

Asian-Pacific Weed Science Society



Commemorating
Forty Years
(1967-2007)



Asian-Pacific Weed Science Society

Commemorating 40 Years (1967-2007)

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Cover design: The APWSS logo, as it evolved through 40 years, against a backdrop of barnyardgrass, (*Echinochloa crusgalli* L.), the worlds' worst weed in rice, the major staple food in the Asian-Pacific region.

Dedication

To our founding fathers

To the memory of the departed APWSS leaders and members

To all the men and women who continue to contribute to the advancement of weed science in the Asian-Pacific region.

Acknowledgements

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APWSS after 40 years:

A look at the past, a glimpse into the future

Out of a need to establish linkages with fellow workers in the Asian-Pacific region, a group of weed scientists founded the Asian-Pacific Weed Science Society in 1967 during the first meeting at the Hawaiian island of Kauai primarily to "facilitate the interchange of current weed control information and to promote research in weed science". Initially supported by the East-West Center at the University of Hawaii, the biennial conferences have since become major fora by which research results were shared, information disseminated to agricultural researchers, and cooperation, even encouragement, developed from the fellowships that resulted from them. Through the conferences, APWSS has also played a key role in the rapid institutionalization of weed management as a science in many universities and research centers. In the words of one of its founding members, Donald Plucknett, "APWSS has linked many scientists in disparate places and enabled them to form relationships, correspondence, and collaborative linkages that flourished through the years. Meeting key people and finding ways to work together on large problems that seem insoluble have been a key feature of APWSS and its success".

To mark its 40th year, APWSS is publishing this compilation of the highlights of the twenty conferences held since the first meeting in Hawaii in 1967. Each year includes the date and place of the conference, the host country, organizers, number of participants, number of papers presented, officers, awardees, notable activities or projects and similar milestones. Each decade starts with a summary of significant weed science or agricultural events and how these may have shaped or affected weed management issues in the region.

For 20 years, from 1983 to 2003, APWSS, in cooperation with the Monsanto Chemical Company, established the Best Paper and Best Poster competition to recognize and encourage high quality research in weed science in the region and the winners were announced during the closing ceremonies. Excerpts from the winning papers and other papers presented at the conferences which may have shaped or reflected the development of weed science in the region are also included for each year. The topics of papers presented through the years, from cultural and chemical control methods in the 1960s, 1970s and 1980s to ecological, biological, and biotechnical approaches in the 1990s to 2000s, reflect the shifts in pest paradigms and weed management strategies that have developed over the years in the Asia-Pacific region as well as in other parts of the world.

From 87 founding members in 1967, the number of participants attending each conference increased to about 300 in the 1980s, peaked at 589 in 1989 and now gradually decreasing to about 250 in 2005, with an average of 330 delegates each year. The number of papers also increased from 50 in 1967, peaked at 223 in 1999 and decreased to 150 in 2005, with an average of 126 papers each year. The number of countries participating was lowest (16) in 1991 and highest (27) in 1997 with an average of 21 countries for each year.

Through this compilation, we look back after 40 years and see how far we have gone since 1967. As an old Asian proverb goes, "He who does not look back where he came from, will not reach his destination." In the same light, we hope that this compilation will help provide us with the insight, past experiences and lessons learned, that will help us move into the future and set the directions for the next 40 years.

Aurora M. Baltazar
Past President, 2001-2003

1960s and 1970s: The founding years

	Year	Date	Place	Papers	Delegates	Countries
1 st	1967	Jun 12-22	Honolulu, Hawaii, USA	50	87	22
2 nd	1969	Jun 16-20	Laguna, Philippines	47	146	20
3 rd	1971	Jun 7-12	Kuala Lumpur, Malaysia	74	200	20
4 th	1973	Mar 12-16	Rotorua, New Zealand	78	300	18
5 th	1975	Oct 5-11	Tokyo, Japan	114	308	21
6 th	1977	Jul 11-17	Jakarta, Indonesia	105	314	22
7 th	1979	Nov 26-30	Sydney, Australia	134	311	18

Significant weed science events before and during the APWSS founding years

- Before 1960: Start of chemical control**
 Herbicides were introduced into Asian-Pacific region: phenoxy (2,4-D, MCPA), amides (butachlor), carbamates (thiobencarb), dinitroanilines (trifluralin), others
- 1960: Green Revolution: Development of "miracle rice" and "Mexican wheat"**
 With the dwarfing gene, miracle rice and miracle wheat were born, signaling the start of the Green Revolution and doubling crop yields. But the high-yielding, short-statured cultivars which replaced tall, traditional cultivars emphasized the importance and critical role of weed control.
- 1970: Shift from transplanting to direct-seeding**
 Rice cropping season increased from one crop per year in transplanted rice, to two (or even 3) crops in direct-seeded rice, again increasing yields. But the water regimes in direct-seeded rice favor growth of grasses, shifting major weed problems from broadleaves to grasses which are more competitive and more difficult to control than broadleaf weeds.
- Pest (weed) paradigms**
 Cultural and chemical strategies for immediate solutions to weed control problems
 Start of interest on integrated weed management and on biological control strategies

First Asian-Pacific Weed Control Interchange, June 1967 held in Hawaii, USA. Standing, fourth row: William Furtick (3rd from right); Don Plucknett. (8th from right). Standing, third row: Horace Clay (2nd from right); Marcos Vega (10th from right); Kenji Noda (11th from right); Michel Lambert (3rd from left). Second row, seated: Roman Romanowski (3rd from right); Shooichi Matsunaka (5th from right); Roger Billman (6th from right); Santiago Obien (7th from left); Front row, seated: Philip Motooka (5th from right); Neil van der Schans (6th from left).



1967 1st APWCI Interchange: June 12-22 East-West Center, University of Hawaii, Honolulu, Hawaii, USA

Theme: Weed control basic to agricultural development

Number of delegates: 87 (22 countries)

Number of papers: 50

Organizers: East-West Center Institute for Technical Interchange;
College of Tropical Agriculture, University of Hawaii

Conference organizers: Donald Plucknett, Harold Clay, Roman Romanowski, William Furtick
Officers (1967- 69) : Chair: Marcos Vega (Philippines); Secretary: Roman Romanowski (USA);

Coordinators: Asian region – Shooichi Matsunaka (Japan); Pacific region –

Kenneth Newton (South Pacific Commission); Industry – Joe Antognini (USA)

Plenary speakers: Spark Matsunaga (U.S. Congressman, Hawaii)

Thomas Hamilton (President, University of Hawaii)

Y. Baron Goto (Vice-Chancellor, Institute for Technical Interchange, East-West Center)

C. Peairs Wilson (Dean, College of Tropical Agriculture, University of Hawaii)

G. Donald Sherman (Associate Director, Hawaii Agricultural Experiment Station, UH)

William Furtick (Director, Oregon State University - USAID Research Contract)

Other milestones:

- Out of the Asian Pacific Weed Control Interchange (APWCI), the Asian-Pacific Weed Science Society was established
- First set of officers were elected: President, Secretary and Area Coordinators

From one of the founding fathers...

"It all began in a kitchen at the East Kauai Methodist Church" Don L. Plucknett

The history of the Asian-Pacific Weed Science Society begins with the first "Asian-Pacific Weed Control Interchange". The story of its beginnings is an interesting story, involving a number of persons who came together to make it all possible.

In 1966, the University of Hawaii and Oregon State University began a new collaborative program to screen new herbicides under subtropical conditions in Hawaii. These experiments were linked with similar experiments in Oregon and Chile (an ecological analogue of Oregon). Professor Bill Furtick of Oregon State had pioneered these experiments that demonstrated the efficacy of linked international experiments and international collaboration in weed science. Sometime in 1965 or 1966 Dr. Furtick had met Dr. Roman R. Romanowski, Jr., Assistant Professor of Horticulture at the University of Hawaii, and they began to plan how they could collaborate in weed research. On his return to Hawaii, Dr. Romanowski contacted me (Dr. Donald L. Plucknett, then Associate Agronomist, University of Hawaii and Superintendent of the Hawaii Agricultural Research Station, Kauai Branch Station, KBS) regarding possible holding of the annual herbicide trials at the KBS. I quickly agreed, and Roman and I brought the matter to the administrators of the UH College of Tropical Agriculture who readily approved. Thus began a very fruitful and fulfilling collaborative arrangement between OSU and the UH Departments of Horticulture and Agronomy and Soil Science. Every year, when the trials were being conducted, Bill Furtick, Roman Romanowski and I spent a lot of time together, working and talking about how weed science might be expanded even further and strengthened to meet the challenges.

In January, 1967, we (Furtick, Romanowski and Plucknett) were relaxing a bit on Kauai after completing work on the annual OSU-UH Herbicide Screening Trials at KBS. We decided to go apart from the crowd for a while and just brainstorm what could and should be done in weed science in the Asia and Pacific region. To be alone, we went to the East Kauai Methodist Church and used the kitchen as a meeting place.

In the discussions which followed, we decided that what we would really like to do was to get a small group of knowledgeable persons – researchers, extension workers, industry scientists – somewhere in a key location (Fiji was one suggestion) to answer some of the following questions: 1) who are the weed workers in the Asian-Pacific area; 2) what are the major weeds and weed problems; 3) what are the research and development needs of the various countries; 4) what linkages are necessary or possible in dealing with the perceived needs?

Funding for the above work became readily apparent. We decided to approach the East-West Center, headquartered at the University of Hawaii, to ascertain their interest. We made an appointment with Dr. Y. Baron Goto, Vice-Chancellor of the East-West Center Institute for Technical Interchange. In our meeting with Baron Goto, we outlined what we wanted to accomplish and what we thought could be done to achieve this. To our surprise, Baron readily agreed that something should be done. He outlined his views somewhat as follows: 1) there should be such a meeting; 2) the meeting should be larger than what we asked for and should survey the Asian-Pacific area; 3) the meeting should be held in Hawaii; 4) the East-West Center's Institute for Technical Interchange would co-sponsor the meeting with the University of Hawaii College of Tropical Agriculture; 5) Dr. Horace Clay (former Extension Ornamental Horticulturist, UH and at that time Special Assistant to Dr. Goto) would act as his staff representative in planning it; and 6) he asked us to begin to develop plans for its implementation.

Later that evening, when Roman and I were seeing Bill Furtick off at the airport, we were enthusiastically searching for a theme for the meeting. We worked it out: "Weed Control Basic to Agricultural Development".

Many steps followed – Baron Goto sent Roman Romanowski to Asia to seek out possible participants and to identify key persons – Roman and I asked Congressman Spark Matsunaga to be our keynote speaker (he readily agreed). We decided to have two locations for the meeting, one week in Honolulu followed by another week in Kauai. Kauai was selected as the site of several field experiments and field trips.

The meeting was a real joy. Many weed workers who had been toiling in isolation for the first time met other persons with similar interests. Surveys of important weeds of crops, of trained workers, and of existing weed science programs, etc. were conducted.

The Proceedings was edited by Roman Romanowski, Don Plucknett and Horace Clay. Several chemical companies helped the University of Hawaii College of Tropical Agriculture and the East-West Center Institute to support its publication.

On the last day of the Interchange, at the Prince Kuhio Hotel near Poipu on the island of Kauai, the Asian-Pacific Weed Science Society was proposed and organized. We met in a large tent on the lawn overlooking the blue Pacific. Here the first officers were elected and given a mandate by the members to proceed with the development of what has become a major regional (and truly international) weed science society.

We have been so fortunate to have good support from many sources, first of all the East-West Center which backed us and got us started and the companies have always been supportive and helpful. And we have had outstanding leadership from an energized, committed membership and individuals who caught the vision and built well beyond what Roman, Bill and I could have envisioned in that tiny little rural church kitchen in Kauai.

Note: Of the main actors involved in the establishment of the APWSS, only Bill Furtick and I (Don Plucknett) are still alive. Roman Romanowski, Horace Clay, Baron Goto and Spark Matsunaga have since departed. We honor their memory and their contribution to weed science and agricultural development.

- Don Plucknett, Honolulu, Hawaii, December 2006

A few words about the founding fathers...

Dr. Donald L. Plucknett triggered the organization of APWSS through personal letters and newsletters which he sent to various people in the Asian-Pacific region. He served as secretary of APWSS for 14 years, from 1969 to 1981. Dr. Plucknett was a professor of agronomy at the University of Hawaii and a specialist in tropical agronomy and weed science. From Hawaii, he went to Washington, DC to head the Natural Resources Management Program of the Agency for International Development, and later was with the World Bank. He also served as Scientific Advisor of the Consultative Group on International Agricultural Research (CGIAR) in Washington, DC in the 1980s. Dr. Plucknett has authored several books, among them, the monumental "The Worlds Worst Weeds" which he wrote with L.G. Holm, J.V. Pancho and J.P. Herberger, and "Weeds of the Tropics" which he wrote with D.F. Saiki.

Dr. Roman T. Romanowski was professor of horticulture in Purdue University and recognized as a vegetable crops and herbicide authority. It was during his stay at the University of Hawaii as Associate Professor of Horticulture that he orchestrated the founding of APWSS, together with Donald Plucknett and William Furtick. While at the University of Hawaii, he made many contributions to the solution of tropical weed problems. He traveled to, and had numerous assignments, in Asia and had a genuine concern for the people of Asia. He co-authored the "Weed Research Methods Manual" published by the Weed Science Society of America (WSSA) in 1971 and was a WSSA fellow in 1981. He passed away in September 1981 after an extended illness.

Dr. William R. Furtick, professor of agronomy and weed science at Oregon State University (retired), was among the first weed scientists to pioneer international collaboration in weed research through a program launched by USAID and Oregon State University starting in 1966. This program was carried out through the International Plant Protection Center at OSU focusing on weed control in the tropics initially in South America and then to Southeast Asia like the Philippines and Indonesia. It was through these weed research collaborative programs between Oregon State University and the University of Hawaii that Dr. Furtick, Dr. Romanowski and Dr. Plucknett initiated the plans to form the APWSS. From the Oregon

State University, Dr. Furtick went on to Washington, DC to serve a high position at the U.S. Agency for International Development (USAID).

Dr. Y. Baron Goto was Vice-Chancellor of the Institute of Technical Interchange (ITI) of the East-West Center, University of Hawaii when the first Asian-Pacific Weed Control Interchange was held in June 1967. It was Dr. Goto who approved the holding of the conference which gave birth to the APWSS. He has traveled a lot in the Asian-Pacific region as agricultural consultant. He was the first Director of the International Cooperation Center which was established in Hawaii when many tropical agricultural technicians went to the island.

Excerpts from papers presented at the first conference:

July 3, 1967, Honolulu, Hawaii – Representatives of 22 countries meeting in Hawaii have formed an international body to attack the mounting food shortage in tropical areas through weed control. The organization is the Asian-Pacific Weed Science Society and it was organized by a recent weed control conference sponsored jointly by the University of Hawaii's College of Tropical Agriculture and the East-West Center's Institute for Technical Interchange...The Society will seek to stimulate research into how extensively weeds limit food production in the tropics, giving major attention to rice in Asia and to coconuts in the Pacific...To date, most research in weed control has been confined to the temperate zone... Countries represented by the 80 founding members of the Society are the U.S., Japan, American Samoa, Philippines, Fiji, Republic of China, Indonesia, Cook Islands, West Germany, Malaysia, Marianas Islands, India, New Caledonia, Western Samoa, New Zealand, Okinawa, Trust Territory of the Pacific, Tonga, Thailand, Pakistan, Hongkong and England....

- News release from East-West Center, Honolulu, Hawaii

...Perhaps the most dramatic example of how successfully herbicides can be used in rice production is to be found in California. Only 7 1/2 man-hours per acre are required to grow rice there, as compared with 400 to 900 man-hours in many other parts of the world...Currently, propanil is being widely used as a postemergence herbicide to control watergrass and other weeds in rice. This particular herbicide has only recently come into use in Japan and in some parts of Southeast Asia... Incidentally, a new variety developed in the Philippines under the direction of the International Rice Research Institute has exactly this desired characteristic. Sizeable amounts of this variety – known as IR-8 – are being test grown in India...Approximately 600 research projects by scientists in many of the developing nations under terms of Public Law 480, the Food for Peace Act, have some application to problems of increasing food production....All of these nations have many problems that require special attention. But they cannot overlook the urgent need for weed control in establishing a basis for feeding their growing millions...

- Spark M. Matsunaga, US Congressman from Hawaii, Keynote speech

....Let me begin by telling you something about the East-West Center, which is one of a number of unusual activities you will find at the University of Hawaii...The Center – which is barely six years old – is a new and experimental department in international education. Its underlying

purpose is to increase understanding among nations through cross-cultural interchange in an academic setting. The people who come here to study and participate in the various Center programs also undertake an obligation to engage in cross-cultural activity, to learn more about one another. In this way, we hope to make some contributions to the development of a more peaceful world...

-Y. Baron Goto, Vice-Chancellor, ITI, East-West Center, University of Hawaii, Plenary Paper

....It seems to me that we have been terribly slow to transfer directly the temperate zone agricultural technology to the tropics and make it work...Secretary Freeman said two years ago: "First there is need for more applied research, and, second, there needs to be more specialized tropical research." He also said, "I'm speaking of the needs for applied research – research to adapt varieties of important staple food crops to local environments, to identify and develop control measures for tropical insects and diseases... F.F. Hill, Ford Foundation said: "It is my considered view that a major roadblock to progress toward increased food production in developing regions of the world has been the lack of substantially improved production technology suitable for use in the tropics and sub-tropics."....

- C. Peairs Wilson, Dean, College of Tropical Agriculture, University of Hawaii, Plenary Paper

....The rather substantial research effort on the value of weed control in temperate zone crops has resulted in a wealth of data on the losses to agriculture as a result of weed encroachment. Unfortunately there has not been this same level of effort in the tropical and semi-tropical areas My reason for dwelling on the importance of weed control in the temperate zone is to dramatize the enormous importance of weed control in tropical agriculture where the number and diversity of weed problems are much greater than under temperate zone conditions and weeds present a problem over a much longer period of the year or in many types of tropics on a full-year basis....Perhaps the best illustration of these inter-relationships can be found with rice, particularly upland rice in which there is no weed control through flooding. This can be clearly illustrated by the following statement from the International Rice Research Institute's 1965 Annual Report which says on page 227: "An important reason for low yields of most upland rice is the absence of effective low-cost weed control..."

- William R. Furtick, Professor, Oregon State University, Plenary Paper



Second Asian-Pacific Weed Science Society conference, June 1969 held in Los Banos, Philippines: (1a) Delegates during the opening ceremony at the International Rice Research Institute auditorium; (1b) Dioscoro Umali, keynote speaker (extreme left), talks with some delegates during the session break; (1c) Marcos Vega, first APWSS president (extreme right) talks with delegates during the session break; (1d) Part of the activities was a field trip to view weed control experiments in sugar cane at the Canlubang Sugar Estate.



Fourth APWSS conference, March 1973, held in Rotorua, New Zealand.



Fifth APWSS conference, October 1975, held in Tokyo, Japan.



Sixth APWSS conference, July 1977 held in Jakarta, Indonesia

1969 2nd Conference: June 16-20 University of the Philippines Los Banos International Rice Research Institute Los Baños, Laguna, Philippines

Theme: None

Number of delegates: 146 (20 countries)

Number of papers: 47

Organizers: Weed Science Society of the Philippines; University of the Philippines Los Baños;
International Rice Research Institute; University of Hawaii; East - West Center Food Institute

Officers (1969-71): President: **Cornelius van der Schans** (Pacific Islands); Vice-President: **Les Matthews** (New Zealand); Secretary: **Donald Plucknett** (USA); Treasurer: **Roger Billman** (USA);
Past President: **Marcos Vega** (Philippines); Program Chairman: **David Barnes** (USA)

Plenary speakers: **Dioscoro Umali** (Dean, College of Agriculture and Vice-President for Forestry and
Agriculture, University of the Philippines); **Leroy Holm** (University of Wisconsin);
William Furtick (Director, OSU-USAID Research Project, Oregon State University);
Y. Baron Goto (Vice-Chancellor, Inst. for Technical Interchange, East-West Center, UH)

Other milestones:

- A President, Vice-President, Treasurer, and Program Chair were added to the set of officers; the position of Area Coordinator was removed.
- Writing of two books, "The World's Worst Weeds" and "A Geographical Atlas of World Weeds", co-authored by APWSS founding members Leroy Holm, Juan Pancho, Donald Plucknett, Horace Clay was planned and started at this meeting. Both books were written at the East-West Center with support from APWSS and the East-West Center at the University of Hawaii.

Excerpts from papers presented at the second conference:

...At the conclusion of your meeting of minds, the way may be paved towards "weedless" agriculture. Along this line I have in mind an exciting experiment I recently saw at the IRRI...This IRRI study had to do with new granular herbicides. In both experimental and control plots, similar cultural practices were done. The experimental plot, however, was weedless and its yield was comparable to that of the handweeded plot. Should the results of this experiment become widely disseminated, a significant step towards the elimination of the backbreaking toil of weeding shall have been made...In after years it will be a great source of pride for us to say that on these grounds was held the meeting that spelled the doom of weeds in agriculture....

