agricultural University, Hisar, India.

Indian Society of Weed Science National Symposium on the Strategies for the management of herbicide resistance in the rice-wheat cropping system

A one-day Symposium organized at the National Agricultural Sciences Complex, New Delhi on 14 Nov. 2008 was attended by several pesticides companies and University/ICAR scientists to take stock of herbicide resistance situation with respect to the new herbicides released a decade back for managing isoproturon resistant *Phalaris minor* in wheat under rice-wheat cropping system.

The symposium comprised of invited presentations by lead speakers, poster papers and panel discussion to develop strategies for mitigating farmers' losses due to reduced control of *Phalaris minor* by the existing wheat herbicides.

Dr. N. T. Yaduraju, in his Presidential address, highlighted the challenges faced by the scientists, regulatory authorities and pesticides manufactures in fighting herbicide resistance in wheat weeds in north-west India, which is a real threat to increased crop production at a time when the stocks are all time low. He hoped that the coming together of academic and industry will result in formulating a policy to fight resistance and informed the house of the significant work done by HAU and PAU scientists on isoproturon resistance management through an integrated approach. As a result of this work and the large-scale adoption of zero tillage in wheat, farmers are helping to lower the menace of *P. minor*, and are also saving money on field preparation, with significant environmental benefits.

In the inaugural paper, Prof. R. K. Malik, Symposium Coordinator on 'Conservation Agriculture & Herbicide Resistance Management in RWCS', discussed the history of resistance evolution in 1992. He highlighted the scientific impetus for innovative technology adoption to manage resistance; release of new herbicide molecules with the help of pesticide industry and regulatory authority for emergency registration of new molecules. This was to lower the threat of isoproturon resistance, where the farmers were forced to harvest wheat as green fodder or to plough up wheat fields. He cautioned that farmers' lack of initiatives for changing usual practices might increase problems once again. He informed that GR₅₀ levels for effective herbicides recommended in 1998 have already increased with very high proportion in some biotypes and this has been happening for the last few years.

Dr. A. K. Gogoi, ADG, ICAR, highlighted the significant role played by weed scientists in managing herbicide resistance with the examples of two important weeds; *P. minor* and *Parthenium hysterophorus*; both are of larger significance with huge economic stakes. He stressed on conservation agriculture, which offers a significant scope in the management of herbicide resistant weeds. He also appreciated the contribution of NRC Weed Science, Jabalpur (MP) for the management of *Parthenium* and CCS HAU Hisar (HR) and PAU Ludhiana (PB) for the management of *P. minor*.

Dr. R. S. Chhokar from Directorate of Wheat Research (ICAR), Karnal, Haryana, dwelt on the management aspect of resistant biotypes of *P. minor*. Dr. Chhokar mentioned that IPU resistant biotypes were earlier found sensitive to clodinafop, fenoxaprop, sulfosulfuron, metribuzin, pinoxaden, atlantis (mesosulfuron+iodosulfuron), fluazolate, pendimethalin, trifluralin, chlorotoluron and terbutryne. However, during 2002-03, several biotypes were found to defy fenoxaprop and clodinafop and later sulfosulfuron (2006-07). Under-dosing and faulty application methods contributed for the failure of these herbicides, as happened earlier with IPU.

He stressed the need for several strategies for the control of resistant biotypes like, early sowing, optimum dose and proper application methods, herbicide mixtures, integration of non-selective herbicides (paraquat & glyphosate) with pre-emergence herbicides for effective control of resistant *P. minor* in zero tillage and for delayed sown wheat by killing the first emerged flush of *P. minor*. Crop and herbicide rotation and cultural practices (competitive var., crop density, sowing time, planting pattern, method of fertilizer application, tillage systems, soil moisture and stale seed bed/Dab system) should also be effectively followed. Issues of straw management also need to be tackled effectively as its retention, removal and burning has significant effect on soil seed bank of *P. minor*.

