



IWSS Newsletter

International Weed Science Society

January 1999

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From the President

This last of Presidential missives must deal mainly with Society affairs, to sum up a term of office. It has been an interesting two years, trying to learn what the office and Society were about, without any records from previous years and with a new Secretary/Treasurer, Dr. Carol Mallory-Smith, who found the membership lists in disarray and an empty treasury. Carol, with the able aid of Jeannette Harper, straightened out the latter two issues. They hope to have located all missing members. There are now sufficient resources for publishing and mailing the newsletter, and the recent constitutional amendments designated more rational uses for our limited financial resources, so we should stay in the black. An audit committee should be appointed by the Board

of Directors at their forthcoming meeting to enhance the transparency of operations.

I found that my major task was to be chair of the Scientific Organizing Committee for our Third International Congress. Our gracious hosts in Brazil have organized a fantastic site, while for the first time, the Society set out to wholly organize the scientific aspects of the Congress. Knowing my limitations in most areas of weed science full well, we co-opted an international community of experts to outline program areas and choose main topic organizers. These in turn have picked the session organizers who together with the Committee modified the program outline to make it even more relevant to the global weed science community. This program will appear in the Congress website, <http://www.sercomtel.com.br/ice/plantata>. Many of the main topic and session organizers are not yet members of the IWSS, but seeing their enthusiasm for the overall global program, I have a feeling that most will join the ranks of those who realize the importance of weed science beyond their respective regions. It was with a strong satisfaction that we had a more than 90% acceptance rate among our first choices for this all-star cast of organizers and speakers. While the speakers will be the nucleus of the Congress, much of the actual science will come from the floor--literally--as a great emphasis is being put on the poster sessions. The posters will be presented over long lunch periods, in the luncheon areas. Who will miss the posters and the food, when the excellent Brazilian lunches are included in the registration fees? Time has also been allocated for each of the session leaders to hold a discussion of the most relevant posters during their sessions.

We have a strong feeling that the meeting will draw a large number of participants from around the world. Despite the size, the format of coherent and meaningful progressions of main topics means that those who adhere to their sub-specialities will find themselves in the intimacy of a smaller community of like-minded colleagues. The uniform timetable and compactness of the convention center will

allow those who have more general interests to hop among parallel sessions.

I wish that I could say as President that the Society had fulfilled other goals it set out to deal with: e.g., to assist regional and local societies in the organization of smaller meetings, workshops, courses, and publications. We received no such requests to assist in enhancing the inter-regional flavor of their meetings. This may well come about due to the groundwork laid by enlarging the board of directors with members from regional weed societies and the FAO to other international groups dealing with weed issues. Thus, the World Bank, GCPF (the chemical manufacturers' organization), and the Aquatic Plant Management Society have joined the Board. CARE, CIMMYT, IRRI, IITA, and ALAM have members on the Scientific Organizing Committee of the Congress. Perhaps these organizations will understand the wealth of scientific power in the IWSS, and then use the IWSS as a participatory element in their future events.

From the aspect of retiring President, I feel that the membership was wise in lengthening the term of office so that a President can see the fruits of labor come to fruition. Perhaps we should have done this earlier so that a very able Dr. Ricardo Labrada would not receive a truncated term of a year and a half. The President who follows him will serve from Congress to Congress. Thus, it is for Ricardo to compress a considerable amount of work in his short tenure. He, Secretary/Treasurer Carol Mallory-Smith, and the newly elected Vice President Steve Duke, will head an organization who have a most cooperative and helpful membership in the global weed community. It must be due to the importance of our task--to assist in insuring the worlds' food supply--that has engendered this human fellowship of weed scientists to be so dedicated. Carry on!

Jonathan Gressel, President

IWSS Newsletter is the biannual newsletter of the International Weed Science Society. IWSS is a membership organization dedicated to encourage, promote, and assist development of weed science and weed control technology on a global level.