- D.L. Umali, University of the Philippines Los Banos,
Keynote Speech

.... I have come to believe that we badly need to know the names, the distribution, and the ecology of the world's worst weeds ... I worked on a weed problem which had reached emergency proportions in one country in Asia, in that locality there were not even the means for giving scientific, common, or local name to the species... There are about 200,000 species of angiosperms recorded...Some estimates suggest that 30,000 of these may behave as weeds. We have looked

at 3,000 and were able to reduce the list of weed species to 100. It now appears that about 50 of these may be worth serious considerations on a world basis. ...One of the characteristics of a troublesome species is that it has established itself over all or most of the agricultural regions of the earth. *Cyperus rotundus*, is a native of Asia, and may be the world's worst weed. It is in all of the major crops and most of the important agricultural regions of the world... We need to know what the world's worst weeds are - so that we can do first things first....

- L. Holm, University of Wisconsin, Plenary Paper

... This means that without weed control, this modern agriculture will end up under a canopy of weeds. It is the duty of the weed science societies to get this story across to others in agriculture.... Since 1966 the USAID has launched a major effort in developing weed control in the nations with which it deals. This program has been carried out through a contract with Oregon State University and is a major function of the International Plant Protection Center. This program was centered initially in South America. A new project will also be established in Southeast Asia....

- W.R. Furtick, Oregon State University, Plenary Paper

1971 3rd Conference: June 7-12 Federal Hotel, Kuala Lumpur, Malaysia

Theme: None

Number of delegates: 200 (20 countries)

Number of papers: 74

Organizers: Malaysian Plant Protection Society; Malaysian Agricultural Research and Development Institute

Officers (1971-73): President: **Les Matthews** (New Zealand); Vice-President: **Kenji Noda** (Japan);

Secretary: **Donald Plucknett** (USA); Treasurer: **Roger Ferguson** (USA);

Past President: **Cornelius van der Schans** (Pacific Islands)

Plenary speaker: **A.H. Moseman** (Director, Malaysian Agricultural Research and Development Institute)

Other milestones:

- Weed Science Society of Indonesia was the first national society to become affiliated with APWSS.

Excerpts from papers presented at the third conference:

....the short-stawed "Mexican wheats" and IRRI rice varieties were less able to compete with weeds than the taller indigenous varieties... In 1954 the Rockefeller Foundation turned attention to the possibility of improving rice production in Asia....The International Rice Research Institute was conceived in 1959, and established in 1962, to provide a multidisciplinary research team approach to develop modern rice production technology for Asian conditions.... The "Mexican wheats" as well as the "Miracle rices" combined to change our targets and prospects for food production in Asia...The Government of Malaysia is taking steps to establish a more effective research base through the Malaysian Agricultural Research and Development Institute.

- *A.H. Moseman, Malaysian Agricultural Research and Development Institute, Keynote Speech*

.... Among 1000 thiolcarbamate derivatives, benthocarb proved the most effective and selective for rice and barnyardgrass....Benthocarb controls barnyardgrass from germination to the 2-leaf stage... Rice is sensitive to benthocarb before the coleoptile stage, but it is not affected after the one-leaf stage....Benthocarb is taken up more from the mesocotyl than from the roots....

- *I. Kimura, Kumiai Chemical Industry Co., Japan, Scientific paper*

.... In 1950, the herbicide 2,4-D was introduced into Japan, thus marking the beginning of what could be called the first period in the history of scientific weed control in Japan. This period, from 1950 to 1958, is characterized by successive development and practice of foliage - treatment herbicides such as 2,4-D, MCPA, and MCPB....The period of development of pentachlorophenol from 1958 to 1962 can be called the second period in the history of new weed control...From the initial discovery of lesser toxic herbicides in 1960 to 1970 might be called the third period.... At present in Japan, nearly the total area of paddy fields is being treated with herbicides....Herbicides are paving the way to direct-sown rice culture.....

- *K. Noda, K. Ozawa, National Kyushu Agricultural Experiment Station, Scientific Paper*

....When the problem of annual weeds become less serious, perennial grasses and sedges take over as the major weed problems. *Scirpus maritimus* is one such perennial sedge...Extensive *Scirpus maritimus* infestation has been observed in the Albay province, and about four thousand hectares are reportedly infested in the Cagayan Valley, Philippines....

- *A.K. Ghosh, D.K. Kim, S.K. De Datta, International Rice Research Institute, Scientific Paper*

1973 4th Conference: March 12-16

Rotorua International Hotel, Rotorua, New Zealand

Theme: None

Number of delegates: 300 (18 countries)

Number of papers: 78

Organizer: New Zealand Weed and Pest Control Society

Officers (1973-75): President: **Kenji Noda** (Japan); Vice-President: **Mohammad Soerjani** (Indonesia); Secretary: **Don Plucknett** (USA); Treasurer: **Roy Nishimoto** (USA); Past President: **Les Matthews** (New Zealand); Newsletter Editor: **Philip Motooka** (USA); Executive Committee members: **Peter Michael** (Australia); **N.C. Joshi** (India); **A. K. Seth** (Malaysia); **Michel Lambert** (Pacific Islands); **Santiago Obien** (Philippines); **Earl Rodgers** (USA); Area Program Convenors: **P. J. Terry** (Africa); **Neil van der Schans** (Pacific Islands); **Larry Burrill** (USA); **Shoichi Matsunaka** (Japan); **Les Matthews** (New Zealand); **Phil Upchurch** (USA)

Plenary speakers: **T.W. Walker** (Lincoln College); **K.F. O'Connor** (Director, Tussock Grasslands and Mountain Lands Institute, Lincoln College); **E.J. Stonyer** (Ministry of Agriculture and Fisheries, New Zealand); **P.B. Lynch** (Ruakura Agricultural Research Center); **W.F. Leonard** (ICI New Zealand); **N.C. Joshi** (Ministry of Agriculture, India)

Other milestones:

- APWSS rules were established.
- Y. Baron Goto was elected first APWSS honorary life member.
- The positions of Secretary and Treasurer were made permanent positions and were based at the University of Hawaii.
- Philip Motooka was appointed APWSS Newsletter Editor. Herbicide and Membership Committees were formed, and were chaired by Santiago Obien and Roy Nishimoto, respectively.
- Six Executive Committee members and six area program convenors were elected.
- Affiliated societies at this time: Weed Science Society of America, Weed Science Society of Japan, Weed Science Society of Indonesia, Weed Science Society of India, New Zealand Weed and Pest Control Society, Council of Australian Weed Science Societies.

Excerpts from papers presented at the fourth conference:

.....Weed control in grazed pastures is primarily a matter of making desirable species grow better. Herbicides have a place to play in weed control in grazed pastures but it is a very secondary one to the positive steps that must be taken to encourage competitive species...The commonest mechanical weed control method in New Zealand pastures is mowing. It is the usual means of brush control...Rotary slashers are used, where the terrain makes their use possible, on a variety of weeds...

- *P.B. Lynch, Ruakura Agricultural Research Centre, New Zealand, Plenary Paper*

.....New Zealand interest in the use of herbicides as an aid to pasture improvement dates back many years. Early success resulted from the use of TCA and 2,2-DPA or mixtures of 2,2-DPA and amitrole....With the discovery of the bipyridyl compound paraquat, however, the situation changed....By

applying paraquat in autumn to pastures containing an element of white clover but dominated by undesirable grasses, Blackmore was able to introduce ryegrass which, coupled with the release of white clover from competition, resulted in a marked improvement in pasture composition...

- *W.F. Leonard, ICI New Zealand Ltd., Wellington, Plenary Paper*

.... Another noxious weed, nutsedge (*Cyperus rotundus*) is extensively spread all over India....An elaborate study for eradication of this weed was made in India as early as 1925 by Ranade and Burns... The hormone type of herbicide, 2,4-D was introduced in 1948....From 1948 to 1972, about 30 sophisticated herbicides belonging to different groups were imported into India...

- *N.C. Joshi, Ministry of Agriculture, India, Plenary Paper*

An ideal approach to purple nutsedge control is to use a systemic herbicide which is capable of killing both the aerial and underground parts. At this time no herbicide has been reported to be effective in this manner without leaving harmful residues in the soil....An alternative method would be to induce all buds on the dormant tubers in the soil to sprout and subsequently use a herbicide to kill the newly formed foliage...

- C.K.H. Teo, B.H. Zandstra, R.K. Nishimoto, University of Hawaii, Scientific Paper

....The taxonomy of many important weedy genera, including *Echinochloa*, is confused....It appears that

probably all of the species listed in Asian countries as *Echinochloa crusgallii* do not belong to that species...Plants listed as *Echinochloa crusgallii* may belong not only to *Echinochloa crusgallii* but also to other species including *Echinochloa oryzoides*, *Echinochloa phyllopogon* (probably the valid name for *Echinochloa oryzicola*) and perhaps others. Much of the material from sub-tropical or tropical areas called *Echinochloa crusgallii* may be referable to *Echinochloa hispidula* usually taken as a synonym of *E. crusgallii*....

- P.W. Michael, University of Sydney, Australia, Scientific Paper

1975 5th Conference: October 5-11 Science Council Conference Hall, Tokyo, Japan

Theme: Integrated control of weeds

Number of delegates: 308 (21 countries)

Number of papers: 114

Organizers: Weed Science Society of Japan; Japan Association for the Advancement of Phyto-Regulators; Science Council of Japan; Ministry of Agriculture and Forestry

Officers (1975-77): President: **Mohammad Soerjani** (Indonesia); Vice-President: **Peter Michael** (Australia); Secretary: **Donald Plucknett** (USA); Treasurer: **Roy Nishimoto** (USA); Past-President: **Kenji Noda** (Japan); Executive Committee members: **Wong See Ping** (Malaysia); **S.K. De Datta** (Philippines); **Les Matthews** (New Zealand); **Michel Lambert** (South Pacific); **Larry Burrill** (USA); **Shooichi Matsunaka** (Japan); **Ojo Adiwinata** (Indonesia)

Plenary speakers: **Y. Togari** (President, Japan Association for Advancement of Phyto-Regulators); **Tomoji Egawa** (Director-General, National Institute of Agricultural Sciences); **John Fryer** (Director, Weed Research Organization, Agricultural Research Council, U.K.)

Other milestones:

- Kenji Noda, Shooichi Matsunaka, and Les Matthews were elected APWSS honorary life members.
- The number of Executive Committee members was increased from 6, to 7 in some years, and 8 in some years. There were no more area program convenors.
- Weed Science Society of the Philippines and Weed Science Society of Thailand became affiliate societies of APWSS.
- APWSS became affiliate of the International Weed Science Society (IWSS). Les Matthews was appointed APWSS representative to IWSS.

Excerpts from papers presented at the fifth conference:

....In October 1965 the first symposium on integrated pest control was held....An FAO/UNDP Cooperative Global Programme for the Development and Application of Integrated Pest Control in Agriculture was launched in 1975....As with insecticides in the 1960s, the question now needs to be posed: "is too much reliance being placed on the routine use of herbicides?"...As far as I am aware this is the

first international symposium ever to be held on the integrated control of weeds. Thus, APWSS is to be congratulated for including it in their programme of the Society's Fifth Conference....

- John Fryer, Agricultural Research Council, Weed Research Organization, UK, Plenary Paper

...The higher yield per ha is in temperate zone countries, such as Australia, Japan, Spain, and the United States, commonly producing rice crops of 6 t/ha or so. Tropical areas, in spite of sufficient sunlight and higher temperatures, generally submit tamely to lower yields and from 1.0 to 2.0 tons/ha on the average... This method first began in rice with the use of 2,4-D, and it dramatically developed in the United States and Japan. It resulted in a revolutionary change in weed control in rice. In Japan, herbicides were used on over 100% of the total rice acreage in 1974, when the acreage where herbicides were used more than twice a year is taken into account... Regardless of whether the rice is transplanted or direct-seeded, barnyardgrass, *Echinochloa crusgalli*, is the most serious weed affecting it... Today, the Asian-Pacific Weed Science Society Conference ranks as the broadest international weed science conference in the world.... It is very delightful for us that recently organized international institutions such as IRRI, CIAT, IITA, and CIMMYT have developed along the lines of one entomologist, one weed scientist, and one plant pathologist... This is in the direction of integrated weed control, a highlight of this conference....

- Kenji Noda, APWSS President, Plenary Paper

...In 1953, water soluble salt formulations of 2,4-D and MCPA have been developed, soon after, these chemicals were

introduced in Japan.... In this history, also we had some typical ages, such as PCP since 1960, diphenylethers since 1964, and benthocarb since 1971... According to an economic study, the labor-man numbers for weeding per hectare have clearly been reduced, for instance this required 63-men in 1950, 34 men in 1960, 16-men in 1970, now 12-men or less.

- Haruhiko Nakayama, Japan Association for Advancement of Phytoregulators, Scientific Paper

...Worldwide emphasis on increased food production has resulted in expanded interest in weed science and created an international need for additional formal education and practical experience opportunities... The International Plant Protection Center at Oregon State University conducts a program aimed at helping meet some of these needs through disseminating publications, a free newsletter, and reprints, as well as participation in short courses and direct response to technical inquiries. IPPC also coordinates an AID-sponsored weed research program in several developing countries like the Philippines and Indonesia....

- A.E. Deutsch, L.C. Burrill, International Plant Protection Center, Oregon State University, Scientific Paper

1977 6th Conference: July 11-17 Hotel Indonesia-Sheraton, Jakarta, Indonesia

Theme: Weed control in small-scale farms

Number of delegates: 314 (22 countries)

Number of papers: 105

Organizers: Weed Science Society of Indonesia; Regional Center for Tropical Biology (BIOTROP); Department of Agriculture

Officers (1977-79): President: **Peter Michael** (Australia); Vice-President: **H.R. Arakeri** (India); Secretary: **Donald Plucknett** (USA); Treasurer: **Roy Nishimoto** (USA); Past President: **Mohamad Soerjani** (Indonesia); APWSS Newsletter Editor: **Philip Motooka** (USA); Executive Committee members: **S.V.R. Shetty** (India); **Ojo Adiwinata** (Indonesia); **Shooichi Matsunaka** (Japan); **Michel Lambert** (Pacific Islands); **Santiago Obien** (Philippines); **Rolf Jessinger** (USA); **Abu Bakar** (Malaysia); **Larry Burrill** (USA).

Plenary speakers: **Thoyib Hadiwijaya** (Minister of Agriculture, Republic of Indonesia) **Ishemat Soerianegara** (Director, Regional Center for Tropical Biology) **Haryono Semangun** (President, Weed Science Society of Indonesia) **A.T. Birowo** (Chief, Bureau of Planning, Department of Agriculture, Indonesia)

Other milestones:

- APWSS celebrated its 10th anniversary this year. To mark this occasion, a publication "Commemorating 10 years of the APWSS" was compiled, designed and published by the International Plant Protection Center (IPPC) at the Oregon State University in Corvallis, Oregon, USA in July 1977.

- Marcos Vega, first APWSS president, was elected APWSS honorary life member.
- The first set of officers of the International Weed Science Society (IWSS) was installed during the APWSS business meeting: Les Matthews – President, Marvin Schreiber – President-Elect, Larry Burrill – Secretary-Treasurer; Shoochi Matsunaka – APWSS representative to the IWSS.
- Four issues of the APWSS Newsletter were published.

Excerpts from papers presented at the sixth conference:

.....with its 6th Conference, the APWSS celebrates its tenth anniversary and all of us present wish it many more decades of success and fruitfulness to come...

- *H.O. Adiwinata, Chair, Organizing Committee, Welcome Remarks*

.....I am happy to learn that the Weed Science Society of Thailand has been formed and is now affiliated with our APWSS. Recently the Malaysian Plant Protection Society was also formally instituted to include a weed control program. The promotion of weed science in the Southeast Asian region seems to be gaining momentum....The introduction of a Weed Science Program under FAO proves this point. With the formation of IWSS the activities of weed science will surely be better coordinated. I propose that our Society establish cooperation not only with IWSS but also with FAO.

- *Mohamad Soerjani, President, APWSS, Presidential Speech*

...While in the past one could proceed to become a phytopathologist or entomologist, now one has to be a plant protectionist first before specializing in a particular field of pest problem such as weeds....As an administrator responsible for regulating the use of pesticides I have keenly followed the increasing volume of pesticides used in Indonesia and the also increasing proportion of herbicides in the total volume of all pesticides combined: while it amounted to only 9% in 1969 it rose to no less than 30% in 1974....

- *Thoyib Hadiwijaya, Minister of Agriculture, Republic of Indonesia, Keynote Speech*

.....The achievement in rice production was attributed mostly to the intensification program, the Indonesian acronym of which is BIMAS Program. BIMAS program is simply a credit package containing the provision of cash, fertilizers, seed, pesticides as well as the provision of intensive extension by the government to the farmers. The intensification program in 1968 covered an area of about 1.60 million hectares which increased to 3.99 million hectares in 1973 or a total increase of 146% during the PELITA I...The yield in the BIMAS program increased from 3.63 t/ha in 1973 to 4.30 t/ha in 1975 or up by 21.8%.... In 1968 there were 1,854 Village Units and increased to 2,557 in 1973, and around 3,000 were estimated in 1975....

- *A.T. Birowo, Ministry of Agriculture, Indonesia, Plenary Paper*

.....Since its inception in 1968, BIOTROP's Tropical Pest Biology Program has held four six-week intensive courses in weed science and seven 6-month research training courses. The six-week courses have been attended by a total of 140 participants and the six-month courses by a total of twelve graduates in biology and agriculture. Further opportunities are being provided in the program for the second five year Development Plan which comes into effect from July 1978.

- *T.O. Robson, Regional Center for Tropical Biology (BIOTROP), Plenary Paper*

1979 7th Conference: November 26-30 Boulevard Hotel, Sydney, Australia

Theme: Weeds in urban bushlands

Number of delegates: 311 (18 countries)

Number of papers: 134

Organizer: Council of Australian Weed Science Societies

Officers (1979-1981): President: **H.R. Arakeri** (India); Vice-President: **Beatriz Mercado** (Philippines);

Secretary: **Donald Plucknett** (USA); Treasurer: **Roy Nishimoto** (USA);
Past President: **Peter Michael** (Australia); Executive Committee members:
K. A. Watson (Australia); **Shooichi Matsunaka** (Japan); **Chris Teoh** (Malaysia);
Umporn Suwunnamek (Thailand); **Terry Cox** (New Zealand); **Michel Lambert**
(Pacific Islands); **Mohamad Soerjani** (Indonesia); **K. Krishnamurthy** (India)

Plenary speakers: **D. Day** (Minister of Agriculture, Australia); **J.R. Hosking** (Agricultural Research Center, Australia); **J.A. Carnahan** (Australia National University);
S.L. Everist (Council of Australian Weed Science Societies)

Other milestones:

- The book, "A Geographical Atlas of the World's Worst Weeds" by Leroy Holm, Juan Pancho, James Herberger and Don Plucknett, which was planned and started during the 1969 APWSS meeting, was published this year. This is the first published atlas on weeds of the world.
- 7 issues of APWSS Newsletter were published
- The Malaysian Plant Protection Society became affiliate society of APWSS

Excerpts from papers presented at the seventh conference:

...*O. aurantiaca* is a major pest in N.S.W. and South Africa and a minor pest in Queensland, which if not controlled, can cover pasture land rendering it useless for grazing...It is now present in 1,060,000 hectares and would take 300,000 man-hours to spray all known infestations in N.S.W. ...

- *J.R. Hosking and P.J. Deighton, Agricultural Research Centre, Australia, Plenary Paper*

...Aquatic weeds are distributed throughout the irrigation areas of south-east Australia. A range of chemical and mechanical techniques have been developed....and each season these authorities spend at least one million dollars on control with herbicides...

- *Kathleen H. Bowmer, CSIRO Division of Irrigation Research, Australia, Scientific Paper*

.....Biological control of aquatic weeds is less than five years old in Australia, but already exciting results have been achieved...*Neochetina eichhorniae* and *Sameodes albigutallus* have been released against *E. crassipes* in October 1975 and October 1977.... *Agasicles hygrophilla* and *Vogtia malloi* were released against alligatorweed from January 1977 and December 1977 respectively. *A. hygrophilla* completely destroyed floating mats of the weed 15 months after release...Two recent developments are the initiation of a programme against *Salvinia molesta*, and the commencement of exploration in South America for agents specifically suited to attack floating weeds under Australian conditions. These results could not have been

obtained without the work of U.S. and C.I.B.C. entomologists....