At the Symposium, Dr. U. S. Walia, Professor and Head of Agronomy Department, Punjab Agricultural University (PAU), Ludhiana, elaborated the status of resistance in *P. minor* under Punjab conditions. Losses caused by *P. minor* were greater (58%) than *Avena ludoviciana* (54%) or broadleaf weeds (26%) in wheat under Punjab conditions. In a 1994 study, where 30 biotypes were compared for isoproturon resistance, only 4 were found susceptible to recommended rate of isoproturon, whereas 26 biotypes were not controlled even by double the recommended rate of isoproturon, necessitating the adoption of clodinafop, fenoxaprop and sulfosulfuron, which were costing 4 times higher than isoproturon.

Dr. Wahlia highlighted some of the problems that lead to resistance development: improper spraying practices, under-dosing, which lead to the failure of recommended herbicides; and the use of herbicides, which are not recommended for managing weeds in wheat.

Dr. Samunder Singh, Weed Scientist from CCS Haryana Agricultural University presented the latest resistance scenario for Haryana state. He highlighted the *Phalaris minor* resistance to isoproturon (IPU) during 1992-93 and the failure of diclofop-methyl made in 1994, which had to be withdrawn due to cross-resistance. IPU has lost its usefulness in rice-wheat rotation areas due to resistance in *P. minor* and is fading from other areas of the State. Since the resistance was due to increased metabolism and *P. minor* being mostly self-pollinated; IPU cannot be useful even if used after a gap of many years.

Some highlights of his presentation are as follows:

- Several biotypes collected from fields where IPU resistance was first detected in 1992, are again facing multiple resistance to new herbicides, among which are clodinafop, fenoxaprop and sulfosulfuron.
- Seed collected from farmer's fields during 2005-06 and 2006-07 where poor efficacy of these herbicides was reported (farmers' complaints), were subjected to several herbicides and many of them defied clodinafop and fenoxaprop confirming the fear of their failure at farmers' fields.
- Clodinafop resistant *P. minor* biotype in a farmer's field in Fatehabad district was effectively controlled by pinoxaden herbicide. The efficacy of pinoxaden was enhanced by tank mixture with carfentrazone. Although there was temporary crop suppression, crops recovered within a fortnight.
- Quizalofop (100 g/ha) – a non selective wheat herbicide was found to control resistant *P. minor* biotypes indicating that not all herbicides of ACCase inhibitors have lost efficacy.
- The resistance of *P. minor* biotypes to new herbicides has not yet been characterized, although one biotype from Punjab was found to have target site resistance to clodinafop, as confirmed by Syngenta (UK). The low level of resistance to these new herbicides could also be due to enhanced metabolism, as has been observed in Australia.
- It is better to have more herbicides in the market from different chemical families to lower the chances of evolving cross-/multiple resistances in *P. minor* biotypes.

Two presentations were made from Syngenta and Bayer CropScience on the problems of herbicides resistance in the rice-wheat cropping system and the contribution of Industry to manage resistance with a multi-pronged strategy, in collaboration with weed scientists and farmers of the affected areas.

The Symposium drew attention to the following issues, to effectively manage the continuing resistance problem in farmers' fields:

- PPI/PRE herbicides for POE applications, where the problem is very serious;
- Application techniques- i.e. in the management of *P. minor*, proper coverage of the field with flat fan nozzle applications increases control;
- Media campaigns for popularizing spray techniques (nozzles, volume of water and optimum dose and spray time) to be carried out with assistance from Industry;
- Collaboration with Industry to manage resistance through new herbicide molecules;
- Limited scope for crop rotation, due to lower remuneration to farmers;
- Substitute crops, in case of wheat crop failure due to resistance; i.e. Crops like sunflower can be raised in case resistant biotypes are not controlled by herbicides, causing crop failure;
- Varieties for early canopy cover should be preferred to compete with weeds, and early sowing is better in *P. minor* problem areas as wheat can smother late emerging *P. minor* plants;
- Adoption of Zero Tillage (ZT) wherever possible; Zero tillage must be encouraged to reduce the seed bank of *P. minor* population;
- Rotavator antagonize ZT benefit in *P. minor* management and should be discouraged in rice-wheat rotation areas; and
- Techniques for exhausting the soil seed bank of *P. minor* need to be studied for its effective long-term control.