Membership fees are US \$10 annually, with lifetime membership available at US \$200. Subscription/membership information can be obtained from:

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Herbicide Resistant Weeds in Rice Workshop

The Tropical Agricultural Center for Research and Higher Education (CATIE) with the support of the British Natural Resources Institute (NRI) organized a workshop on Prevention and Management of Herbicide Resistant Weeds in Rice. This workshop, held in Costa Rica on July 15-17, was part of the activities of a collaborative research project funded by the United Kingdom Department of International Development's Crop Protection Programme. This project has been developing strategies for the management of herbicide resistant weeds in rice under the leadership of Dr. Bernal Valverde (CATIE), Dr. Charlie Riches (NRI) and Dr. John Caseley (Long Ashton Research Station, UK).

Attended by 34 researchers, extension agents, industry representatives, government officials, growers from Bolivia, Colombia, Costa Rica, Mexico, Nicaragua, and Panama, and Guest Lecturer Albert Fischer (University of California at Davis), the workshop addressed the current regional situation of herbicide resistance in weeds associated with rice based on research conducted by the project. Since 1992, the CATIE/NRI/LARS group has determined the mechanisms responsible for propanil resistance in *Echinochloa colona*, and has demonstrated approaches of the management of resistant populations which integrate cultural or chemical pre-plant control with in-crop control with herbicides with alternative modes of action or propanil/synergist combinations. Possible avenues to increase awareness and prevent dissemination of resistant weeds and the evolution of new cases of herbicide resistance also were examined at the workshop.

Recommendations from the workshop included:

To broaden research to cover management of other troublesome weeds, especially redrice, *Ischaemum rugosum*, *Murdannia nudiflora*, and *Eriochl-*

oa punctata. Participants acknowledged the importance of project outputs and felt that as a result they are in a much better position to begin the implementation of resistance prevention and management options.

To investigate means for early detection of herbicide resistance at field level and to establish a service for corroborating suspect cases through bioassays. Rapid tests for resistance developed by the project need to be field tested.

To design and implement an awareness strategy to inform and train field advisors and growers about herbicide resistance prevention and management. Industry should be involved in the process and provide supplemental funding.

To develop suitable extension protocols to train and help growers in prevention and management of herbicide resistance in weeds and to judiciously select herbicides for their weed control schemes. These protocols should be aimed to organized growers' groups and to a lesser extent to individuals in order to maximize use of limited resources.

To promote the formation of weed resistance action groups at the local or the regional level, depending on current awareness and resource availability with participation of industry, academic and government sectors, and growers.

To recommend the adoption by industry of labeling of herbicides to indicate mode of action and resistance risk.

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What's constraining rice?

The 1997 ANNUAL RESEARCH REPORT of the Cambodia-IRRI-Australia project, a project dedicated heavily to understanding the constraints to rice production and then develop appropriate practical IPM systems. According to the January 1999 'IPMnet News': Program research confirmed the fact that there was no significant yield difference between treated and untreated plots due to insect damage or insecticide applications; farmer pesticide practices did not increase yields. Only the incidence of weeds had a clear (negative) effect on crop yield. It sounds as if weed scientists have their work cut out for themselves in Cambodia. This finding is not surprising.

Most weed scientists could not guess how much herbicide was being used in China. It must have been a lot, and for a long time, because there was a report that there are three million hectares of riceland covered with *Echinochloa crus-galli* that is resistant to both thiobencarb and butachlor, herbicides thought to be immune to resistance problems. (Resistant Pest Management, 9(1):5-7.)

MEMBERSHIP DUES

Please check the date on the mailing label on this newsletter. If it does not say "0" (Lifetime Member) or "1999", please take the time to send in your dues. A membership application form is included at the back of the newsletter for your convenience or for you to give to other potential members. It may be photocopied.