- *P.M. Room, K.L.S. Harley, M.H. Julien, A.D. Wright, I.W. Forno, CSIRO Division of Entomology, Australia, Scientific Paper*

.....There are 5 weeds that I would like to mention specifically and comment on their control. These are water hyacinth, prickly pear, *Lantana*, serrated tussock and Paterson's curse...I am very pleased to be able to report to you that water hyacinth has been virtually controlled in north-western New South Wales....I would instance the extremely successful use of *Cactoblastis* for the control of prickly-pear ...

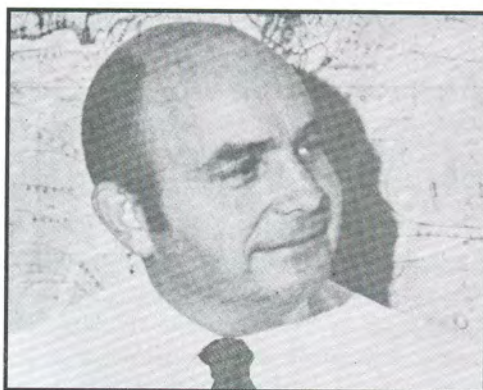
- *D. Day, Minister of Agriculture, N.S.W. Australia, Keynote Speech*

....Much of the emphasis on research on weed control in Australia has been on weeds of pastures used for sheep and cattle...the best weapons we have to control pasture weeds are the annual subterranean clover for the control of St. John's wort, perennial grasses and Lucerne for the control of thistles, and the sub-tropical species *Desmodium* spp and *Macroptilium atropurpureum* for the control of *Ageratina adenophora*....

- *Peter W. Michael, University of Sydney, N.S.W., Australia, Plenary Paper*



Marcos Vega, first APWSS president, being cited as APWSS honorary member during the closing ceremony of the 6th conference.



William R Furtick, APWSS founding father



Les J. Matthews (third APWSS President)



Donald L. Plucknett, APWSS founding father and Secretary (1969-1981) reads the minutes at the 1977 conference.



Kenji Noda (fourth APWSS President);



Mohamad Soerjani (fifth APWSS President)



Peter W. Michael (sixth APWSS President)

1980s: The growing years

	Year	Date	Place	Papers	Delegates	Countries
8 th	1981	Nov 22-29	Bangalore, India	120	311	18
9 th	1983	Nov 28-Dec 2	Manila, Philippines	83	305	20
10 th	1985	Nov 24-30	Chiang Mai, Thailand	117	530	23
11 th	1987	Nov 29-Dec 5	Taipei, Taiwan, China	144	462	17
12 th	1989	Aug 21-26	Seoul, South Korea	198	589	21

Significant weed science events during the APWSS growing years:

- **Chemical control**
Introduction of new herbicide chemistries (aryloxyphenoxys, sulfonylureas) with very low use rates
Shift from sequential applications in 1970s to one-shot treatments in late 1980s
- **Emerging weed problems**
Increase in perennial weed problems once annual weeds are controlled
Increase in grass weed problems in direct-seeded rice
- **Herbicide-resistant weeds**
First appearance of herbicide - resistant weeds in East, Southeast Asia and Australia: sulfonylurea – resistant sedges and broadleaves and 2,4-D – resistant broadleaves
- **Shifts in weed paradigms**
Concerns on environment and human safety and appearance of herbicide-resistant weeds shifted research emphasis from chemical approaches to integrated, ecological and biological approaches to manage weeds

Delegates to the eighth APWSS conference, November 1981, held in Bangalore, India, pose for souvenir photo



1a

1b

1c



Ninth APWSS conference, November 1983, held in Manila, Philippines during the opening ceremonies (1b) and officers (1a): Bonifacio Lapade (WSSP president); Beatriz Mercado (APWSS president); Shooichi Matsunaka (Keynote speaker); Tanongchit Wongsiri (APWSS Vice-President); Peter Michael (Past President); and K. Krishnamurthy (India Execom member). Maxima Mabbayad, senior author of the paper that won first place in the Best Paper competition receives the Best Paper plaque from Roy Nishimoto, Past APWSS Secretary and chair of the Best Paper award committee (1c).

2a

2b

2c



Eleventh APWSS conference, November 1987 held in Taipei, Taiwan, China: some of the Philippine and South Korean delegates pose with Yuh-Lin Chen, 10th APWSS president (2c); During the Executive Committee meeting, from left to right: Keith Moody, APWSS treasurer; Aurora Baltazar, APWSS secretary; and Yuh-Lin Chen, APWSS President (2b). Yuh-Lin Chen and Richard Schumacher of Monsanto Chemicals present the Best Paper plaque to Aurora Baltazar, senior author of the paper that won first place in the Best Paper competition (2a).

3a

3b

3c



Twelfth APWSS conference, August 1989 held in Seoul, South Korea: During the Executive Committee meeting, shown at the center table (3a): Keith Moody, Treasurer; Dong Soo Kim, 11th APWSS President; Y.W. Kwon, Execom member from Korea, Aurora Baltazar, Secretary, and Kil-Ung Kim, Chair of the 12th Conference Organizing Committee; participants at the 12th conference included Jim Hill (Execom member from U.S.A) and Philip Motooka (Past Treasurer) (3b); delegates from the Philippines during the welcome fellowship held on the first night of the conference (3c).

1981 8th Conference: November 22-29 West-End Hotel, Bangalore, India

Theme: Perennial weeds in cropped lands and unwanted vegetation in non-cropped lands

No. of delegates: 311 (18 countries)

No. of papers: 120

Organizers: Indian Society of Weed Science; University of Agricultural Sciences; Karnataka State Department of Agriculture; Indian Council of Agricultural Research; Indian Institute of Agricultural Technology; and Government of India

Officers (1981-83): President: **Beatriz Mercado** (Philippines); Vice-President: **Tanongchit Wongsiri** (Thailand); Secretary: **Roy Nishimoto** (USA); Treasurer and Newsletter Editor: **Philip Motooka** (USA); Past President: **H.R. Arakeri** (India); Executive Committee Members: **Peter Michael** (Australia); **Sri Tjitrosoedirdjo** (Indonesia); **K. Krishnamurthy** (India); **Michel Lambert** (Pacific Islands); **Shooichi Matsunaka** (Japan); **Larry Burrill** (USA); **Terry Cox** (New Zealand); **Christopher Teo** (Malaysia)

Plenary speakers: **O.P. Gautam** (Director-General, Indian Council of Agricultural Research)
Shri Govind Narain (Governor of Karnataka, Bangalore)

Other milestones:

- Dr. Mohamad Soerjani, fifth APWSS president, was elected APWSS Honorary Member.
- Don Plucknett resigned as Secretary to take up an important post in Washington, DC. In his place, Roy Nishimoto was elected Secretary and Philip Motooka was elected Treasurer.
- Five issues of the APWSS Newsletter were published from 1979 to 1981.

Excerpts from papers presented at the eighth conference:

...Today tea plantations account for 60% of total herbicidal use in India...It was in the 1950s that a full-fledged Weed Control Section was established in the Agronomy Division of IARI for the first time...The latest effort to strengthen weed research in India is represented by the All-India Coordinated Research Programme on Weed Control which ICAR has undertaken at fourteen locations in different agro-climatic zones of the country. In 1968, the Indian Society of Weed Science was established and the first issue of the Indian Journal of Weed Science published by this Society came out in 1969...In the last decade, substantial work has been done to identify weed management practices in wheat, paddy, sorghum, maize, pulses, plantation crops, etc. in India.

- *O.P. Gautam, Director General, Indian Council of Agricultural Research, Plenary Paper*

....The Asian-Pacific Weed Science Society is 14 years old, with its first interchange held at the East-West Centre in Honolulu in 1967...It has endeavored to further the objective of the society of promoting knowledge through exchange of ideas and information among different scientists involved in weed science, particularly the Asian-Pacific Region.

- *H.R. Arakeri, President, APWSS, Presidential speech*

.....Weed research is an integral part of ICRISAT's farming systems research that aims to develop improved systems for the small farmers of limited means....Some aspects of the ICRISAT research are described to illustrate how the cropping system itself may be manipulated to improve weed control...While herbicides give good control of susceptible weeds such as *Celosia argentea* or *Brachiaria eruciformis*, this can lead to the proliferation of other weeds such as *Cyperus rotundus* and *Cynodon dactylon*.

- *M. Natarajan, S.V.R. Shetty, R.W. Willey, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India, Plenary Paper*

Due to their better yield potential, the wheat breeder has shown keen interest in developing three-gene dwarf wheat cultivars since they are responsive to higher levels of fertilizers and irrigation and are resistant to lodging as well...However, three-gene dwarf wheat genotypes have proved most conducive for the growth and development of *Phalaris minor*, *Chenopodium album*, and *Melilotus indica*, which are dominant weeds of this crop...The tall genotypes have good weed smothering potential but are low yielders....

- *H.S. Gill, S.P. Mehra, Punjab Agricultural University, India, Scientific paper.*

1983 9th Conference: November 28 - December 2 Philippine Plaza Hotel, Manila, Philippines

Theme: Weed control in cropping systems

Number of delegates: 305 (20 countries)

Number of papers: 83

Organizers: Weed Science Society of the Philippines; Department of Agriculture; Philippine Tobacco Research and Training Center; National Science and Technology Council

Officers (1983-85): President: **Tanongchit Wongsiri** (Thailand); Vice-President: **Yuh-Lin Chen** (Taiwan, China); Secretary and APWSS Newsletter Editor: **Beatriz Mercado** (Philippines); Treasurer: **Keith Moody** (Philippines); Past President: **Beatriz Mercado** (Philippines); Executive Committee members: **K. Krishnamurthy** (India); **Terry Cox** (New Zealand); **Christopher Teoh** (Malaysia); **J. Wiroatmodjo** (Indonesia); **Larry Burrill** (USA); **Peter Michael** (Australia); **Yuji Yamasue** (Japan); **Maneesa Teerawatsakul** (Thailand)

Plenary speaker: Shooichi Matsunaka (Professor, Kobe University, Japan)

Other milestones:

- APWSS initiated the Best Paper Award in 1983 in cooperation with Monsanto Agricultural Company to encourage high quality research in weed science and related fields in the Asia-Pacific region. During each conference, three best papers (oral) and three best posters are selected by a panel of judges headed by Monsanto and the chair of the APWSS Best Paper Award Committee. The award comes with a plaque and cash prize. The winners are announced during the banquet and closing ceremonies on the last day of the conference.
- The Secretariat was moved from Hawaii to the Philippines and the position of APWSS Newsletter Editor was moved to the office of the President. Beatriz Mercado was elected Secretary and Newsletter Editor while Keith Moody was elected Treasurer.
- APWSS sponsored the FAO/IWSS Expert Consultation on Improving Weed Management in Developing Countries Workshop held in Rome, Italy in September 6-11, 1982. A FAO Panel of Experts for Weed Science was appointed.

Best Paper Award winners

1st place: The effect of time and method of land preparation on weed populations in rice

Maxima O. Mabbayad, Paquito P. Pablo, and Keith Moody (Philippines)

2nd place: Distribution of C₃ and C₄ weeds at different crop habitats of an experimental farm

Yuji Yamasue, Y. Fukumoto, and K. Ueki (Japan)

Two Honorable Mention:

Physiological aspects and phytotoxicity of butachlor granules formulated in different ways

B.Y. Oh, J.C. Chun, and H.S. Ryang (South Korea)

Plant growth inhibiting substances contained in *Polygonaceae* weeds

J. Harada and M. Yano (Japan)

Excerpts from papers presented at the ninth conference:

....Alternative weed control technology is developed and is being modified for broadcast-seeded flooded rice...In the past, the most important reason for the rather slow adoption of direct seeding, particularly broadcast-seeding in Southeast Asia, is weed control. Experiments at the IRRI farm from 1976 to 1983 studied the effect of herbicides and their integration with some cultural practices on weed control in broadcast-seeded flooded rice....As a result of new weed control technology and with good irrigation and shorter maturing rices, and

increased labor costs, many farmers in the Philippines, Malaysia, and Thailand are switching from transplanting to broadcast-seeding onto puddled fields....

- *P.C. Bernasor, S.K. De Datta, International Rice Research Institute, Philippines, Scientific Paper*

.....Shifts of weeds from annuals to perennials have been observed in East Asia where herbicides have been used

continuously for years...In the Philippines, perennial weeds *Scirpus maritimus* and *Paspalum distichum* are becoming troublesome where herbicides have been used for several years to control susceptible weeds such as *Echinochloa crusgalli* and *Monochoria vaginalis*...

- Keith Moody, International Rice Research Institute, Philippines, Scientific Paper

...From 1977 to 1981 the International Plant Protection Center (IPPC) of Oregon State University and the National Crop Protection Center (NCPC) of the University of the Philippines Los Banos conducted experiments to determine the effects on upland rice production and subsequent farm income of farmers' existing weed control practices...The average yield reduction in upland rice due to weeds is estimated at 68%. ...Farmers in Batangas and Cavite provinces use up to 900 person-hours per hectare while hand weeding upland rice. The cost of labor has increased 81% over the 4-year period, while

rice farm prices have increased only 40%. ...Butachlor followed by handweeding provides the highest average net revenues over sites and over years for all farm cases studied...

- Stanley F. Miller, Alan Cooper, Dennis O'Brien, International Plant Protection Center, Oregon State University, Scientific Paper

...all of the *Graminae* found in this experiment are C4 plants, and only one species, *Cyperus difformis* in lowland rice, is C3 plant...C4 plants can show high competitive ability under high light intensity and temperature and low water supply....in the rice field surveyed, 8 out of 14 weeds are C4 plants... it is concluded that C4 weeds exhibit high competitive ability and become dominant under favorable conditions....

- Y. Yamasue, Y. Fukumoto, K. Ueki, Kyoto University, Japan, Scientific Paper

1985 10th Conference: November 24-30 Chiang Mai, Thailand

Theme: Weeds and the environment in the tropics

Number of delegates: 530 (23 countries)

Number of papers: 117

Organizers: Weed Science Society of Thailand; Department of Agriculture; Thai Pesticides Association

Officers (1985-87): President: **Yuh-Lin Chen** (Taiwan, China); Vice-President: **Dong Soo Kim** (South Korea); Secretary and Newsletter Editor: **Beatriz Mercado** (Philippines); Assistant Secretary: **Aurora Baltazar** (Philippines); Treasurer: **Keith Moody** (Philippines); Past President: **Tanongchit Wongsiri** (Thailand); Executive Committee members: **Terry Cox** (New Zealand); **Christopher Teoh** (Malaysia); **Larry Burrill** (USA); **Peter Michael** (Australia); **Yuji Yamasue** (Japan); **Mohamad Soerjani** (Indonesia)

Plenary speakers: **Chaiya Poonsiriwong** (Governor, Changmai City)
Keith Moody (President, International Weed Science Society)
John Swarbrick (Member, FAO Panel of Experts on IWM)

Best Paper award winners: No available information on Best Paper Award winners for this year.

Other milestones:

- A logo design contest was held and the current APWSS logo (globe design) was selected as the winner, designed by A.N. Rao of the International Rice Research Institute in Los Banos, Laguna, Philippines.

Excerpts from papers presented at the tenth conference:

...Two insects, *Cyrtobagous salviniae* and *Samea multiplicalis* were released in tropical Australia during 1981 and 1982 for the biological control of the floating fern, *Salvinia molesta*. At a coastal site, the weevil controlled the growth of the weed in as little as 12 months but took up to 4 years at cooler, elevated sites....

- I.W. Forno, CSIRO, Australia, Scientific paper

...Locally, it has been estimated that the effects of weed infestation and subsequent competition are responsible for a yield loss of between 20-30 percent annually in areas of rice production in Chiang Mai province. Almost 50,000

hectares of non-agricultural land in the four northern provinces of Chiang Rai, Chiang Mai, Lampoon and Lampang are currently infested by the troublesome weed *Mimosa pigra*; this weed is now rapidly spreading along both waterways and highways to the southern provinces of Thailand...

- *Tanongchit Wongsiri, Department of Agriculture, Thailand, Scientific paper*

.... Much has happened in weed science over the past 18 years. As examples, we have new herbicide chemistry, herbicide safeners, different methods of application of herbicides, herbicide resistance in weeds, greater concern about the effect of herbicides on the environment, the concern about herbicide safety to humans and environment, biological herbicides, and genetic engineering.... What role has the Asian-Pacific Weed Science Society played during the time that it has been in existence and while these changes have been going on? Obviously by the fact that there are so many people here today from so many parts of the world, the Asian-Pacific Weed Science Society biennial meeting is an important forum for the exchange of weed science information and the society has, therefore, lived up to one of the reasons why it was formed.... I think all of you would agree that this biennial meeting ranks among the most important weed science conferences in the world....

- *Keith Moody, President, International Weed Science Society, Plenary Paper*

.... The function of the FAO Plant Protection Service is to assist developing countries with their weed, insect and plant disease problems.... The weed specialist post was held for

short periods by Dr. L. Holm and Dr. C. Little before being developed as a permanent position by L.J. Mathews since 1977.... The FAO weed specialist is supported in the weed science community of the world by an advisory board of the panel of experts on Improved Weed Management, of which I am privileged to be a member. The panel was set up following the FAO/International Weed Science Society Expert Consultation on Improving Weed Management in developing countries which was held in Rome in September 1982.

- *John T. Swarbrick, University of Queensland, Plenary paper*

.... The most recent serious weed outbreak in Thailand was *Mimosa pigra*, an herbaceous leguminous plant introduced into the country around 1960. Two *Mimosa* species were introduced by the Thai farmers in Chiangmai for the primary purpose of erosion control. The dominant species, *Mimosa pigra*, has experienced a marked increase in distribution and density since 1977....

- *S. Thamasara, Royal Irrigation Department, Thailand, Scientific Paper*

.... Increases in labor costs and irrigated areas, the development of modern early-maturing varieties, and improved weed management techniques have encouraged many farmers in Thailand, Malaysia, and the Philippines to switch from transplanted to direct-seeded flooded rice culture.... Based on research at IRRI during the late sixties, butachlor and thiobencarb are now marketed in 22 and 56 countries, respectively....

- *S.K. De Datta, J.C. Flinn, International Rice Research Institute, Philippines, Scientific paper*

1987 11th Conference: November 29-December 5 Howard Plaza Hotel, Taipei, Taiwan, China

Theme: Weeds and their control in vegetable production

Number of delegates: 462 (17 countries)

Number of papers: 144

Organizers: Weed Science Society of the Republic of China; Asian Vegetable Research & Development Center; Asia-Pacific Food and Fertilizer Technology Center

Officers (1987-89): President: **Dong Soo Kim** (South Korea); Vice-President: **Achmad Soedarsan** (Indonesia); Secretary and Newsletter Editor: **Aurora Baltazar** (Philippines); Treasurer: **Keith Moody** (Philippines); Past President: **Yuh-Lin Chen** (Taiwan, China); Executive Committee members: **K. Krishnamurthy** (India); **Christopher Teoh** (Malaysia); **Larry Burrill** (USA); **Yuji Yamasue** (Japan); **Terry Cox** (New Zealand);

Mohamad Soerjani (Indonesia); Peter Michael (Australia);
Manessa Teerawatsakul (Thailand)
Plenary speakers: Y.T. Wang (Chairman, Council of Agriculture, Taiwan, China)
Keith Moody (President, International Weed Science Society)

Best Paper awards

- 1st place: Activity, absorption, and translocation of fluazifop-butyl in upland rice and in three grass weeds
Aurora M. Baltazar, S.K. De Datta, and Marian A. Llagas (Philippines)
2nd place: Effect of bensulfuron-methyl on growth, inhibition, and regrowth of *Sagittaria pygmaea*
J.C. Chun, H.J. Kim and H.S. Lee (South Korea)
3rd place: Herbicidal activity and molecular fate of chlomethoxynil in the light and dark
K. Ishizuka and H. Matsumoto (Japan)

Best Poster awards (three winners, no ranking)

- Three submerged aquatic weeds of the family *Hydrocharitaceae* in Japan
Y. Oki, K. Imanishi and K. Nakagawa (Japan)
Fate of the herbicide naproanilide in a rice paddy model ecosystem
K.L. Hwang, Y.S. Wang and Y.L. Chen (Taiwan, China)
Growth pattern and tuber formation of *Cyperus rotundus*
C.I. Yuan and L.S. Leu (Taiwan, China)

Other milestones:

- APWSS initiated the "Young and Deserving Scientists Travel Grant" to give partial support to members to present papers at the APWSS conference. The following year, 1989, the criteria for selection of qualified applicants, the number of grantees, and the amount of support was determined at the South Korea conference.
- The Weed Science Society of America and the APWSS agreed to establish an official exchange of conference delegates to promote closer contact between the two societies. The official WSSA delegate to the 1987 APWSS conference was Richard Schumacher (WSSA Liaison to APWSS) while the official APWSS delegate to the WSSA meeting in 1988 was Yuh-Lin Chen (Past President, APWSS).
- Five issues of APWSS Newsletter were published from 1985 to 1987.
- APWSS Vice-President was appointed official representative to IWSS.