Those seeking more information on the Symposium or wish to be part of the resistance management initiative should contact Dr. Samunder Singh directly.

The Crop and Weed Science Society (CWSS), West Bengal, India, announces 5th Annual Symposium

The CWSS has announced its 5th Annual Conference, under the theme "**AGRICULTURE IN THE PARADIGM OF INTERGENERATIONAL EQUITY**" to be held at BCKV during 22-23 May 2009.

The Main Topic Areas are:

- Crop Improvement
- Biotechnology
- Natural Resource Management
- Quality of Environment Soil-Plant-Atmosphere
- Biosafety, Phytotoxicity and Pest management
- Socio-Economic and Livelihood

Contact addresses for sending papers are as follows:

- Prof. R. K .Ghosh, Working President and Organizing Secretary (rgosh2008@gmail.com)
- Prof. A. Bhattacharrya, President (anjan84@gmail.com)
- Prof. J. K. Hore, Editor (jkhore31@rediffmail.com)
- Dr. P. K. Sahu, Joint Secretary & Editor (pkshubckv@rediffmail.com)

More information is available on the Website: www.cwssbckv.org.in

News from Iran

Dr. Ebrahim Izadi, Associated Professor in Weed Science, at Ferdowsi University Of Mashhad, Mashhad-Iran has provided information on the Iranian Journal of Weed Science and invites all Weed Scientists to publish in the Journal.

The Iranian Journal of Weed Science (Iran. J. Weed Sci.) presents original research and reviews in the fields of biology, physiology, ecology and control methods of weeds from a diversity of perspectives. These encompass basic research, and the technological development and application of weed control measures.

The Journal is managed by- Executive Director: Dr. H. Rahimian Mashadi; and Chief Editor : Dr. H. Ghadiri; Email: Journal@isws.ir

Manuscripts are welcome and should be sent to: The Secretary of Iranian Journal of Weed Science, Plant Pest & Disease Research Institute, P.O. Box 1454, Tehran 19395, Iran.

Dr Izadi also informs that the **2nd Iranian National Congress of Weed Science** was held at 29-30 January 2008 at Khorasan Agricultural & Natural Resources Research Center-Iran.

The 3rd Congress will be held at Shiraz university- Iran in 2009 and information on this forthcoming event could be found at www.isws.ir

News from New Zealand

Dr. Anis Rahman (anis.rahman@agresearch.co.nz), of Plant Protection, Ruakura Research Centre, AgResearch, NZ (www.agresearch.co.nz) sent the following information:

New Zealand's Plant Protection Society's 2008 Annual Conference and Symposium

Various current issues in protecting plants from pre-and post-border biosecurity risks were explored at the 2008 NZ Plant Protection Society's annual conference and symposium. The pre-conference symposium entitled "Surveillance for biosecurity" was sponsored by MAF Biosecurity and FBA consulting Ltd.

The papers presented included a study looking at the value of surveying New Zealand plants growing in other countries to predict their potential risks to New Zealand's native flora.

Other interesting papers covered recent studies on weeds entering New Zealand in pineapple leaves and cocopeat. Two scientists from the Victoria Department of Primary Industries in Austria joined in and presented on their weed spotter programme to enhance reporting of new occurrences of invasive weeds by trained interest groups.

Papers presented at the Symposium have just been published in a separate volume entitled **"Surveillance for biosecurity-: Pre-border to pest management"**, which can be purchased for NZ\$40 from Manaaki Whenua Press at MWPpress@landcareresearch.co.nz.