Part I of this article appeared in the July 1998 Newsletter

THE ROCKEFELLER FOUNDATION'S COLLABORATIVE RESEARCH INITIATIVE ON STRIGA-RESISTANT MAIZE--Part II

J.D. DeVries, F.K. Kanampiu, O.M. Odongo

MAIZE STRIGA RESEARCH OUTSIDE AFRICA

In recognition of the possibility that *Striga* resistance may need to be engineered using recently-developed techniques which are available in a limited number of laboratories, the *Striga* maize initiative also comprises several grants made to advanced laboratories outside Africa.

PURDUE UNIVERSITY. Using molecular maps, researchers at Purdue University have identified markers linked to the single recessive gene (termed *lgs*) responsible for lowered production of the *Striga* germination stimulants strigol and sorgolactone in resistant lines of sorghum. They hope to fine-map and clone the *lgs* gene using positional cloning on bacterial artificial chromosomes (BACs). On the chance that the *lgs* gene proves difficult to work with, the team is attempting to map and clone other genes in sorghum, which have also been shown to contribute to resistance. Candidate transgenes for resistance in maize will then be derived based on these genes and knowledge of their function in sorghum.

This same team is attempting to engineer a hypersensitive response mechanism in maize which will cause rapid cell death at the site of penetration of the *Striga* haustorium, preventing attachment, but not otherwise causing significant damage to the plant. This strategy involves identifying separate genes that are stimulated and repressed by *Striga* infection and linking their promoters to introduced gene constructs that produce the proteins barnase and barstar. Barnase causes cell death by digesting RNA, while barstar inhibits barnase. Thus, the researchers are hoping to (1) find good examples of genes which are stimulated and repressed by *Striga* infection; (2) isolate the promoter sections of these respective genes and attach them to barnase and barstar genes in ways that will generate a hypersensitive response;

and (3) transfer these genes into the maize genome and test for resistance to *Striga*.

UNIVERSITY OF CHICAGO. Germination of *Striga* seed is dependent upon a pre-germination conditioning process, and the presence of a germination stimulant. Thus, maize plants that did not produce the stimulant would not suffer from *Striga* infestation. Blocking this pathway would (assuming all other processes remain normal) render the maize plant roots "invisible" to *Striga* seeds in the root zone. Focusing on this possibility, researchers at the University of Chicago are attempting to determine the compound(s) produced and secreted by maize roots to promote germination of *Striga* seed. Identification of the specific compound(s) responsible for stimulating germination in maize will permit researchers to investigate the biosynthetic pathway involved in stimulant production and either choose from a list of biosynthetic mutants already identified in maize or attempt to engineer such a mutant.

They will be searching for two types of mutants: both for non-production of stimulant and over-production. The advantage of a non-production mutant is obvious. The reasoning for development of an over-production mutant is that it may lead to germination of *Striga* seed at distances from the root greater than that which enables attachment via haustoria. This will depend on the stability of the compound in the soil and the ability of over-producing genotypes to build up concentration gradients sufficient to stimulate germination at significant distances from the root.

UNIVERSITY OF VIRGINIA. In order to parasitize a host, *Striga* must first penetrate host roots via the haustorium. Resistant hosts, non-hosts, and susceptible hosts differ with respect to their responses to contact with *Striga* haustoria at the level of the root cortex. Thus, one important mechanism for resistance to *Striga* appears to exist at this level. Researchers in this laboratory are investigating the specific biochemical factors and gene products involved in cortical rejection. Once identified, these characteristics could be selected for in maize or added to maize via cloned genes transferred from other plant species. In a second component of their work, these researchers are also hoping to identify and clone maize genes responsible for resistance to *Striga* by identification of altered

responses to *Striga* infection among maize mutants produced via transposon insertions.