Excerpts from papers presented at the eleventh conference:

...Since we last met in Chiangmai, Thailand in November 1985 several important events have occurred in the region. Among these are the establishment of the: Southeast Asian Weed Information Center at BIOTROP in Indonesia, the Tropical Weeds Research Center in Australia, and the Pakistan Weed Science Society; and the holding of the International Conference on Pesticides in Tropical Agriculture in Malaysia and the 11th International Congress of Plant Protection in Manila, Philippines- the first time that this prestigious conference has been held in a developing country....

- Keith Moody, President, International Weed Science Society, Plenary Paper

...The recent discovery of postemergence grass herbicides expands the control options for rice growers. The principal objective of these studies was to identify rates and times of fluazifop-butyl applications which are selective to rice, yet provide adequate control of three grass weeds - itchgrass, goosegrass, and jungle rice. Our results indicate that, at certain rates and times of application, rice can tolerate fluazifop-butyl. These rates and times of application also provide adequate-to-excellent control of the grass weeds commonly associated with upland rice. The susceptibility of goosegrass, which was greater than that of itchgrass or junglerice, could have been due in part to the greater translocation of the herbicide in this species....

- A.M. Baltazar, S.K. De Datta, M. A. Llagas, University of the Philippines Los Banos and International Rice Research Institute, Scientific paper

.....This study was conducted to investigate the effects of butachlor on production of α -amylase and protease in seed germination and cell division and cell elongation in early seedling development. Production of α -amylase and protease in germinating rice seeds was inhibited by butachlor. However, butachlor did not affect hydrolytic reaction per se of the two enzymes....Butachlor did not disrupt the mitotic sequence, but induced an inhibition of mitotic entry, resulting in delayed cell division....Butachlor primarily inhibited cell division and secondarily cell elongation...

- J.C. Chun, I.T. Hwang, Jeonbug National University, South Korea, Scientific paper

.....Three most popular herbicides used for the control of weeds in paddy fields in Taiwan are butachlor, thiobencarb and chlomethoxynil. The residues of the herbicides in the paddy water decreased as time elapsed and in the second crop it showed higher dissipation rate than that of the first crop....Dissipation of the herbicides in the soil followed the first order kinetics with DT-50 (50% disappearance time) ranging from 0.28 to 10 days and DT-90 (90% disappearance time) ranging from 19 to 42 days....Benthiocarb was found

to be more persistent than chlomethoxynil and butachlor was the least persistent...

- *Hann-Chyuan Chiang, Yei-Shung Wang, Yuh-Lin Chen, National Taiwan University, Scientific paper*

...Field experiments indicate that weed competition resulted in mean yield losses of 21% and 33% in direct-seeded and transplanted vegetables, respectively. The most

dominant weeds in vegetable fields are: *Portulaca oleracea*, *Stellaria aquatica*, *Digitaria adscendens*, and *Cyperus iria*. There are nineteen kinds of registered herbicides to control weeds in vegetable fields in Taiwan. Butralin, linuron, oxyfluorfen, fluazifop-butyl, butachlor, and alachlor are used commonly by farmers.

- *Y.J. Chiang, L.S. Leu, Taiwan Agricultural Chemicals and Toxic Substances Research Institute, Scientific paper*

1989 12th Conference: August 21-26 Ramada Renaissance Hotel, Seoul, South Korea

Theme: Weed problems and their economic weed management in the Asian-Pacific Region

Number of delegates: 589 (21 countries)

Number of papers: 198

Organizers: Korean Society of Weed Science

Officers (1989-91): President: **Achmad Soedarsan** (Indonesia); Vice-President: **John Swarbrick** (Australia); Secretary: **Aurora Baltazar** (Philippines); Treasurer: **Keith Moody** (Philippines); Past President: **Dong Soo Kim** (South Korea); Executive Committee members: **David Campbell** (Australia); **Ze Pu Zhang** (Beijing, China); **S.K. Mukhopadhyay** (India); **Sri Tjitrosoedirdjo** (Indonesia); **Yuji Yamasue** (Japan); **Kil-Ung Kim** (South Korea); **Ng Kwang Yew** (Malaysia); **Anis Rahman** (New Zealand); **Rashid Ahmad Shad** (Pakistan); **Bonifacio Lapade** (Philippines); **Visut Chandrangsu** (Thailand); **Yuh-Lin Chen** (Taiwan, China); **James Riggelman** (USA)

Plenary speakers: **Yung Bog Chae** (Korea Research Institute of Chemical Technology)

John Ahrens (President, Weed Science Society of America)

Marcos Vega (Past President, APWSS)

Shooichi Matsunaka (Professor, Kobe University)

S.K. De Datta (Principal Scientist, International Rice Research Institute)

Best Paper awards

1st place: Distribution of propanil-hydrolyzing enzyme, arylacylamidase I, in genus *Oryza*

Jian Jun Chen and Shooichi Matsunaka (Japan)

2nd place: Ecophysiological studies in relation to weed management strategies in rice

Ampong Nyarko Kwesi and S.K. De Datta (Philippines)

3rd place: Frost as a limiting factor in the distribution of *Senecio madagascariensis* in Australia

B.M. Sindel and Peter W. Michael (Australia)

Best poster awards: (three winners, no ranking)

Biochemical identification of *Echinochloa* species collected in Korea

K.U. Kim, J.H. Kim, and I.J. Lee (South Korea)

A simple and rapid screening method for herbicidal photosynthetic electron transport inhibitors using liverwort photoautotrophic cultured cells

S.S. Kwak, K. Ichinose, M. Kishida, S. Yoshida, N. Takahashi, F. Sato, and Y. Yamada (Japan)

Seed germination characteristics of *Alisma canaliculatum*

Y.C. Ku, T. Sumiyoshi, N. Ishikura, and H. Nakamura (Japan)

Other milestones:

- APWSS marked its 20th anniversary this year. A special program was held to honor and recognize the founding members, charter members, and past presidents of the Society for their contributions to APWSS.
- A special program was held to honor Donald Plucknett, one of the founding fathers of APWSS. A plaque of citation was given to him in recognition of his pioneering and dedicated efforts in establishing APWSS.
- The number of Executive Committee members was increased from 7 (8 in some years) to 13, the current number of societies affiliated with APWSS. This rule was ratified by the members at the business meeting held during the conference. An affiliated society is any national weed science society who actively participates in APWSS activities. Payment of dues by the affiliated societies is not necessary. Starting in 1989, there were 13 national societies represented at the APWSS Executive Committee from the following countries:

Australia, Beijing, China, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Pakistan, Philippines, Taiwan, China, Thailand, and the U.S.A.

- The APWSS membership fee of US \$10 was included in the conference registration fee, thus, starting in 1989, all registered delegates automatically became members of APWSS for that particular year.
- Beatriz Mercado, APWSS secretary since 1983, passed away in February 1988. Aurora Baltazar was elected new APWSS secretary and Newsletter Editor. Keith Moody continued as APWSS treasurer.
- The Korean Society of Weed Science, organizer and host of the 12th conference, donated the APWSS flag. The flag will be passed on at the close of each conference to symbolize the passing of responsibility from one host society or organizing committee to the next.
- Six issues of the APWSS Newsletter were published from 1987 to 1989.

Excerpts from papers presented at the twelfth conference:

.....The Korean Weed Science Society was established in 1981 with relatively small number of experts....However, the rapid and dynamic changes taking place in Korea during last two decades led to understanding of weed science as an important field in agricultural development. Nowadays herbicide becomes the main tool for weed control replacing manual control method.... However, we have to worry about environmental contamination injuries created by intensive use of herbicides. In this regard, I would say that the best control method might be an integrated weed control employing cultural and biological methods together with herbicide. This method can be implemented by an economic use of methods concerned. That is why Economic Weed Control, which should deal with all aspects of control methods from several angles reflecting academic, practical and industrial inputs, has been chosen as the symposium theme....

- Dong Soo Kim, President, APWSS, Rural Development Administration, Korea, Presidential speech

.....The Korean market of the agrochemicals is 270 billion Won, that is about 400 million US dollars. It corresponds to 2% of the world market. ...The market is divided into 35.% fungicide, 39% insecticide and 20% herbicide. As you can see herbicide occupies the low level compared with world trend. Due to the industrialization, however, as rural population is constantly decreasing and getting aged, the herbicide market will gradually increase....

- Yung Bog Chae, Korea Research Institute of Chemical Technology, Plenary Paper

.....This study indicates that *Cyperus serotinus* was most sensitive to bensulfuron because of slow metabolic rate and faster translocation rate...The higher tolerance of rice and relatively high tolerance of barnyardgrass may be caused by the ability of the two species to metabolize bensulfuron to inactive metabolites at a rate much faster than that of *Cyperus serotinus*....

- Jong Yeong Pyon, Chae Soon Kwon, Chungnam University, Korea, Scientific paper

.....Twenty three wild rice species including 102 strains were surveyed for aryl acylamidase I (AAI), a key enzyme in the detoxification of propanil in rice plants...The AAI distribution figure in *Oryza* offers an excellent indication for wild rice control by propanil...This unique selective action of propanil is attributable to the enzyme aryl

acylamidase I (AAI) in rice plants, which specifically catalyzes the hydrolysis of propanil to dichloroaniline and propionic acid....

- Chen Jian Jun, Shooichi Matsunaka, Kobe University Japan, Scientific paper

.....I will paraphrase two questions asked in the publication, thus "Why is a society formed? I will quote the response given in the publication "The answer revolves around need - A need for linkages, whether local, regional, or intercontinental - A need to share information, experimental results, problems, answers"...My personal opinion is the Asian-Pacific Weed Science Society has to a large measure fulfilled these needs. ...There are changes in the world around us that impact on our practice of weed science and I strongly urge APWSS to keep up with the changes....

- Marcos Vega, University of the Philippines Los Baños, Plenary paper

.....It is a great pleasure to attend this Asian-Pacific Weed Science Society conference in Korea and to receive this award. As you know, I was privileged to help establish the APWSS at the First Asian-Pacific Weed Control Interchange held in Hawaii in June, 1967. I am just sorry that the other two men who worked with me in establishing the society couldn't be here too. As you may know, Dr. Roman R. Romanowski, Jr. passed away several years ago, and Dr. William R. Furtick is currently serving in a high position with the Agency for International Development in Washington, DC and could not get away for this meeting. Both of these men played significant roles in APWSS in the past, especially Dr. Romanowski who was the first Secretary of the Society and who played such an important role in getting it underway in its early years...I have always been proud of what the Society has been able to achieve. I have been told that the Asian-Pacific Weed Science Society is now the largest regional Weed Science Society in the world...And while I would not want to diminish the importance of diseases and insects, such problems are not always present in every crop, but every field in every growing season has a weed problem that must be addressed....

- Donald Plucknett, Scientific Advisor, Consultative Group on International Agricultural Research, Washington, D.C., U.S.A. (Speech delivered when he received a Special Citation from APWSS on the occasion of APWSS 20th anniversary)

1990s: The maturing years

	Year	Date	Place	Papers	Delegates	Countries
13 th	1991	Oct 15-18	Jakarta, Indonesia	96	199	16
14 th	1993	Sep 6-10	Brisbane, Australia	114	453	18
15 th	1995	Jul 24-28	Tsukuba, Japan	182	450	20
16 th	1997	Sep 8-12	Kuala Lumpur, Malaysia	140	375	27
17 th	1999	Nov 22-27	Bangkok, Thailand	223	392	21

Significant weed science events during the APWSS maturing years:

- **Chemical control**
More weed species develop resistance to sulfonylureas, aryloxyphenoxys
- **Emerging weed problems**
Grass weed problems continue to increase: Weedy rice, *Ischaemum rugosum*, *Leptochloa chinensis*
More perennial weed problems
- **New pest (weed) paradigms: IPM, IWM, sustainable agriculture**
Increased interest in biological, cultural, and ecological approaches
Expanded search for botanical and biological weed control agents
Increased interest in knowledge-based decision-support approaches (expert systems, simulation models)
- **Development of transgenic herbicide-resistant crops**
Herbicide-resistant crops are introduced to the Asia - Pacific region



Officers during the 13th conference, October 1991, held in Jakarta, Indonesia (1a): Aurora Baltazar, Outgoing Secretary; Anis Rahman, Treasurer; John Swarbrick, Vice-President; Jenny Bibo, Incoming Secretary; Achmad Soedarsan, 12th APWSS President; Achmad Soedarsan and Aurora Baltazar present their reports during the general business meeting (1b); Delegates try the native Indonesian dance during the closing ceremonies (1c).

17th APWSS conference, November 1999, held in Bangkok, Thailand; shown are some of the officers for 1999 during the closing ceremony: Rungsit Suwanketnikom, 16th APWSS President, Kozo Ishizuka, Editor, Weed Biology and Management Journal, and Ze Pu Zhang, Vice-President (2a).



2a

Some of the officers during the dinner and closing ceremonies; Sombat Chinawong, Secretary (extreme left); Rungsit Suwanketnikom, President (second from right); Ze Pu Zhang, Vice-President (extreme right) (2b).



2b



2c

The President, Rungsit Suwanketnikom gives his report during the closing ceremonies (2c); Ze Pu Zhang, Vice-President, delivers his acceptance speech as the next host of the 2001 (18th) APWSS conference (2d).



2d

1991 13th Conference: October 15-18 Hotel Indonesia, Jakarta, Indonesia

Theme: Vegetation management strategy for sustainable development

Number of delegates: 199 (16 countries)

Number of papers: 96

Organizers: Weed Science Society of Indonesia; Department of Agriculture

Officers (1991-93): President: **John Swarbrick** (Australia); Vice-President: **Kozo Ishizuka** (Japan); Secretary: **Jenny Bibo** (Australia); Treasurer: **Anis Rahman** (New Zealand); Past President: **Achmad Soedarsan** (Indonesia); APWSS Newsletter Editor: **Aurora Baltazar** (Philippines); Executive Committee members: **Yuji Yamasue** (Japan); **David Campbell** (Australia); **Ze Pu Zhang** (Beijing, China); **Kil-Ung Kim** (South Korea); **S.K. Mukhopadhyay** (India); **S. Tjitroseminto** (Indonesia); **Anwar Ismail** (Malaysia); **Anis Rahman** (New Zealand); **Rashid Ahmad Shad** (Pakistan); **Bonifacio Lapade** (Philippines); **Visut Chandrangsue** (Thailand); **Yuh-Lin Chen** (Taiwan, China); **James Riggelman** (USA)

Plenary speakers: **Mohamad Soerjani** (University of Indonesia)
Keith Moody (International Rice Research Institute)
M. Numata (Natural History Museum and Institute, Japan)
John Swarbrick (University of Queensland)

Best Paper awards: Protein patterns of rice (*Oryza sativa* L.) Cultivar affected by thiobencarb herbicide
H.Y. Kim, K.U. Kim, and D.H. Shin (South Korea)

Best Poster awards: Expert systems on weed identification in rubber plantation
S.S. Tjitrosoedirdjo, I. Mawardi, and M. Djojomartono (Indonesia)

Other milestones:

- The Executive Committee decided that the position of Secretary should be at the same location as the president. Jenny Bibo from Australia was elected new Secretary. Keith Moody resigned as Treasurer in early 1991. Aurora Baltazar was appointed Acting Treasurer until the election of Anis Rahman as Treasurer at the Executive Committee meeting.
- Similar to the previous year, there were 13 national societies and countries represented at the Executive Committee.
- Since the \$10 membership fee was included in the conference registration fee, all registered delegates were also APWSS members for this year.

Excerpts from papers presented at the thirteenth conference:

.....For the past 10-15 years in Southeast Asia, there has been a general shift in rice production system from transplanted to direct-seeded, of which wet seeding has been the main method adopted in Malaysia, Thailand and Philippines... Widespread adoption of molinate in Muda area, Malaysia for the control of *Echinochloa* species has resulted in species displacement in favor of *Leptochloa chinensis* and *Ischaemum rugosum*.... In the Philippines, perennial weeds such as *Scirpus maritimus* and *Paspalum distichum* have become troublesome when herbicides have been used to control susceptible annual weeds such as *E. crus-galli* and *M. vaginalis*....

- *Keith Moody, International Rice Research Institute, Philippines, Plenary Paper*

...In the irrigated areas of Thailand, Philippines, Sri Lanka, Malaysia and Fiji Island, rapid changes from transplanting to direct seeded method have been motivated by the introduction of effective herbicides, development of short-

culm and early maturing rice cultivars and high labor cost of transplanting.... Changes in the rice planting method have caused a shift of weed population and flora. Tremendous increase in the population of grassy weeds especially *Echinochloa crus-galli* complex, *E. colona*, *E. stagnina*, *Leptochloa chinensis* and *Ischaemum rugosum* has been noticed....

- *Kazuyuki Itoh, Malaysian Agricultural Research and Development Institute, Plenary paper*

.....Today, the emphasis has turned from weed control as such toward vegetation management, using environmentally acceptable yet economically effective remedies for the presence of weeds, resulting from integrating management strategies.... To meet these changes there will be increased scope for knowledge-based decision-support approaches such as expert systems and simulation models.... Expert systems have many predictive and diagnostic applications

in weed management, particularly in the development of integrated approaches to crop management....

- John Mayall, CAB International, UK, Plenary paper

....The *Imperata* Project was funded by the United Kingdom Overseas Development Administration (ODA) in collaboration with the Government of Indonesia, the SEAMEO Regional Centre for Tropical Biology, Bogor and the Research Institute for Estate Crops...Weed-wiping with a herbicide-soaked cloth has been a common practice in plantations in Southeast Asia for many years. Recently, equipment has been developed for wiping concentrated solutions of herbicide, primarily glyphosate, onto target weeds....Hand-held wipers are swung or pushed throughout the weed foliage, directly applying a smear of herbicide to the target plants....

- T.I. Cox, P.J. Terry, D.E. Johnson, University of Bristol, Long Ashton Research Station, United Kingdom, Scientific paper

....Universities in many countries are becoming aware of the problems weeds created in crops, and now include an undergraduate subject in weed science in or topics in courses in crop protection. Some have both graduate and undergraduate courses....The need for weed control specialists is growing very rapidly. Agribusiness which centers around the sale of herbicides or pesticides require many graduates in weed science and crop protection. Weed science is now recognized as a separate discipline within plant protection in many countries....

- Sri Tjitrosoedirdjo, Regional Center for Tropical Biology, Indonesia, Plenary paper

1993 14th Conference: September 6-10 Sheraton Brisbane Hotel, Brisbane, Queensland, Australia

Theme: Weed management – Towards tomorrow

Number of delegates: 453 (18 countries)

Number of papers: 114

Organizers: Council of Australian Weed Science Societies; Weed Science Society of Queensland; Australian Federal Government

Officers (1993-95): President: **Kozo Ishizuka** (Japan); Vice-President: **Anwar Ismail** (Malaysia); Secretary: **Yuji Yamasue** (Japan); Treasurer: **Anis Rahman** (New Zealand); Past President and APWSS Newsletter Editor: **John Swarbrick** (Australia); Executive Committee members: **Aik Hock Cheam** (Australia); **Ze Pu Zhang** (Beijing, China); **Sisir Mukhopadhyay** (India); **Soekisman Tjitrosemito** (Indonesia); **Yuji Yamasue** (Japan); **Jong Yeong Pyon** (South Korea); **Anwar Ismail** (Malaysia); **Anis Rahman** (New Zealand); **Rashid Ahmad Shad** (Pakistan); **Bonifacio Lapade** (Philippines); **Yuh-Lin Chen** (Taiwan, China); **Prasan Vongsaroj** (Thailand); **Roy Nishimoto** (USA)

Plenary Speakers: **K.F. Kon** (Ciba Research Station, Malaysia); **D.T. Briesse** (CSIRO Division of Entomology, Australia); **L.W. Smith** (Department of Agriculture, Australia); **Tang Hong Yuan** (Shanghai Academy of Agricultural Sciences, China)

Best paper awards:

Dynamics of weed invasion: Implications for control

- **R.J. Hobbs** (Australia)

Best poster awards: No information available for this year.

Other milestones:

- Rules and criteria concerning selection of grantees of the APWSS Young and Deserving Scientists Travel Grant were finalized this year: 1) grantees should not be more than 35 years old, and 2) must present a high quality paper at the conference. The panel to select qualified recipients was composed of the organizing committee and senior APWSS members. Full implementation of this travel grant started the following year (1995).
- Yuji Yamasue was elected APWSS Secretary.
- Two issues of the APWSS Newsletter were published from 1991 to 1993.

Excerpts from papers presented at the fourteenth conference:

.....The extension programme has enabled establishment of control agents to be achieved at many widely distributed release sites much more rapidly than would have been previously possible...St. John's wort beetle rapidly became established on St. John's wort (*Hypericum perforatum*) throughout New Zealand. After redistribution under the extension programme, cinnabar moth is now established at sites throughout New Zealand...