For the benefit of APWSS Members, Anis also draws attention to the following publications, which are available from the **NZ Plant Protection Society**:

- Surveillance for Biosecurity: pre-border to pest management 2008 (\$ 39.95)
- Future challenges in crop protection: repositioning NZ's primary industries for the future 2008 (\$ 39.95)
- Pesticide resistance: prevention and management strategies 2005 (\$ 39.50)
- An Illustrated Guide to Common Weeds of NZ 2004 (\$ 39.95)
- Managing wilding conifers in New Zealand: present and future 2004 (\$ 35.00)
- Defending the green oasis: New Zealand biosecurity and science 2003 (\$ 35.00)
- Plant protection challenges in organic production 2001 (\$ 30.00)
- Managing urban weeds and pests 2000 (\$ 40.00)
- A Guide to the Identification of New Zealand Common Weeds in Colour 1997 (\$ 19.95)
- Plant Protection: Costs, Benefits and Trade Implications 1993 (\$ 39.00)

News from Thailand

NEWS from Weed Science Society of Thailand (WSST)

An election of a new President for the Weed Science Society of Thailand will be held on 27 March 2009 at the Annual meeting of the Society.

At this event, the occurrence of resistance to pesticides in Thailand will also be discussed among Thai Society of Entomology and Zoology, Thai Society of Plant Pathology and Weed Science Society of Thailand.

News about Forthcoming Conferences

9-13 February 2009 **Weed Science Society of America (WSSA) Annual Meeting and Conference**
Location: Orlando, Florida
Hotel: Hilton in the Walt Disney World Resort
Full information at: <http://www.wssa.net/Meetings/WSSAAnnual/Info.htm>

9-11 March 2009 **European Weed Research Society Workshop: Physical And Cultural Weed Control.** To be held at: Zaragoza, Spain on the Campus of Aula Dei.
Full information at: <http://www.ewrs.org/pwc/>

26-29 July 2009 **10th Queensland Weeds Symposium**
To be held at Rydges Capricorn, Yeppoon.
For more information, contact the chair of the organising committee, Trudy Baker, or look for future updates on the WSQ website: www.wsq.org.au

Other 'Weedy' News

New E-Newsletter Features Invasive Plant Management

Montana State University's Center for Invasive Plant Management (CIPM) has begun publishing a bi-monthly electronic newsletter highlighting the Center's activities, as well as other weed and invasive plant management information.

At <http://www.weedcenter.org> click on "e-newsletter" to gain access or launch a free subscription.

CIPM, Montana State Univ., PO Box 173120, Bozeman, MT 59717, USA.

For additional information, CIPM could be contacted directly: weedcenter@montana.edu.

Editor's Column

I have been able to issue three issues of the new APWSS Newsletter during 2008. These have been well received by the Membership. Based on the feedback, the information provided by the Newsletter was useful to many people, and the opportunity to disseminate information on recent activities in different countries was also welcomed by many.

I am hopeful that the Membership will continue to provide relevant and interesting information that will make this Newsletter grow in importance in the Asia-Pacific Region.

Several Country Representatives and individual members have made significant contributions to this **Issue (January 2009)**; I am thankful to them, and am hopeful that this trend will continue.

As Newsletter Editor, I am making another request to our partner Industry to participate more in sharing of information. I am convinced that the Industry will find this vehicle of information useful and worthwhile, particularly to disseminate information on new herbicides and new weed management initiatives.

- Possibly the most important issue highlighted in the Newsletter is the next APWSS's Conference, to be held in Lahore, Pakistan. This news must receive priority consideration of the Membership. Those wishing to take part are encouraged to seek more information and submit their research for consideration by the Organizing Committee.
- Thailand has traditionally been one of the most active members of APWSS. Therefore, APWSS wishes our Thai colleagues every success in the election of a new President for the Thai Weed Science Society. The long-standing, healthy relationship with our Society is likely to continue.
- Similarly, APWSS must congratulate Bangladesh colleagues for establishing a Weed Science Society. All APWSS members wish Bangladesh success in this new venture, and hope for closer collaboration in moving forward.

Our Indian colleagues have sent in a lot of information, for which I am thankful. This shows the significance of Indian weed science activities, and their relevance to the Asia-Pacific region.

The next Newsletter will be in April 2009. I am therefore requesting that all contributions to the next Newsletter and any other feedback on the current Issue be sent as soon as possible.

I encourage Country Representatives to provide interesting news from their respective Weed Societies and activities. I also welcome ideas on what might be of interest to a broader membership and suggestions to improve the quality of the Newsletter.

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

Thank you

Dr. Nimal Chandrasena

Newsletter Editor, APWSS

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