- *P. Syrett, L.M. Hayes, J.J. Sheat, Manaaki Whenua-Landcare Research, New Zealand, Scientific paper*

.....Weed scientists have a particularly important role in the development of national approach to pesticide use for several reasons: herbicides are the single most important group of pesticides in use in Australia, representing more than sixty percent of sales; herbicide use has increased as farmers have adopted minimum tillage technology; existing public concern about herbicides contaminating the environment; and the development of herbicide resistant crops will heighten debate on the use of pesticides...

- *G. Evans, P. Rowland, D. Adams, Dept. of Primary Industries and Energy, Australia, Plenary paper*

....By far the greatest number of occurrences of herbicide resistance in Australia has been for annual ryegrass (*Lolium rigidum*) growing as a weed in continuous cropping rotations (usually wheat/lupins) treated with selective grass herbicides...For simplicity we assume that the land is cropped with wheat each year until the number of weeds

resistant to herbicide is so great that livestock grazing of pasture is more profitable than further cropping...

- *A.K. Abadi Ghadim, D.J. Pannell, R.J. Gorddard, Department of Agriculture, Australia, Scientific paper*

.....At Murray Bridge immediately after discovery of branched broomrape in October 1992, we handpulled all 125 emerged plants prior to seed production. We fenced the 3000 m² infested area to stop spread on livestock and vehicles. During 1993 we intend to plant a sacrifice host crop. In September 1993 we plan to destroy it with glyphosate...Provided we do not find any other infestation we believe the infestation may be eradicated in 10 years...

- *R.J. Carter, SA Animal & Plant Control Commission, Australia, Scientific paper*

.....Within 2 years of its introduction as a salt tolerant forage plant for saltland rehabilitation, kochia showed weedy attributes by proliferating and spreading to non-saline soils...In view of the perceived threat to Australian agriculture and the weed's current restriction to Western Australia, joint Federal and State funding for a four-year eradication program for kochia was approved in March 1993....A vigorous program of herbicide treatment, crash grazing; and grubbing was conducted at all known infestations in autumn 1993, with the aim of preventing seed production by destroying all known kochia plants...

- *J. Dodd, J.H. Moore, South Perth, Australia; Scientific paper*

1995 15th Conference: July 24-28 Dai-ichi Hotel, Tsukuba, Japan

Theme: Innovative weed management strategy for sustainable agriculture

Number of delegates: 450 (20 countries)

Number of papers: 182

Organizers: Weed Science Society of Japan; Japan Society for Advancement of Phyto-Regulators

Officers (1995-97): President: **Anwar Ismail** (Malaysia); Vice-President: **Rungsit Suwanketnikom** (Thailand); Secretary: **Baki Bakar** (Malaysia); Treasurer: **Anis Rahman** (New Zealand); Past President: **Kozo Ishizuka** (Japan); APWSS Newsletter Editor:

John Swarbrick (Australia); Executive Committee members: **Aik Hock Cheam** (Australia); **Ze Pu Zhang** (Beijing, China); **Edison Purba** (Indonesia);

Sisir Mukhopadhyay (India); **Yuji Yamasue** (Japan); **Jong Yeong Pyon** (South Korea); **Baki Bakar** (Malaysia); **Anis Rahman** (New Zealand); **Rashid Ahmad Shad** (Pakistan);

Bonifacio Lapade (Philippines); Rungsit Suwanketnikom (Thailand);
Lai Quey Wu (Taiwan, China); Roy Nishimoto (USA).
Plenary speakers: K. Adulavidhaya (President, Kasetsart University, Thailand)
S.K. De Datta (Director, Office of International Research & Development, Virginia Tech)
H. Chisaka (Japan Association for the Advancement of Phyto-Regulators)
S.K. Mukhopadhyay (Head, Weed Science Laboratory, Institute of Agriculture, India)

Best Paper Awards:

1st place: Calculating chlorsulfuron concentration in plants: an approach for detecting the mechanism of herbicide sensitivity - *F. Dastgheib and R.J. Field (New Zealand)*

2nd place: Revegetation of embankment slopes with cogongrass (*Imperata cylindrica* var. Keonigii)
K. Asami, H. Akamatsu, and T. Hattori (Japan)

3rd place: Effect of water stress on glyphosate phytotoxicity: histological study of *Imperata cylindrica*
P. Wanichanantakul and K. Pongern (Thailand)

Best Poster Awards:

1st place: Detection of DNA fingerprints of *Sagittaria trifolia*

R. Miura, C. An, T. Kusanagi, and R. Terauci (Japan)

2nd place: Status and control of weedy rice in the Muda area of Malaysia

I. Md. Zuki, H. Watanabe, and N.K. Ho (Malaysia)

3rd place: Effect of glyphosate on growth of indica rice callus and regenerated plants.

S. Surawattananon, C. Wongwattane, K. Namwongpram, K. Sangnil, M. Nakorn, and S. Chaum (Thailand)

Other milestones:

- Recipients of the Young and Deserving Scientists Travel Grant for this year were **Tao Bo (Beijing, China)** and **A.N. Tewari (India)** who received \$500 each plus waived registration fee from APWSS to enable them to attend and present papers at the 15th APWSS conference in Japan.

Excerpts from papers presented at the fifteenth conference:

.....*Salvinia molesta*, the haunting nightmare of farmers of Kutanad and kole lands in Kerala India, has finally succumbed to a tiny beetle, *Cyrtobagous salviniae*, introduced from Australia...This phenomenal biological suppression has been accomplished over a wide area of 1000 km² in the short period of two years... the weevil has remained strictly host-specific to the target plant...The farmers of Kuttanad and kole lands have benefited immensely by reduction of weed damage and has saved Rs 6.8 million per year. The once choked navigation canals have been cleared for transportation. An hourly cut of about 25 per cent in time and one litre in diesel is now experienced by motorboats in the weed-free canals...

- *P.J. Joy, D. Joseph, N.V. Satheesan and K.R. Lyla, Kerala Agricultural University, India, Scientific paper*

....Herbicide technology in transplanted rice in Japan has been developed by adopting granules and mixtures with two or more active ingredients....Sequential application of several herbicides in 1950s to 1980s has been replaced by one-shot application in 1990s. In 1994, weeding hour was 20 hours/ha with 1.6 times of herbicide use on an average for the total rice field....Further improvements are making good progress, especially in new formulations.; the so-called "1 kg granule", "flowable" and "jumbo" formulations...Before 1950, when there was no herbicide available, weeds were removed by

hands and/or man-power rotary cultivator which were repeated four or more times in one crop season, spending over 500 man-hours/ha,...2-4-D was introduced in 1949 and this success accelerated development and introduction of new herbicides so rapidly....

- *H. Chisaka, Japan Association for Advancement of Phyto-Regulators, Scientific paper*

...Wahab and Suhaimi first reported that infestation of weedy rice, which is locally called "padi angin", appeared in rice fields and Tanjung Karang in 1988. Two years later weedy rice was found in the MUDA irrigation scheme and by 1993 some fields were obviously infested....The results of this experiment clearly suggest that weedy rice evolved from cultivated rice and is not progeny of a cross with wild rice. Many morphological traits of weedy rice are similar to cultivated rice, which also suggests cultivated rice is the source of weedy rice....With the widespread adoption of broadcasting rice in areas where rice was previously transplanted, weedy rice may emerge rapidly....

- *D. Vaughan, H. Watanabe, Abdullah Md. Zain³, K. Okuno, Malaysia, Scientific paper*

....There was a gradual build-up of perennial weeds rather than annual weeds. In 1971, dominant weed species were

annuals such as *Rotala indica*, *Monochoria vaginalis*, *Cyperus difformis*, *Echinochloa crusgalli* and *Lindernia procumbens* except *Eleocharis acicularis*, perennial weed. However, perennial weed species like *Sagittaria pygmaea*, *Potamogeton distinctus*, *Sagittaria trifolia* and *Cyperus serotinus* in 1981 were predominant in lowland rice fields over the whole country. In 1992 *E. kuroguwai* and *S. trifolia*, perennial weeds, were most dominant species....

- K.H. Park, K. Moody, S.P. Kam, Y.J. Oh, Y.C. Ku, South Korea, Scientific paper

.....The largest wet-seeded rice areas are in Sri Lanka (60%), Malaysia (50%), Thailand, Philippines and India.... Shift of dominant weeds from broadleaves and sedges in transplanted rice to grass weeds in wet-seeded rice is most prominent in Malaysia...the grass weeds that grow with wet-seeded rice are C_4 plants (*Echinochloa* spp.) with higher resource use efficiencies than rice which is a C_3

plant....Broadleaf weeds and sedges (*M. vaginalis*, *Cyperus* spp.) are also C_3 plants, thus not as competitive as the C_4 grass weeds....

- A.M. Baltazar, University of the Philippines Los Baños, Scientific paper

....The steady emergence of herbicides as a preferred technology for weed control in Asian rice systems follows a 20-year period of widespread growth in insecticide use that is just beginning to subside....Although herbicides are thought to be a less serious problem than insecticides in terms of acute toxicity to humans and crop damage to rice, the inevitable question arises: 20 years from now, will Asian societies regret having gone down the herbicide path?...

- R. Naylor, Stanford University, CA, USA, Paper read at Herbicide Use in Asia Workshop, Stanford University, Stanford, California, USA

1997 16th conference: September 8-12 Hilton Hotel, Kuala Lumpur, Malaysia

Theme: Integrated weed management towards sustainable agriculture

Number of delegates: 375 (27 countries)

Number of papers: 140

Organizers: Malaysian Plant Protection Society; Malaysian Agricultural Research and Development Institute; University of Malaya

Officers (1997-99): President: **Rungsit Suwanketnikom** (Thailand); Vice-President: **Ze Pu Zhang** (Beijing, China); Secretary: **Sombat Chinawong** (Thailand); Treasurer: **Anis Rahman** (New Zealand); Past President: **Anwar Ismail** (Malaysia); APWSS Newsletter Editor: **Aurora Baltazar** (Philippines); Executive Committee Members: **Aik Hock Cheam** (Australia); **Su Shao Quan** (Beijing, China); **Soekisman Tjitrosemto** (Indonesia); **Sisir Mukhopadhyay** (India); **Yuji Yamasue** (Japan); **Jong Yeong Pyon** (South Korea); **Baki Bakar** (Malaysia); **Anis Rahman** (New Zealand); **Rashid Ahmad Shad** (Pakistan); **Bonifacio Lapade** (Philippines); **Rungsit Suwanketnikom** (Thailand); **Lai Quey Wu** (Taiwan, China); **Roy Nishimoto** (USA); **Duong Van Chin** (Vietnam)

Plenary speakers: **W. Marcus Blacklow** (University of Western Australia); **M.J. Kropff** (Wageningen Agricultural University, The Netherlands); **Shiaki Murakami** (Novartis Agrochemicals, Japan); **J. Okezie Akobundu** (Federal University of Agriculture, Nigeria); **Bernhard G. Johnen** (Zeneca Agrochemicals, U.K.)

Best paper awards:

1st place: Allelopathy in *Chenopodium pumilio*: A serious but manageable problem

Aik Hock Cheam S. Lee, L. Martin, J. Pearce, and B.J. Rayner (Australia)

2nd place: Progress of a biological weed control project in rice-based cropping systems in southeast Asia

Alan K. Watson, Maxima O. Mabbayad, W.Zhang, R.F. Masangkay-Watson, L.Z. Deluna-Couture, C.B. Yandoc, T.C. Paulitz and A.M. Mortimer (Philippines)

3rd place: Weed control using a blanket wiper

Brad J. Rayner and J.R. Pierce (Australia)

Best poster awards:

A novel method for determination of mefenacet adsorption in soil by centrifugation with double tubes

Katsuichiro Kobayashi, N. Nakamura, and Ie Sung Shim (Japan)

Allelopathic potential of water extract from Mexican sunflower on growth of rice

Suthep Thongma (Thailand)

Biological control of grass weeds cooperative project between Vietnam and Australia

Bruce Auld, Ha Minh Trung, Tran Huu Hanh, Nguyen Hong Son (Vietnam and Australia)

Other milestones:

- Recipients of the **Young and Deserving Scientists Travel Grant** for 1997 were: **Mukesh Jain (India)**, **K.P.S. Bandula (Sri Lanka)**, and **C.R. Chinamutu (India)**. Each grantee was given \$500 to attend and present a paper at the 16th APWSS conference.
- The International Training Course on "Weed Science in the Asian Tropics" was held in Thailand as a post-1995 APWSS conference activity. It was sponsored by APWSS and the Weed Science Society of Japan. Fifteen trainees attended the 4-week training course.
- APWSS co-sponsored an International Seminar on "Weed Management in the North Asian region (Japan, Korea, China), which was organized by the Northeast Agricultural University, the Korean Weed Science Society and the Weed Science Society of Japan. It was held in Harbin, China on August 20-23, 1996 and chaired by Prof. Su Shao Quan of Beijing, China.
- Two issues of APWSS Newsletter were published from 1997 to 1999.
- The Weed Science Society of Vietnam became affiliate society of APWSS and was represented at the Executive Committee by Duong Van Chin.
- The number of APWSS Executive Committee members was increased from 13 in 1995 to 14 in 1997.

Excerpts from papers presented at the sixteenth conference:

...Herbicides are used in rice and wheat crops in the north-western Indian states of Punjab and Haryana....Sulfonylurea herbicides were widely adopted for the control of grass weeds notably *Phalaris minor* (Littleseed canarygrass) in these states in the early 1980s. Continuous use of isoproturon in continuous wheat-rice rotation resulted in the evolution of resistance in *P. minor* biotypes in 1991...Failure to control *P. minor* using herbicides resulted in a yield loss of 30-80% and complete crop failure in many areas with severe resistant (R) biotype...Lower incidence of resistance evolution were recorded in fields where farmers adopted crop rotations and is a vital strategy along with rotation of herbicides with different modes of action coupled with modified agronomic practices...

- *Ralph Kirkwood, Samunder Singh, George Marshall, University of Strathclyde, UK, Scientific Paper*

.....Herbicide use against the littleseed canary grass in wheat strongly shaped the large scale yield advantage and improved the economy of farmers. Continuous use of a single herbicide, isoproturon, has now trapped farmers into the problem of resistance which got worse every year since 1992 and wiped out the gains achieved over the past 10 years starting from 1982...The frequent use of a single herbicide together with monoculture of wheat has been the main cause of resistance in littleseed canary grass reported for the first time in Haryana. Resistant biotypes of this weed now require 5 to 6.5 times more of isoproturon than susceptible (S) biotypes....If the situation is not tackled now, this resistance problem may put a question mark on the sustainability of rice-wheat cropping sequence...

- *R.K. Malik, A. Yadav, Haryana Agricultural University, India, Scientific Paper*

.....Sulfonylurea herbicides have been widely used in major cereal-growing areas to control or suppress broadleaf weeds and some sedges since their introduction in the early 1980s. Especially, bensulfuron-methyl and pyrazosulfuron-ethyl were used for 8 years as one-shot treatment herbicides, for example, bensulfuron / mefenacet in Japan. In the spring of 1996, annual paddy weeds *Lindernia micrantha* in Yoshijima, Kawanishi Town, and *Lindernia dubia* in Nakayoshide, Yuza Town, Yamagata Prefecture were observed to be resistant to sulfonylurea herbicides. Also, we found resistant *L. dubia* subsp. *major* in some paddy areas in Akita and Miyagi Prefecture. *Lindernia pyxidaria* and *Limnophila sessiliflora* were also not controlled not only by sulfonylurea herbicides but also by mefenacet in the Tohoku district. It may be concluded that the resistant biotypes of these weeds are about 100 times more resistant to all SU herbicides than the susceptible ones...

- *Itoh Kazuyuki, Guangxi Wang, Tohoku National Agricultural Expt. Station, Japan, Scientific paper*

....Propanil has become the most popular and widely used rice herbicide to control grass weeds, especially *Echinochloa crusgalli* because of its high selectivity to rice....At present in Sri Lanka, propanil accounts for about 80% of the total volume of sale of rice herbicides. However, in the recent past there have been complaints by farmers in rice-growing areas that propanil in some locations have failed to provide effective control of this weed. These areas are subjected to continuous use of propanil for more than a decade. Thus it was suspected that the poor control of *E. crusgalli* by the herbicide propanil is due to development of resistance....

- *B. Marambe, L. Amarasinghe, G.R.P.B. Senaratne, University of Peradeniya and Department of Agriculture, Sri Lanka, Scientific paper*

.....The first report of Malaysia goosegrass biotypes resistant to fluazifop was in 1989. The biotypes were treated with fluazifop at recommended rates 2 to 3 times a year in the preceding 4 to 5 years. Resistance was established at 200-fold under glasshouse conditions. The studies also confirmed cross-resistance to several aryloxyphenoxypropionate and cyclohexanedione herbicides.....In 1994, we received news that propaquizafop failed to control a biotype of goosegrass in a vegetable farm in Alor Setar, Kedah, Malaysia. This biotype of goosegrass was previously subjected to repeated applications of fluazifop for several years....

- K.P. Tiw, K.F. Kon, F.W. Lim, D. Cornes, Novartis R & D Station, Malaysia; Novartis Crop Protection AG, Basle, Switzerland, Scientific paper

.....Weedy rice is a new pest in rice-growing countries of Asia including Vietnam. In tropical areas, weedy rice are progenies of crosses between wild rice and cultivated rice or come from degradation of cultivated rice. The major characteristic of weedy rice is easy shattering. Other characteristics are: taller plants, fewer tillers, and high percentage of red rice in milled rice....The existence of weedy rice in Vietnam was detected by scientists from IRRI and CLRRRI in a survey conducted in 1994....

- Duong Van Chin, Cuulong Delta Rice Research Institute, Vietnam, Scientific paper

.....Seed longevity of *Echinochloa crus-galli* in soil and its seed production by field investigation indicated that a high level of control at 97 to 100% would be required to keep its seed population in the soil at low density levels....Weed seeds at densities of 712,228 – 930,910 seeds/m² were recorded in the soil of direct-seeded rice fields in the Muda area...

- Hiroaki Watanabe, Azmi Man, Md. Zuki Ismail, Tohoku Nat. Agric Expt Station, Japan; Malaysian Agricultural Research and Development Institute, Malaysia, Scientific paper

.....Attempts on biological control of water hyacinth in Thailand started in 1974. *Neochetina eichhorniae* was introduced from Florida in 1977 and 1979. *Neochetina bruchi* was introduced from Florida via Australia in 1990, 1991, and 1992... Countrywide field releases were initiated in 1995 and the follow-up releases made in 1996-1997....Biological control of water hyacinth in Thailand has already achieved a great success. Severe damage by both water hyacinth weevils, *N. eichhorniae* and *N. bruchi* have resulted in smaller plant size, reduced plant growth and a return of water bodies to more natural conditions.....

- A. Winotai, B. Napompeth, National Biological Control Center, Kasetsart University, Thailand, Scientific Paper

1999 17th Conference: November 22-27 Central Plaza Hotel, Bangkok, Thailand

Theme: Weeds and environmental impact

Number of delegates: 392 (21 countries)

Number of papers: 223

Organizers: Weed Science Society of Thailand; Kasetsart University; Department of Agriculture; Ministry of Agriculture and Cooperatives; Weed Science Foundation of Thailand

Officers (1999-2001): President: **Ze Pu Zhang** (Beijing, China); Vice-President: **Aurora Baltazar** (Philippines); Secretary: **Chao Xiao Zhang** (Beijing, China); Treasurer: **Anis Rahman** (New Zealand); Past President: **Rungsit Suwanketnikom** (Thailand); Newsletter Editor: **Aurora Baltazar** (Philippines); Executive Committee members: **Aik Hock Cheam** (Australia); **Ni Han Wen** (Beijing, China); **S. Brar** (India); **Soekisman Tjitrosemito** (Indonesia); **Hiroiko Watanabe** (Japan); **Kil Ung Kim** (South Korea); **Baki Bakar** (Malaysia); **Anis Rahman** (New Zealand); **Gil Magsino** (Philippines); **Rashid Ahmad Shad** (Pakistan); **J.D.K.M. Jayawardana** (Sri Lanka); **Kleopan Suwannarak** (Thailand); **Mou Yen Chiang** (Taiwan, China); **Roy Nishimoto** (USA); **Duong Van Chin** (Vietnam)

Plenary speakers: **Robert Zimdahl** (Colorado State University, USA)
Jiro Harada (National Institute of Agro-Environmental Sciences, Japan)
Katsuichiro Kobayashi (University of Tsukuba, Japan)
Jonathan Gressel (Weizmann Institute of Science, Israel)
Hiroshi Matsumoto (Institute of Applied Biochemistry, University of Tsukuba, Japan)
Martin Mortimer (International Rice Research Institute, Philippines)
Steve Adkins (University of Queensland, Australia)

Best paper awards:

1st place: Weed morphology effects on competitiveness for light in direct-seeded rice

Barney P. Caton, A. Martin Mortimer, T. C. Foin, Jim E. Hill, Kevin D. Gibson, Albert J. Fischer (U.S. and Philippines)

2nd place: Soil solarization and glyphosate for purple nutsedge control

Roy K. Nishimoto and O. Kabawata (U.S.)

3rd place: Structure-activity relationships of new benzenesulfonylureas in rice and barnyardgrass

I.T. Hwang, Y.K. Ko, T.J. Kim, D.W. Kim, and K.Y. Cho (Korea)

Best poster awards: (3 best posters, no ranking)

Involvement of abscisic acid in temperature-sensory mechanisms for controlling the seasonal timing of seed germination in winter annual weeds

T. Yoshioka, T. Gonai, S. Satoh, and T. Hashiba (Japan)

Plant interaction in vegetation of a model levee of paddy field

K. Nakatani and Y. Fujii (Japan)

Weed population dynamics in coffee plantation managed by different soil conservation techniques

N. Sriyani, H. Suprpto, A.T. Lubis, Y. Oki, T. Adachi, and M. Senge (Indonesia)

Other milestones:

- APWSS sponsored the "International Symposium on Wild and Weedy Rices in Agro-Ecosystems" held at Ho Chi Minh City, Vietnam on August 10-11, 1998.
- The Plant Protection Society of Sri Lanka was affiliated with APWSS. This brings the total number of APWSS-affiliated societies to 15 as of 1999.

Excerpts from papers presented at the seventeenth conference:

.....I suggest we consider carefully what agricultural science has accomplished and what values are demonstrated by those accomplishments. We can opt to stay on the present energy, chemical and capital intensive course without knowing how long it will be possible and knowing that each technological step often leads to what Berry calls a "ramifying series of new problems", most of which appear as externalities. Second, we can search for technological fixes such as another herbicide when resistance appears.....I think we should elect the third option and further suggest it means we must become part of a caring culture. A caring culture is one governed by making explicit that healthy prospects for future generations and a healthy landscape are paramount values....

- Robert Zimdahl, Colorado State University, U.S.A, Plenary Paper.

.....weed scientists in Asian-Pacific Region must promote the following cooperative research: Risk assessment and monitoring of herbicides, Risk assessment of genetically modified crops, Allelopathy as a means of sustainable weed management, Mechanism and preventive measures of globalization of exotic weeds, Utilization of weeds, and Establishment of weed inventory center in Asian-Pacific Region....According to ISAAA report, global cultivated area of GMO in 1998 is 27.8 million ha, and USA occupies 74%, Argentina 15%, Canada 10%, and Australia and Mexico 1%,

respectively. By trait, herbicide tolerance occupies 71%, insect resistance 28%, combination of above both traits 1%, and quality less than 1%....

- Jiro Harada, National Institute of Agro-Environmental Sciences, Japan, Plenary Paper

..... During the past decade in Japan, bensulfuron and pyrazosulfuron, which are called "one-shot treatment herbicides," have been widely used for herbicides in paddy fields: bensulfuron-mefenacet, bensulfuron-esprocarb, bensulfuron-dimepiperate, and pyrazosulfuron-mefenacet. In 1995, a sulfonylurea resistant biotype of paddy weed was first detected, *Monochoria korsakowii*, in Hokkaido Prefecture. In 1996, biotypes resistant to SU herbicides were also detected in some annual paddy weeds of *Scrophulariaceae* in the Tohoku district. Examples include *Lindernia micrantha* and *L. dubia* in Yamagata Prefecture and *L. dubia* subsp. *major* in Akita and Miyagi Prefectures. In recent years, *Scirpus juncooides*, a serious perennial weed in Hokkaido and Tohoku district, and *Rotala indica*, *Elatine triandura* in Saitama Prefecture, and *Monochoria vaginalis* in Akita and Ibaraki Prefectures. All common annual paddy weeds, were found resistant to SU herbicides....In recent years, the number of paddy weed species resistant to SU herbicides has gradually increased....

- K. Itoh, G.X. Wang, H. Shibaike, K. Matsuo, Nat. Institute of Agro-Environmental Sciences, Japan, Scientific paper

2000s: The New Millenium years

	Year	Date	Place	Papers	Delegates	Countries
18 th	2001	May 28-Jun 2	Beijing, China	201	400	26
19 th	2003	Mar 16-21	Manila, Philippines	143	200	20
20 th	2005	Nov 7-11	Ho Chi Minh City, Vietnam	111	258	23
21 th	2007	Oct 2-6	Colombo, Sri Lanka			

Significant weed science events during the APWSS new millennium years:

- **"Superweeds" of the new millennium**
Weedy rice, herbicide-resistant weeds, new grass weeds
- **Biotechnology and GMOs**
More herbicide-resistant crops, herbicide-resistant rice; search for allelopathic rice
- **New weed paradigms**
Search for long-range agroecological management strategies and new alternative approaches
- **New developments/technologies: GATT, IT, GIS, GPS**
Low-input weed management for global competitiveness
Computer-aided precision – management technologies
- **New millennium challenges to weed management**
A second green or doubly green revolution: productivity as well as sustainability



Outgoing President, Ze Pu Zhang, turning over the APWSS flag to Incoming President, Aurora Baltazar, during the closing ceremonies at the 18th conference held in Beijing, China

Some of the delegates and officers during the closing ceremonies and banquet at the 18th conference pose with Ze Pu Zhang, 17th APWSS president: Jonny Gressel, plenary speaker and IWSS president (2a); Baki Bakar, Execom member from Malaysia (2b); Ricardo Labrada FAO weed officer and plenary speaker, (standing second from left) and Kil Ung Kim, Execom member from South Korea (Standing extreme left) (2c); and Mou-Yen Chiang (Execom member from Taiwan, China) (2d)



2a



2b



2c



2d

Philippine Department of Agriculture Secretary Luis Lorenzo Jr. delivers the keynote address during the opening ceremonies of the 19th APWSS conference at the same venue where the 9th conference was held, the Philippine Plaza Hotel. Also shown are the 2003 officers, Felicitos Palis (master of ceremonies), Yasuhiro Yogo (Newsletter Editor), Duong Van Chin (Vice-President), Jose Cruz (WSSP President), Aurora Baltazar (18th APWSS President), Ze Pu Zhang (Past President), Anis Rahman (Treasurer), Analisa Henedina Ramirez (Secretary). (3b)

Secretary Lorenzo cuts the ribbon at the APWSS exhibits and poster session following the opening ceremonies. Also shown are Dulce Gozon, (Chair, Vegetables Committee, Department of Agriculture), Jose Cruz (WSSP President), Enrique Paller (Plenary Speaker), Aurora Baltazar (APWSS President) and S.K. De Datta (Past Execom member from Philippines and Plenary Speaker). (3a)



3a



3b

Some of the delegates to the 19th conference: Ze Pu Zhang (Past President) and Anis Rahman (Treasurer) (3a); Yuji Yamasue (Execom member, Japan) with Ze Pu Zhang and Anis Rahman (3b); Ze Pu Zhang and Santiago Obien (APWSS charter member and past Execom member, Philippines) (3c)



3a

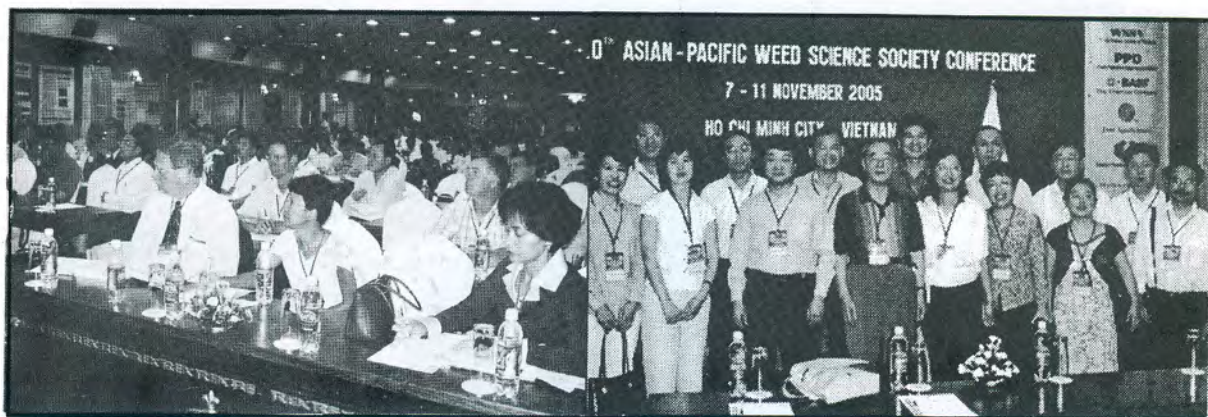


3b



3c

Part of the delegates listening to the speakers during the opening ceremony and plenary session of the 20th conference at the Rex Hotel, shown in front are Steve Duke (Keynote speaker), Aurora Baltazar (Past President), and Nilda Burgos (Plenary speaker)(4a); Delegates from China at the 20th conference in Vietnam (4b)



4a

4b

2001 18th Conference: May 28-June 2 Beijing Friendship Hotel, Beijing, China

Theme: The role of ecologically - based weed management for sustainable agriculture in the 21st century
Number of delegates: 400 (26 countries)

Number of papers: 201

Organizers: Weed Science Society of China; Chinese Academy of Agricultural Sciences;
China Society of Plant Protection; Ministry of Agriculture

Officers (2001-03): President: **Aurora Baltazar** (Philippines); Vice-President: **Duong Van Chin** (Vietnam); Secretary: **Analiza Ramirez** (Philippines); Treasurer: **Anis Rahman** (New Zealand); Past President: **Ze Pu Zhang** (Beijing, China); Newsletter Editor: **Yasuhiro Yogo** (Japan); Executive Committee members: **Aik Hock Cheam** (Australia); **Ni Han Wen** (Beijing, China); **S. Brar** (India); **Soekisman Tjitrosemito** (Indonesia); **Hiroaki Watanabe** (Japan); **Jong Yeong Pyon** (Korea); **Baki Bakar** (Malaysia); **Anis Rahman** (New Zealand); **Rashid Ahmad Shad** (Pakistan); **Jose Cruz** (Philippines); **Anurudhika Abeysekera** (Sri Lanka); **Kleopan Suwunnarak** (Thailand); **Mou-Yen Chiang** (Taiwan, China); **Roy Nishimoto** (USA); **Duong Van Chin** (Vietnam)

Plenary speakers: **Ricardo Labrado** (Food and Agriculture Organization, Rome, Italy)
Richard Schumacher (Monsanto Agricultural Company, USA)
Steve Powles (University of Western Australia)
Peter Harris (Agriculture and Agri-Food Canada)
Jonathan Gressel (Weizmann Institute of Science, Israel)
Kil-Ung Kim (Kyungpook National University, South Korea)

Best Paper awards:

1st place: Population dynamics and growth of weeds in rainfed rice-onion systems in response to chemical and cultural weed control methods

M.C. Casimero, A.M. Baltazar, J.S. Manuel, S.R. Obien, and S.K. De Datta (Philippines & US)

2nd place: Resistance to acetolactate synthase (ALS) inhibitors in a biotype of *Monochoria vaginalis* discovered in Korea

I.T. Hwang, K.H. Lee, S.H. Park, B.H. Lee, K.S. Hong, S.S. Han and K.Y. Cho (Korea)

3rd place: Roundup tank mixtures with atrazine plus acetochlor for weed control in zero tillage corn

X.J. Li, D.Z. Lu, Y.H. Li, and R.E. Blackshaw (China and Canada)

Best poster awards:

1st place: Mechanism of resistance to oxyfluorfen in selected soybean cell lines

E. Warabi, K. Usui, and H. Matsumoto (Japan)

2nd place: Resistant genetic character of bean (*Phaseolus vulgaris*) to glyphosate

(tie) *B. Tao, F. Luan, and W. Xiang (China)*

Taxonomic affiliation and nomenclatorial status of weedy rice accessions in Malaysia

A.B. Mislamah, B.B. Baki, J. Abdul Munir, M.Z. Abdullah and D. Tan (Malaysia)

Other milestones:

- The first issue of the official APWSS journal, "Weed Biology and Management" was published in March 2001 with leadership provided by the Weed Science Society of Japan and K. Kobayashi as the first editor. There are four issues published annually. Volumes 1 and 2 with four issues each were published in 2001 and 2002.
- The Asian-Pacific Herbicide Resistance Working Group (APHRWG) was also formed this year. Kazuyuki Itoh was elected chair. Its main focus is on herbicide resistance management and search for solutions to herbicide-resistant weed problems in the Asian-Pacific region.
- A satellite workshop of the 18th APWSS conference on "Control of *Echinochloa* species" was held on May 27, 2001 sponsored by APWSS and FAO. Twelve papers were presented on various aspects of biology, ecology and management of *Echinochloa* species.

Excerpts from papers presented at the eighteenth conference:

....Along with the chemical weed control area being steadily enlarged in global weed management in recent decades, the environmental problems, weed resistance to herbicides and other side effects in crop production induced by intensive herbicide application are becoming severe. For changing this situation, many agricultural scientists and technologists have recognized that the technical skills in weed management should be raised to continuously strengthen the approach in weed science research and extension....For this reason, the 18th APWSS conference will cover most important aspects of weed science, focusing on the role of ecologically based weed management for sustainable agriculture in the 21st century....

- Ze Pu Zhang, Chinese Academy of Agricultural Sciences, Beijing, China, Presidential address

....In 1991 Latin American countries were consuming 8% of the total herbicide market while Asia consumed nearly 15% ...Examples of these phenomena are in direct-seeded rice, where the use of herbicides has been unable to reduce the growth and reproduction of weedy *Oryza sativa* (red or weedy rice) and/or the incidence of the ever-present *Echinochloa* spp....In no less than 80% developing countries there is a lack of data on weed ecology and biology, and in half of them no studies of critical periods of weed competition have ever been carried out....Therefore, assistance to countries by giving training to weed scientists or agronomists on methods to study weeds, their life cycle, reproduction, weed seed bank and weed competition, is essential for the sound development of weed management programs...

- Ricardo Labrada, Food and Agriculture Organization, Rome, Plenary paper

....Researchers of rice allelopathy turned to be active in the past few years. Hassan determined that 30 varieties provided 50% - 90% control of *Echinochloa crus-galli* in field after evaluating 1000 rice varieties in Egypt during 1993-1996. At the IRRI, Olofsdotter offered their research results on rice allelopathy giving more than 50% barnyardgrass control for 11 cultivars in dry season and twenty-one cultivars in rainy season. Ill Min Chuny evaluated the allelopathic

potential of Korea traditional 79 rice cultivars on *Echinochloa crus-galli* var. *oryzicola* and identified possible allelopathic compounds from selected rice cultivars in which Heugbalbayeo showed the greatest inhibition of 81% barnyardgrass dry weight. Compounds in Heugbalbayeo were detected by HPLC analysis which were o-coumaric acid, p-coumaric acid, salicylic acid, syeigic acid and p-hydroxybenzoic acid....

- L.Q. Yu, Z.H. Xu, S.W. Huang, China National Rice Research Institute, Hangzhou, China, Scientific paper

....The use of fish, *Ctenopharyngodon idellus* and *Hypophthalmichthys molitrix* to control weeds of rice was developed in Jiangsu, Zhejiang, Hubei, Sichuan and Anhui Provinces in the 1980s. As of 1985, 22 weeds including *Echinochloa* spp., *Cyperus difformis*, *Ammania* spp., and *Monochoria vaginalis* were controlled on one million ha of rice. This control method has doubled net returns from rice culture with the production of 300 kg per ha of edible fish and a saving of 450 RMB per ha in herbicides. Recently, a new biocontrol project of water hyacinth, *Eichhornia crassipes*, was initiated in 1995. Two weevils, *Neochetina bruchi* and *N. eichhorniae*, were introduced from USA and Argentina in 1995. Host specificity test showed that the beetles damaged only water hyacinth plant. The beetle could be used to control the population of water hyacinth safely and effectively....

- F.H. Wan, J. Y. Guo, R. Wang, Chinese Academy of Agricultural Sciences, China, Scientific paper

....MTB-951 and JMB-98 are the potential mycoherbicides using *Drechslera monoceras* fungal plant pathogen isolated from diseased annual *Echinochloa* species in Japan... Conclusively the highest control effect was obtained when the mycoherbicide was treated at two-leaf stage of *E. oryzicola* plants that was coincident with the peak of the emergence, where the dry weight of the weed was reduced by 85 or 95% ...

- H. Watanabe, A. Uchino, M. Tachibana, Tohoku National Agricultural Experiment Station, Japan, Scientific paper



1a



1b

Delegates to the 18th conference held in Beijing, China, pose with Ze Pu Zhang, 17th APWSS president: Kozo Ishizuka, Jong Yeong Pyon (1a) and Aurora Baltazar, Jose Cruz, and Duong Van Chin, 19th APWSS president) (1b).

2003 19th Conference: March 16-21

Philippine Plaza Hotel, Manila, Philippines

Theme: Weed science, agricultural sustainability, and GMOs

Number of delegates: 200 (20 countries)

Number of papers: 143

Organizers: Weed Science Society of the Philippines; Philippine Department of Agriculture;
Bureau of Agricultural Research

Officers (2003-05): President: **Duong Van Chin** (Vietnam); Vice-President: **Buddhi Marambe** (Sri Lanka);
Secretary: **Tran Thi Ngoc Son** (Vietnam); Treasurer: **Steve Adkins** (Australia);
Past President: **Aurora Baltazar** (Philippines); APWSS Newsletter Editor:
Yasuhiro Yogo (Japan); Weed Biology and Management Editor: **Kazuyuki Itoh** (Japan);
Executive Committee members: **Steve Adkins** (Australia); **Ze Pu Zhang** (Beijing,
China); **A.N. Tewari** (India); **Soekisman Tjitrosemito** (Indonesia); **Hiroaki Watanabe**
(Japan); **Jong Yeong Pyon** (South Korea); **Baki Bakar** (Malaysia); **Anis Rahman**
(New Zealand); **Khan Bahadar Marwat** (Pakistan); **Jose Cruz** (Philippines);
Buddhi Marambe (Sri Lanka); **Kleopan Suwunarak** (Thailand); **Mou-Yen Chiang**
(Taiwan, China); **James Hill** (USA); **Duong Van Chin** (Vietnam)

Plenary speakers: **Luis Lorenzo, Jr.** (Secretary, Department of Agriculture)
S.K. De Datta (Director, Office of International Res, Education and Dev, Virginia Tech)
Roy Nishimoto (Dean, College of Agriculture, University of Hawaii)
Eliseo Ponce (Former Director, Bureau of Agricultural Research)
Enrique Paller (Professor, University of the Philippines Los Banos)
K. Yoneyama (Research Leader, Center for Research on Wild Plants, Utsunomiya Univ)
Yoshiharu Fujii (Research Leader, National Institute of Agro - Environmental Sciences)
Michael Bravermann (Rutgers University)
Esteban Godilano (Senior Adviser, Department of Agriculture)
Eric Johnson (Director, Asia-Pacific Region, Monsanto Chemicals)
Segfredo Serrano (Assistant Secretary, Department of Agriculture)
William Padolina (Deputy Director-General, International Rice Research Institute)
B.S. Ismail (Professor, University Kebangsaan Malaysia)

Best Paper awards:

1st place: Managing a biotype of wild radish (*Raphanus raphanistrum*)

Aik Hock Cheam, A. Lee, D. Nicholson, and M. Clarke (Australia)

2nd place: Practical weed suppression using allelochemicals from hairy vetch

Y. Fujii, T. Kamo, S. Harimoto, and S. Hiradate (Japan)

3rd place: *Setospharia rostrata* – A promising fungus for controlling *Leptochloa chinensis* in lowland rice

D.V. Chin, H.L. Thi, S.D. Hetherington, and B.A. Auld (Vietnam and Australia)

Best poster awards:

1st place: Crop injury caused by herbicides

(tie) **I.Y. Lee, J.E. Park, S.T. Lim, J.R. Cho, and E.S. Lim (Korea)**

A population of sprangletop (*Leptochloa chinensis*) is resistant to fenoxaprop

C. Maneechote, A. Chernchaivachirakul, S. Tittawattanakul, S. Samanwong (Thailand)

2nd place: Root systems of horsenettle (*Solanum carolinense*), growth pattern, architecture, and reproductive ability - **M. Ito and K. Miyazaki (Japan)**

Other milestones:

- Anis Rahman, who served as APWSS treasurer since 1991, has resigned as treasurer effective 2003. Steve Adkins of Australia was appointed by the Executive Committee as APWSS treasurer effective 2003.

- **Young and Deserving Scientists Travel Grant:** The following were granted partial financial support of \$500 each to attend the conference: **Song Xiaoling** (China), **D. Kalyanasundaran** (India), and **H. P. Singh** (India). Special grant in the form of waived registration fee was granted to **Mahdi Faravani** (Iran).
- Eight issues of *Weed Biology and Management* were published; volume 3, numbers 1 to 4 were published in 2003 and volume 4, numbers 1 to 4 were published in 2004. Four issues of the APWSS Newsletter were published from 2003 to 2005.

Excerpts from papers presented at the nineteenth conference:

...The Integrated Pest Management concept was initiated during the 1960s and 1970s but its importance was not fully realized until after the lessons learned from calendar-based pesticide recommendations regardless of pest infestation levels. The IPM programs that were developed since then were based on pest threshold levels to minimize use of direct inputs like hand labor and chemicals....The past 20 years have witnessed a growth in IPM programs in selected Asian countries starting with the FAO-led IPM efforts in Indonesia, the Philippines, Vietnam, Thailand, and Malaysia. But in spite of the success of the farmer field school (FFS) participatory IPM programs, globalization of IPM remains slow...

- *S.K. De Datta, Virginia Polytechnic Institute and State University, USA, Plenary paper*

...Advances in weed control technology are changing the way we manage weeds. Who would have thought that by the year 2000, 66% of the soybean production in U.S.A. would contain a gene that confers resistance to glyphosate. At the same time there is increased effort to apply the principles of plant ecology in weed management that focus on the reduction of propagule production, the reduction of weed emergence in a crop, and the reduction of weed competition with the crop Another area that weed scientists are probing is knowledge-based decision support strategies. The goal is to arrive at a correct decision on optimal resource management that is based upon data, information, knowledge and wisdom....With the breadth and depth of emerging issues in our science, how are we to remain confident that our curriculum is preparing our students to become productive contributing weed scientists and good citizens of our profession?....

- *R.K. Nishimoto, University of Hawaii, U.S.A, Plenary paper*

...The three most common modes of action for recently registered herbicides are inhibitions of PPO and HPPD (*p*-hydroxyphenylpyruvate dioxygenase), both are involved in

pigment biosynthesis, and of very long chain fatty acids (VLCFAs) synthesis. All of these herbicides are very active and environmentally benign....Recent advances in molecular biology have enabled a direct search to be made for herbicide targets on the genomes of *Arabidopsis* and *Oryza sativa* (rice). Alternatively, transgenic plants carrying senses or anti-sense RNA inserts have suggested which gene is to be modified to what extent so as to have a lethal effect on plants.... Another strategy is to design molecules based on knowledge of the receptors in plants; the so-called "biorational approach"...

- *K. Yoneyama, Utsunomiya University, Japan, Plenary paper*

....Recent electronic and computer advances have spawned three technologies that will impact agriculture in the coming decades: Geographic Information Systems (GIS) and Global Positioning System (GPS), and Remote Sensing (RS) are considered to be the 3'S technology of the future. Together these tools provide a powerful new management system that may revolutionize farming....

- *E.C. Godilano, Department of Agriculture, Philippines, Plenary paper*

....Resistant weeds have been reported for three decades since Ryan first reported *Senecio vulgaris* resistance to simazine in 1968...To date, herbicide resistance has evolved to many important groups of herbicides, encompassing almost all of the major herbicide mode-of-action groups and about 272 resistant biotypes from 162 species have been reported worldwide....One of the first applications of genetic engineering in rice has been the development of tolerance to glufosinate by incorporating the bialaphos resistance (BAR) gene. The BAR gene encodes for the enzyme phosphinothricin acetyl transferase (PAT), which is used as an assayable marker gene....

- *B.S. Ismail, C.H. Ng, S. Salmijah, Universiti Kebangsaan Malaysia, Plenary paper*

2005 20th Conference: November 7-11 Rex Hotel, Ho Chi Minh City, Vietnam

Theme: Six decades of weed science since the discovery of 2,4-D

Number of delegates: 258 (23)

Number of papers: 111

Organizers: Cuu Long Delta Rice Research Institute; Weed Science Society of Vietnam; Ministry of Agriculture and Rural Development

Officers (2005-07): President: **Buddhi Marambe** (Sri Lanka); Vice-President: **Khan Bahadar Marwat** (Pakistan); Secretary: **Anuruddhika Abeysekera** (Sri Lanka); Treasurer: **Steve Adkins** (Australia); Past President: **Duong Van Chin** (Vietnam); APWSS Newsletter Editor: **Ramesh Singh** (India); Executive Committee Members: **Steve Adkins** (Australia); **Ze Pu Zhang** (Beijing, China); **R.K. Singh** (India); **Soekisman Tjitrosemto** (Indonesia); **Hiroaki Watanabe** (Japan); **Kil-Ung Kim** (Korea); **Baki Bakar** (Malaysia); **Anis Rahman** (New Zealand); **Khan Bahadar Marwat** (Pakistan); **Aurora Baltazar** (Philippines); **Anuruddhika Abeysekera** (Sri Lanka); **Kleopan Suwunnarak** (Thailand); **C.M. Yang** (Taiwan, China); **James Hill** (USA); **Duong Van Chin** (Vietnam).

Plenary speakers: **Steve Duke** (U.S. Department of Agriculture-ARS, University of Mississippi, USA)
Kazuyuki Itoh (Japan International Research Center for Agricultural Sciences, Japan)
Duong Van Chin (Cuu Long Delta Rice Research Institute, Vietnam)
N.T. Yaduraju (National Research Center for Weed Science, India)
Kil-Ung Kim (Kyungpook National University, South Korea)
Baki Bakar (University of Malaya, Malaysia)
Bernal Valverde (Royal Veterinary and Agricultural University, The Netherlands)
Jonathan Gressel (Weizmann Institute of Science, Israel)
Ricardo Labrada (Food and Agriculture Organization, Rome, Italy)
R.M. Kathiresan (Annamalai University, India)

Other milestones:

- For the first time since it was established in 1983, there was no Best Paper Award competition for this year. Monsanto Agricultural Company, the long-time and sole sponsor of the Best Paper and Best Poster competition decided to stop sponsorship due to changes in the R and D programs of Monsanto.
- A FAO-APWSS pre-conference workshop on "Control of *Cyperaceae* weeds" was held on November 6, 2005. Twelve papers were presented and about 20 weed scientists from south, southeast and east Asia attended to discuss current issues on control of *Cyperaceae* weeds, some of which are threatening to emerge as major weed problems.
- Group discussions held in-between concurrent sessions: weedy rice (Bernal Valverde, discussion leader); invasive weed species (Yoshiharu Fujii, discussion leader); Editorial Board of Weed Biology and Management (Kazuyuki Itoh, discussion leader). Discussions focused on ways to exchange information, plans for future activities and the need for more articles for the journal and newsletter of the Society.

Excerpts from papers presented at the twentieth conference:

.....Quality research in the areas of precision agriculture as it relates to weed biology and ecology is being conducted, and there are strong efforts by weed science societies to find ways to increase funding for these research areas....Non-herbicide-oriented molecular biology approaches to weed science and weed management problems are in their infancy....

- *Steve Duke, University of Mississippi, USA, Plenary paper*

.....Resistance to sulfonylureas has developed in nine annual weeds and three perennial weeds found in rice cultivated areas in Japan since 1995. Sulfonylurea-resistant biotypes in five annual weeds, *Monochoria korsakowii*,

M. vaginalis, *Lindernia dubia*, *Rotala indica* and *Cyperus difformis* and three perennial weeds, *Scirpus planiculmis*, *Scirpus juncoides*, and *Sagittaria pygmaea* as of 2004, have been confirmed in paddy fields in Korea, as well as in several species in Southeast Asia. For some of the resistant biotypes, the herbicide dose for 50% mortality was found to be 100 to 1000 times higher than that for the susceptible biotypes... Bensulfuron and pyrazosulfuron were used from 1989 in one-shot treatments such as bensulfuron-mefenacet, bensulfuron-esprocarb, bensulfuron-dimepiperate as well as pyrazosulfuron-mefenacet in Japan...

- *K.Itoh, A. Uchino, Tae-Seon Park, Japan International Research Center for Agriculture Sciences & Republic of Korea, Scientific paper*

...At present, no commercial cultivar carrying allelopathic properties is available, but there is the possibility of breeding new allelopathic crops by regulating their capacity to produce allelochemicals.... In association with the development of breeding new allelopathic crop cultivars, much progress has been made in screening methods, identification of specific allelochemicals and related genes that can be applicable in breeding programs... This approach employs altering existing biochemical pathways by insertion of two genes such as CA4H and OsDTS2 into one recommended rice variety to produce p-coumaric acid and monilactone at the same time. It seems to be one of the promising molecular approaches that we are undertaking now....

- *K.U. Kim, D.H. Shin, Kyungpook National University, Republic of Korea, Plenary paper*

...Commercial development is under way for three HR rice varieties: Clearfield (imidazolinone resistant), Roundup Ready (glyphosate resistant), and LibertyLink (glufosinate resistant).... The respective varieties will be resistant to imidazolinone, glycine, and phosphinic acid. Transgenes for glyphosate resistance are derived from a

plant or bacterial source... The transgene for glufosinate resistance was derived from a soil bacterium... Mutation of ALS gene is the basis for resistance in the imidazolinone-resistant rice...

- *Baki Bakar, University of Malaya, Malaysia, Scientific paper*

...Weedy rice infestation recently has become more serious in the Mekong delta rice areas... The Imazapic solo and ready mixture with Imazapyr appeared to be promising products due to excellent control of weedy rice... CLEARFIELD™ rice has been developed by Louisiana State University Agricultural Center breeders through a combination of mutagenesis and conventional plant breeding, which is tolerant to imidazolinone herbicides. Technology does not involve introduction of genetic material from other sources and, thus, is characterized as a non-GMO (genetically modified organism) process, and grain harvested from field applied with this technique are approved for food and feed use in global market with no restriction....

- *T.C. Thien, D.V. Chin, T.V. Hien, N.T. Nhiem, Cuu Long Delta Rice Research Institute, Vietnam, Scientific paper*

...This study obviously showed that target genes from IR 64 can introgress to weedy rice. Under natural condition with a distance of less than 100 cm, hybridization can occur... The maximum frequency of gene flow from cultivated rice to weedy rice in this study was 0.02%.... This is much lower than that reported by other studies (2.94% and 0.5%) under similar conditions... The frequency of gene flow from cultivated rice to wild relative *Oryza rufipogon* is significantly lower than from cultivated rice to weedy rice...

- *Nguyen thi Lang, Bui Chi Buu, Allison Snow, Cuulong Delta Rice Research Institute, Vietnam and Ohio State University, U.S.A, Scientific paper.*

Participants at the 20th APWSS conference (2005) pose for the traditional souvenir photo at Ho Chi Minh City, Vietnam.



2007 21st Conference: October 2-6 Galle Face Hotel Colombo, Sri Lanka

Theme: Weed science for sustainable development in the 21st century: Integration and utility of biotechnology in weed science

Organizers: Plant Protection Society of Sri Lanka; National Plant Protection Committee, Council for Agricultural Research Policy, Government of Sri Lanka

Organizing Committee: Chair - Prof. Buddhi Marambe
Program – Dr. L. Amarasinghe
Sessions - Dr. K.G. Prematillake
Posters – Dr. W. Witharama
Finance - Dr. D. Withana
Registration – Ms. K. Jayawardena
Awards – Mr. A. Asiriyage
Proceedings – Prof. U.R. Sangakkara
Registration – Mr. P.B. Ekanayake
Field Trips – Dr. M.S.L. de Silva
Reception – Mr. S. Senaratne
Conference Chair – Prof. J.M.R.S. Bandara
National Advisory Committee: Prof. H.P.M. Gunasena
Prof. D. Ahangama
Dr. C.K. Jayasinghe
Dr. J. De Soyza
Dr. G. Chandrasena
Dr. P. Weerakkody
Mr. A. Jayawardena
Dr. R. S. Kularatne
Dr. P. Fernando
Dr. L. Nugaliyadda
Dr. S. Jayasekera

Conference topics:

Conference will feature oral paper presentations in concurrent sessions and in a poster session on the following topics: Weed biology/ecology, Integrated weed management, Novel herbicides and bioherbicides, Herbicide resistance in weeds and crops, Weed/crop allelopathy, Biological weed control, Invasive alien species, Impact of herbicides on the environment, Socio-economic aspects, Crop-weed competition, Herbicide physiology, Herbicide application techniques, Education and technology transfer in weed science, Impact of global warming on weed-crop interactions and plant invasion, Seed bank dynamics of weeds, and Application of molecular techniques in weed research.

Rules of the Asian-Pacific Weed Science Society (Incorporated)

1. **Name**
The name of the Society shall be the Asian-Pacific Weed Science Society (Incorporated) hereinafter called the Society.
2. **Objective**
The objectives of the Society shall be to promote weed science, in particular in the Asian and Pacific regions, by pooling and exchanging information on all aspects of weed science.
3. **Membership**
There shall be five classes of memberships: (i) Ordinary members; (ii) Sustaining members; (iii) Honorary members; (iv) Associate members; (v) Affiliated national or regional societies.
4. **Mode in Which Persons Become Members**
(i) *Ordinary members*: Any person or organization interested in the objectives of the Society may become a member; (ii) *Sustaining members*: Proprietary companies interested in the objectives of the Society may become sustaining members by biennial financial contributions to the Society; (iii) *Honorary members*: Any member who has given outstanding service to the Society may be elected as an honorary member at any biennial or special general meeting; (iv) *Associate members*; (v) *Affiliated societies*: national or regional societies may affiliate with APWSS for purpose of kindred interests, communications, coordination of activities, etc. by letter of intent or request to APWSS.
5. **Mode in Which Persons Cease to Become Members**
(i) Any member of the Society may resign by giving notice in writing to the Secretary (ii) Any member whose subscription is more than four years in arrears shall be removed from membership and may be readmitted on payment of such arrears of an amount decided by the Executive.
6. **Officers of the Society**
The officers of the Society shall be: (i) *President*; (ii) *Vice-President*; (iii) *Secretary (permanent position)*; (iv) *Honorary Treasurer (Permanent position)* and shall be elected at the biennial general meeting. Officers shall hold office until three months after termination of the biennial general meeting following their election. Newly appointed officers shall take office at the same time.
7. **Executive Committee**
The Executive Committee shall consist of: (i) *President*; (ii) *Vice-President*; (iii) *Secretary*; (iv) *Honorary Treasurer*; (v) *Immediate Past President*; (vi) *Six other members* The Executive Committee shall have the power to appoint new members to fill any casual vacancy and shall have power to co-opt not more than three other members.
8. **Election of Executive Committee**
The members of the Executive Committee shall be elected at the biennial general meeting in the same manner and at the same time as other officers.
9. **Powers of the Executive Committee**
The Executive Committee shall have all the powers of the Society provided that these powers do not conflict with the rules.
10. **Delegation of Powers by Executive Committee**
The Executive Committee may delegate its powers and duties to subcommittees consisting of such member or members as it may resolve and may grant to any such subcommittee the power to co-opt other persons, whether members or not.
11. **Executive Committee - Quorum**
At any meeting of the Executive Committee four shall form a quorum.
12. **Patron of the Society**
A patron shall be selected from the country in which the President is resident.
13. **Biennial General Meeting**
(i) A biennial general meeting shall be held every two years at the biennial conference or at a time or place decided by the Executive Committee.
(ii) If not to be held at the biennial conference, at least three months' notice shall be given to all financial members of the time and place of biennial general meeting.
(iii) At each biennial general meeting an audited balance sheet and income and expenditure account shall be presented.

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- (iv) At each biennial general meeting, a biennial report shall be presented.
- (v) At the biennial general meeting (or any special general meeting) a quorum shall consist of 15 members.
14. **Voting**
Only ordinary and honorary members are entitled to vote. At all meetings voting shall be on the voices or by a show of hands at the discretion of the Chairman provided that if any member shall so demand voting shall be by ballot. The Chairman shall have a deliberative and casting vote. Except where otherwise stated, a simple majority shall be sufficient to carry a motion.
15. **Special General Meeting**
A special general meeting may be held at any time by resolution of the Executive Committee or on receipt by the Secretary of a requisition signed by at least 20 members specifying the purpose for which the meeting is to be called. At least three months' notice shall be given to all financial members of the time and place of such meeting.
16. **Funds**
All funds of the Society shall be paid to the Honorary Treasurer, who shall keep correct accounts showing the details of the Society's financial affairs and shall disburse monies of the Society under the authority of the Executive Committee.
17. **Bank Accounts**
The Society's bank account shall be operated by the Secretary, Honorary Treasurer and any two other members of the Society or other persons appointed by the Executive Committee for that purpose. Cheques and withdrawal warrants shall be signed by any two of the signatories.
18. **Financial Year**
The financial year of the Society shall end on April 30 in each year, or such other date that may be decided from time to time by the Executive Committee.
19. **Auditor**
At each biennial general meeting an Honorary Auditor shall be elected.
20. **Subscriptions**
The biennial subscription which is due at the beginning of the financial year and which shall include all privileges including a copy of the Proceedings of that year, shall be \$4.00 or such other sum as may be decided from time to time at any biennial or special meeting. The fee for associate members would be half that for ordinary members. Non-members may be admitted to conferences on a daily fee which may be decided by the Executive Committee.
21. **Common Seal**
The common seal shall be kept in the custody of the Secretary and shall be affixed to documents only by the direction of the Executive Committee, in the presence of the Secretary and any one member of the Executive Committee.
22. **Alterations of Rules**
The rules of the Society may be altered, rescinded, or added to at any general meeting provided that two-thirds of the members present vote accordingly, and provided that at least three months' notice of intention is sent by post to members.
23. **Power to Borrow Funds**
The Society shall have the power to borrow money.
24. **Distribution of Assets**
In the event of the winding up of the Society the funds and the property of the Society shall be distributed to any other body or organization having the same or similar objectives as those of the Society or to such charitable organizations or such charitable purposes as shall be decided by members at the general meeting.
25. **Official Language**
The official language of the Society shall be English.
26. **Currency**
The currency shall be U.S.A. dollars.

(October 11th, 1975)

Table 1. List of officers from 1976 to 2007

Year	President	Vice President	Secretary	Treasurer	Coordinators/ Area Program Convenors	Newsletter Editor	Executive Committee Members
1967	Conference organizers Donald Plucknett, Harold Clay, Roman Romanowski, William Furtick						
1967-1969	Marcos R. Vega (Philippines)		Roman Romanowski (USA)		Asian region - Shooichi Matsunaka (Japan); Pacific region - Kenneth Newton (South Pacific Commission); Industry - Joe Antognini (USA)		
1969-1971	Cornelius van der Schans (Pacific Islands)	Les Matthews (New Zealand)	Donald Plucknett (USA)	Roger Billman (USA)	David Barnes (USA) - Program Chairman		
1971-1973	Les Matthews (New Zealand)	Kenji Noda (Japan)	Donald Plucknett (USA)	Roger Ferguson (USA)			
1973-1975	Kenji Noda (Japan)	Mohammad Soerjani (Indonesia)	Don Plucknett (USA)	Roy Nishimoto (USA)	P. J. Terry (Africa); Neil van der Schans (South America), Larry Burrill (USA), Shooichi Matsunaka (Japan), Les Matthews (New Zealand), Phil Upchurch (USA)	Philip Motooka (USA)	Peter Michael (Australia); N.C. Joshi (India); A. K. Seth (Malaysia); Michel Lambert (Pacific Islands); Santiago Obien (Philippines); Earl Rodgers (USA)
1975-1977	Mohammad Soerjani (Indonesia)	Peter Michael (Australia)	Donald Plucknett (USA)	Roy Nishimoto (USA)			Wong See Ping (Malaysia); S.K. De Datta (Philippines); Les Matthews (New Zealand); Michel Lambert (South Pacific); Larry Burrill (USA); Shooichi Matsunaka (Japan); Ojo Adiwinata (Indonesia)
1977-1979	Peter Michael (Australia)	H.R. Arakeri (India)	Donald Plucknett (USA)	Roy Nishimoto (USA)		Philip Motooka (USA)	S.V.R. Shetty (India), Ojo Adiwinata (Indonesia), Shooichi Matsunaka (Japan), Michel Lambert (Pacific Islands), Santiago Obien (Philippines), Rolf Jessinger (USA), Abu Bakar (Malaysia), Larry Burrill (USA)

Table 1. List of officers from 1976 to 2007 (Continued)

Year	President	Vice President	Secretary	Treasurer	Coordinators/ Area Program Convenors	Newsletter Editor	Executive Committee Members
1979-1981	H.R. Arakeri (India)	Beatriz Mercado (Philippines)	Donald Plucknett (USA)	Roy Nishimoto (USA)			K. A. Watson (Australia), Shooichi Matsunaka (Japan), Chris H. Teoh (Malaysia), Unporn Suwunnemek (Thailand), Terry I. Cox (New Zealand), Michel H. Lambert (Pacific Islands), Mohamad Soerjani (Indonesia), K. Krishnamurthy (India)
1981-1983	Beatriz Mercado (Philippines)	Tanongchit Wongsiri (Thailand)	Roy Nishimoto (USA)	Philip Motooka (USA)		Philip Motooka (USA)	Peter Michael (Australia), Sri Tjitrosoedirdjo (Indonesia), K. Krishnamurthy (India), Michel Lambert (Pacific Islands), Shooichi Matsunaka (Japan), Larry Burrill (USA), Terry Cox (New Zealand), Christopher Teo (Malaysia)
1983-1985	Tanongchit Wongsiri (Thailand)	Yuh-Lin Chen (Taiwan, China)	Beatriz Mercado (Philippines)	Keith Moody (Philippines)		Beatriz Mercado (Philippines)	K. Krishnamurthy (India), Terry Cox (New Zealand), Christopher Teoh (Malaysia), J. Wiroatmodjo (Indonesia), Larry Burrill (USA), Peter Michael (Australia), Yuji Yamasue (Japan), Maneesa Teerawatsakul (Thailand)
1985-1987	Yuh-Lin Chen (Taiwan, China)	Dong Soo Kim (South Korea)	Beatriz Mercado (Philippines); Assistant Sec. - Aurora Baltazar (Philippines)	Keith Moody (Philippines)		Beatriz Mercado (Philippines)	Terry Cox (New Zealand), Christopher Teoh (Malaysia), Larry Burrill (USA), Peter Michael (Australia), Yuji Yamasue (Japan), Mohamad Soerjani (Indonesia)
1987-1989	Dong Soo Kim (South Korea)	Achmad Soedarsan (Indonesia)	Aurora Baltazar (Philippines)	Keith Moody (Philippines)		Aurora Baltazar (Philippines)	K. Krishnamurthy (India), Christopher Teoh (Malaysia), Larry Burrill (USA), Yuji Yamasue (Japan), Terry Cox (New Zealand), Mohamad Soerjani (Indonesia), Peter Michael (Australia), Maneesa Teerawatsakul (Thailand)
1989-1991	Achmad Soedarsan (Indonesia)	John Swarbrick (Australia)	Aurora Baltazar (Philippines)	Keith Moody (Philippines)			David Campbell (Australia); Ze Pu Zhang (Beijing, China); S.K. Mukhopadhyay (India), Sri Tjitrosoedirdjo (Indonesia); Yuji Yamasue (Japan), Kil-Ung Kim (South Korea), Ng Kwang Yew (Malaysia), Anis Rahman (New Zealand), Rashid Shad (Pakistan), Bonifacio Lapade (Philippines), Visut Chandransu (Thailand), Yuh-Lin Chen (Taiwan, China), James Riggelman (USA)

Table 1. List of officers from 1976 to 2007 (Continued)

Year	President	Vice President	Secretary	Treasurer	Coordinators/ Area Program Convenors	Newsletter Editor	Executive Committee Members
1991-1993	John Swarbrick (Australia)	Kozo Ishizuka (Japan)	Jenny Bibb (Australia)	Anis Rahman (New Zealand)		Aurora Baltazar (Philippines)	Yuji Yamasue (Japan); David Campbell (Australia), Ze Pu Zhang (Beijing, China), Kil-Ung Kim (Korea), S.K. Mukhopadhyay (India), S. Tjitrosemto (Indonesia), Anwar Ismail (Malaysia); Anis Rahman (New Zealand), Rashid A. Shad (Pakistan), Bonifacio Lapade (Philippines), Visut Chandransu (Thailand), Yuh-Lin Chen (Taiwan, China), James Riggelman (USA)
1993-1995	Kozo Ishizuka (Japan)	Anwar Ismail (Malaysia)	Yuji Yamasue (Japan)	Anis Rahman (New Zealand)		John Swarbrick (Australia)	Aik Hock Cheam (Australia), Ze Pu Zhang (Beijing, China), Sisir Mukhopadhyay (India), Soekisman Tjitrosemto (Indonesia), Yuji Yamasue (Japan), Jong Yeong Pyon (South Korea), Anwar Ismail (Malaysia), Anis Rahman (New Zealand), Rashid Shad (Pakistan), Bonifacio Lapade (Philippines), Yuh-Lin Chen (Taiwan, China), Prasan Vongsaraj (Thailand), Roy Nishimoto (USA)
1995-1997	Anwar Ismail (Malaysia)	Rungsit Suwanketnikom (Thailand)	Baki Bakar (Malaysia)	Anis Rahman (New Zealand)		John Swarbrick (Australia)	Aik Hock Cheam (Australia), Ze Pu Zhang (Beijing, China), Edison Purba (Indonesia), Sisir Mukhopadhyay (India), Yuji Yamasue (Japan), Jong Yeong Pyon (South Korea), Baki Bakar (Malaysia), Anis Rahman (New Zealand), Rashid Shad (Pakistan), Bonifacio Lapade (Philippines), Rungsit Suwanketnikom (Thailand), Lai Quey Wu (Taiwan, China), Roy Nishimoto (USA)
1997-1999	Rungsit Suwanketnikom (Thailand)	Ze Pu Zhang (Beijing, China)	Sombat Chinawong (Thailand)	Anis Rahman (New Zealand)		Aurora Baltazar (Philippines)	Aik Hock Cheam (Australia), Su Shao Quan (Beijing, China), Soekisman Tjitrosemto (Indonesia), Sisir Mukhopadhyay (India), Yuji Yamasue (Japan), Jong Yeong Pyon (South Korea), Baki Bakar (Malaysia), Anis Rahman (New Zealand), Rashid Shad (Pakistan), Bonifacio Lapade (Philippines), Rungsit Suwanketnikom (Thailand), Lai Quey Wu (Taiwan, China), Roy Nishimoto (USA), Duong Van Chin (Vietnam)

Table 1. List of officers from 1976 to 2007 (Continued)

Year	President	Vice President	Secretary	Treasurer	Coordinators/ Area Program Convenors	Newsletter Editor	Executive Committee Members
1999-2001	Ze Pu Zhang (Beijing, China)	Aurora Baltazar (Philippines)	Chao Xiao Zhang (Beijing, China)	Anis Rahman (New Zealand)		Aurora Baltazar (Philippines)	Aik Hock Cheam (Australia), Ni Han Wen (Beijing, China), S. Brar (India), Soekisman Tjitrosemto (Indonesia), Hiroko Watanabe (Japan), Kil Ung Kim (South Korea), Baki Bakar (Malaysia), Anis Rahman (New Zealand), Gil Magsino (Philippines), Rashid Shad (Pakistan), J.D.K.M. Jayawardana (Sri Lanka), Kleopan Suwannarak (Thailand), Mou Yen Chiang (Taiwan, China), Roy Nishimoto (USA), Duong Van Chin (Vietnam)
2001-2003	Aurora Baltazar (Philippines)	Duong Van Chin (Vietnam)	Analiza Ramirez (Philippines)	Anis Rahman (New Zealand)		Yasuhiro Yogo (Japan)	Steve Adkins (Australia), Ni Han Wen (Beijing, China), S. Brar (India), Soekisman Tjitrosemto (Indonesia), Hiroaki Watanabe (Japan), Jong Yeong Pyon (South Korea), Baki Bakar (Malaysia), Anis Rahman (New Zealand), Rashid Shad (Pakistan), Jose Cruz (Philippines), Anuru Abeysekera (Sri Lanka), Kleopan Suwannarak (Thailand), Mou-Yen Chiang (Taiwan, China), Roy Nishimoto (USA), Duong Van Chin (Vietnam)
2003-2005	Duong Van Chin (Vietnam)	Buddhi Marambe (Sri Lanka)	Tran Thi Ngoc Son (Vietnam)	Steve Adkins (Australia)		Yasuhiro Yogo (Japan) (APWSS Newsletter); Kazuyuki Itoh (Weed Biology and Management) (Japan)	Steve Adkins (Australia); Ze Pu Zhang (Beijing, China), A.N. Tewari (India), Soekisman Tjitrosemto (Indonesia), Hiroaki Watanabe (Japan), Jong Yeong Pyon (South Korea), Baki Bakar (Malaysia), Anis Rahman (New Zealand), Khan Bahadar Marwat (Pakistan), Jose Cruz (Philippines), Buddhi Marambe (Sri Lanka), Kleopan Suwannarak (Thailand), Mou-Yen Chiang (Taiwan, China), James Hill (USA), Duong Van Chin (Vietnam)
2005-2007	Buddhi Marambe (Sri Lanka)	Khan Bahadar Marwat (Pakistan)	Anuru Abeysekera (Sri Lanka)	Steve Adkins (Australia)			Steve Adkins (Australia), Ze Pu Zhang (Beijing, China), R.K. Singh (India), Soekisman Tjitrosemto (Indonesia), Hiroaki Watanabe (Japan), Kil Ung Kim (South Korea), Baki Bakar (Malaysia), Anis Rahman (New Zealand), Khan Marwat (Pakistan), Aurora Baltazar (Philippines), Anuru Abeysekera (Sri Lanka), Kleopan Suwannarak (Thailand), C.M. Yang (Taiwan, China), James Hill (USA), Duong Van Chin (Vietnam)

Table 2. List of recipients of Best Paper Awards and Best Poster Awards from 1983 to 2003

Year	Best Paper Award	Best Poster Award
1983	1st place: The effect of time and method of land preparation on weed populations in rice - Maxima O. Mababayad, Paquito P. Pablico, and Keith Moody (Philippines) 2nd place: Distribution of C₃ and C₄ weeds at different crop habitats of an experimental farm - Yuji Yamasue, Y. Fukumoto, and K. Ueki (Japan) Two Honorable Mention: Physiological aspects and phytotoxicity of butachlor granules formulated in different ways - B.Y. Oh, J.C. Chun, and H.S. Ryang (South Korea); Plant growth inhibiting substances contained in Polygonaceae weeds - J. Harada and M. Yano (Japan)	
1985	No available information on Best Paper and Best Poster Award winners for this year	
1987	1st place: Activity, absorption, and translocation of fluzifop-butyl in upland rice and in three grass weeds - Aurora M. Baltazar, S.K. De Datta, and M.A. Llagas (Philippines) 2nd place: Effect of bensulfuron-methyl on growth, inhibition, and regrowth of <i>Sagittaria pygmaea</i> - J.C. Chun, H.J. Kim and H.S. Lee (South Korea) 3rd place: Herbicidal activity and molecular fate of chlomethoxynil in the light and dark - K. Ishizuka and H. Matsumoto (Japan)	Three submerged aquatic weeds of the family Hydrocharitaceae in Japan - Y. Oki, K. Inanishi and K. Nakagawa (Japan) Fate of the herbicide naproanilide in a rice paddy model ecosystem - K.L. Hwang, Y.S. Wang and Y.L. Chen (Taiwan, China) Growth pattern and tuber formation of <i>Cyperus rotundus</i> - C.I. Yuan and L.S. Leu (Taiwan, China)
1989	1st place: Distribution of propanil-hydrolyzing enzyme, arylacylamidase I in genus <i>Oryza</i> - Jian Jun Chen and Shooichi Matsunaka (Japan) 2nd place: Ecophysiological studies in relation to weed management strategies in rice - Ampong Nyarko Kwesi and S.K. De Datta (Philippines) 3rd place: Frost as a limiting factor in the distribution of <i>Senecio madagascariensis</i> in Australia - B.M. Sindel and Peter W. Michael (Australia) Protein patterns of rice (<i>Oryza sativa</i> L.) cultivar affected by thibencarb herbicide - H.Y. Kim, K.U. Kim, and D.H. Shin (South Korea) Dynamics of weed invasion: Implications for control - R.J. Hobbs (Australia)	Biochemical identification of <i>Echinochloa</i> species collected in Korea - K.U. Kim, J.H. Kim, and L.J. Lee (South Korea) A simple and rapid screening method for herbicidal photosynthetic electron transport inhibitors using liverwort photoautotrophic cultured cells - S.S. Kwak, K. Ichinose, M. Kishida, S. Yoshida, N. Takahashi, F. Sato, and Y. Yamada (Japan) Seed germination characteristics of <i>Alisma canaliculatum</i> - Y.C. Ku, T. Sumiyoshi, N. Ishikura, and H. Nakamura (Japan) Expert systems on weed identification in rubber plantation - S.S. Tjitrosoedirdjo, I. Mawardi, and M. Djojomantono (Indonesia) No information on Best Poster award available for this year
1991		
1993		
1995	1st place: Calculating chlorsulfuron concentration in plants: an approach for detecting the mechanism of herbicide sensitivity - F. Dastgheib and R.J. Field (New Zealand) 2nd place: Revegetation of embankment slopes with cogon grass (<i>Imperata cylindrica</i> var. Keonigii) - K. Asami, H. Akamatsu, and T. Hattori (Japan) 3rd place: Effect of water stress on glyphosate phytotoxicity: histological study of	1st place: Detection of DNA fingerprints of <i>Sagittaria trifolia</i> - R. Miura, C. An, T. Kusanagi, and R. Terauci (Japan) 2nd place: Status and control of weedy rice in the Muda area of Malaysia - I. Md. Zuki, H. Watanabe, and N.K. Ho (Malaysia) 3rd place: Effect of glyphosate on growth of indica rice callus and regenerated plants

Table 2. List of recipients of Best Paper Awards and Best Poster Awards from 1983 to 2003

Year	Best Paper Award	Best Poster Award
1997	<i>Imperata cylindrica</i> - P. Wanichananakul and K. Pongern (Thailand) 1st place: Allelopathy in <i>Chenopodium pumilio</i>: A serious but manageable problem - Aik Hock Cheam, S. Lee, L. Martin, J. Pearce, and B.J. Rayner (Australia) 2nd place: Progress of a biological weed control project in rice-based cropping systems in southeast Asia - Alan K. Watson, Maxima O. Mababayad, W.Zhang, R.F. Masangkay-Watson, L.Z. Deluna-Couture, C.B. Yandoc, T.C. Paulitz and A.M. Mortimer (Philippines) 3rd place: Weed control using a blanket wiper - Brad J. Rayner and J.R. Pierce (Australia)	- S. Surawattananon, C. Wongwattane, K. Namwongpram, K. Sangul, M. Nakorn, and S. Chaum (Thailand) ▪ A novel method for determination of mefenacet adsorption in soil by centrifugation with double tubes - Katsuichiro Kobayashi, N. Nakamura, and Ie Sung Shim (Japan) ▪ Allelopathic potential of water extract from Mexican sunflower on growth of rice - Suthep Thongma (Thailand) ▪ Biological control of grass weeds cooperative project between Vietnam and Australia - Bruce Auld, Ha Minh Trung, Tran Huu Hanh, and Nguyen Hong Son (Vietnam and Australia) ▪ Involvement of abscisic acid in temperature-sensory mechanisms for controlling the seasonal timing of seed germination in winter annual weeds - T. Yoshioka, T. Gonai, S. Satoh, and T. Hashiba (Japan) ▪ Plant interaction in vegetation of a model levee of paddy field - K. Nakatani and Y. Fujii (Japan) ▪ Weed population dynamics in coffee plantation managed by different soil conservation techniques - N. Sriyani, H. Suprpto, A.T. Lubis, Y. Oki, T. Adachi, and M. Senge (Indonesia)
1999	1st place: Weed morphology effects on competitiveness for light in direct-seeded rice - Barney P. Caton, A. Martin Mortimer, T. C Foin, Jim E. Hill, Kevin D. Gibson, Albert J. Fischer (U.S. and Philippines) 2nd place: Soil solarization and glyphosate for purple nutsedge control - Roy K. Nishimoto and O. Kabawata (U.S.) 3rd place: Structure-activity relationships of new benzenesulfonfylureas in rice and barnyardgrass - I.T. Hwang, Y.K. Ko, T.J. Kim, D.W. Kim, and K.Y. Cho (South Korea)	1st place: Mechanism of resistance to oxyfluorfen in selected soybean cell lines - E. Warabi, K. Usui, and H. Matsumoto (Japan) 2nd place: (tie) Resistant genetic character of bean (<i>Phaseolus vulgaris</i>) to glyphosate - B. Tao, F. Luan, and W. Xiang (Beijing, China); Taxonomic affiliation and nomenclatorial status of weedy rice accessions in Malaysia - A.B. Mislamah, B.B. Baki, J. Abdul Munir, M.Z. Abdullah and D. Tan (Malaysia)
2001	1st place: Population dynamics and growth of weeds in rainfed rice-onion systems in response to chemical and cultural weed control methods - M.C. Casimero, A.M. Baltazar, J.S. Manuel, S.R. Obien, and S.K. De Datta (Philippines/US) 2nd place: Resistance to acetolactate synthase (ALS) inhibitors in a biotype of <i>Monochoria vaginalis</i> discovered in Korea - I.T. Hwang, K.H. Lee, S.H. Park, B.H. Lee, K.S. Hong, S.S. Han and K.Y. Cho (South Korea) 3rd place: Roundup tank mixtures with atrazine plus acetochlor for weed control in zero tillage corn - X.J. Li, D.Z. Lu, Y.H. Li, and R.E. Blackshaw (China and Canada)	1st place (tie): Crop injury caused by herbicides - I.Y. Lee, J.E. Park, S.T. Lim, J.R. Cho, and E.S. Lim (South Korea); A population of sprangletop (<i>Leptochloa chinensis</i>) is resistant to fenoxaprop - C. Maneechote, A. Chernaichachirakul, S. Tittawattanakul, S. Samanwong (Thailand) 2nd place: Root systems of horsenettle (<i>Solanum carolinense</i>), growth pattern, architecture, and reproductive ability - M. Ito and K. Miyazaki (Japan)
2003	1st place: Managing a biotype of wild radish (<i>Raphanus raphanistrum</i>) - Aik Hock Cheam, A. Lee, D. Nicholson, and M. Clarke (Australia) 2nd place: Practical weed suppression using allelochemicals from hairy vetch - Y. Fujii, T. Kamo, S. Harimoto, and S. Hiradate (Japan) 3rd place: <i>Setosphaeria rostrata</i> - A promising fungus for controlling <i>Leptochloa chinensis</i> in lowland rice - D.V. Chin, H.L. Thi, S.D. Hetherington, and B.A. Auld (Vietnam and Australia)	

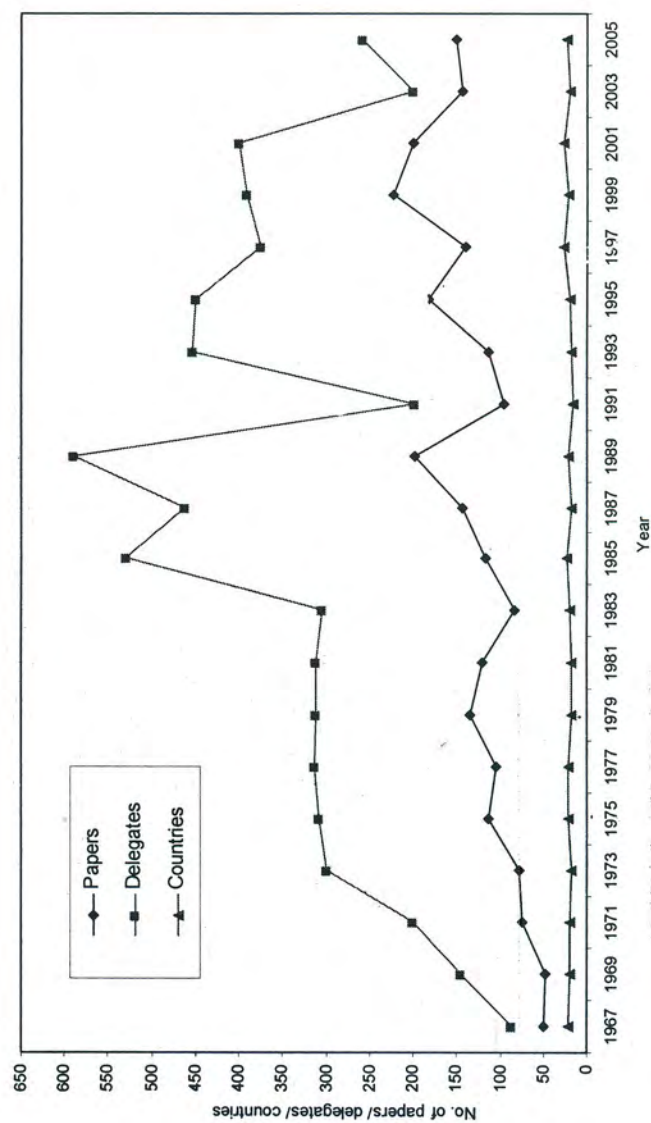


Figure 1. Number of papers presented, delegates, and countries that participated in APWSS conferences from 1967 to 2005.

.....TO PROMOTE WEED SCIENCE,
PARTICULARLY IN THE
ASIAN AND PACIFIC REGIONS,
BY POOLING AND EXCHANGING INFORMATION
ON ALL ASPECTS OF WEED SCIENCE.



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