UNIVERSITY OF CALIFORNIA, DAVIS. Scientists are interested in identifying genes in maize responsible for continued parasitism of the plant following germination of *Striga*. They are testing maize germplasm from a wide variety of origins for resistance to parasitic weeds using *Triphysaria* as a model system. *Triphysaria* is known to be a broad-range host parasite that can recognize signals from many different plants. As a native American plant, it carries the added advantage of having wide approval for use in experiments, whereas *Striga* is under very strict quarantine restrictions. Most laboratories which have approval for work with *Striga* in the U.S. are still not permitted to run extensive field studies. This group has proven that maize grown in pots or *in vitro* in the presence of seeds of *Triphysaria* is parasitized in a manner very similar to *Striga*. They are proceeding with the screening of maize mutants developed using EMS for resistance to *Triphysaria* in expectation that some of these mutants may also be resistant to *Striga*.

Meetings were held in Nairobi, Kenya which involved a wide spectrum of research groups working on control of *Striga* in maize. These meetings were intended to give laboratory and field-based researchers an opportunity to meet, report on their work, and observe *Striga* in the African environment.

Given its early stage of development, the *Striga* maize initiative is still engaged in a limited process of elimination among a restricted number of avenues of research. Progress, however, is being made steadily. It is hoped that one or more of the technologies developed through the program will combine for an effective means of control which is accessible to the many farmers of Africa who are affected by the scourge of *Striga*.

References

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- Hassan, R., J.K. Ransom, and J. Ojeim. 1995. The spatial distribution and farmers' strategies to control *Striga* in maize: Survey results from Kenya. In: D. Jewell, S. Waddington, J. Ransom, and K. Pixley (eds). Proceedings of the Fourth Eastern and Southern Africa Regional Maize Conference. CIMMYT, Harare. p. 250-254.
- Kim, S.K., M.H. Lee and V. Parkinson. 1986. Estimates of maize yield reduction by *S. hermonthica* on susceptible and tolerant maize varieties. Paper presented at the NCMRP Conference on Maize, Ife, Nigeria, 17-21 March, 1986.
- Moessner, B. 1994. *Striga* Survey in Malawi. Malawi-German Biocontrol and Post-Harvest Project, Ministry of Agriculture and University of Malawi. 12 pp.
- Ransom, J.K., L.J. Musselman, A.D. Worsham, C. Parker, eds. 1991. Proceedings of the 5 International Symposium of Parasitic Weeds. Nairobi: CIMMYT.
- Sauerborn, J. 1991. The economic importance of the phytoparasites *Orobanche* and *Striga*. In: Ransom, J.K., L.J. Musselman, A.D. Worsham and C. Parker (eds.). Proceedings of the 5th International Symposium of Parasitic Weeds. Nairobi: CIMMYT. pp. 137-143.
- Watt, W.L. 1936. Control of *Striga* weed in Nyanza Province, Kenya. East African Agricultural Journal. 1:320-322.
- *****
- Agro Annual Meeting China 99**
- The Annual Agro Meeting China 99 with the theme of "Plant Protection and Plant Nutrition," organized by the Ministry of Agriculture, P.R.C., will be held April 13-16, 1999, in Beijing. The meeting has two major activities: International Symposium on Plant Protection and Plant Nutrition, and International Exhibition of Products for Plant Protection and Fertilizer. The Ministry of Agriculture will invite well known scholars of the world to take part in discussions and view-exchanges on research progress and focal points in areas of plant protection and plant nutrition. International companies of the agrochemical industry will be invited to show their advanced technologies and new products. The Plant Protection Stations, Soil and Fertilizer Stations, and Agricultural Input Supply Companies will visit and hold trade talks with exhibitors.

ELECTION

Dr. Stephen O. Duke has been elected to the office of Vice President of IWSS and will serve in this capacity until June 2000. Dr. Duke is Research Leader of the USDA's Natural Products Utilization Research Unit in Oxford, Mississippi (USA), a position he has held since October 1996. Before then, he was Director of USDA's Southern Weed Science Laboratory in Stoneville, Mississippi, where he did research on weed biology and physiology for more than 20 years. He received a Ph.D. in plant physiology in 1975 from Duke University.

His current research assignment involves discovery of uses for natural products in weed management and development of medicinal plants (many are weeds) as alternative crops. More specifically, his lab is discovering natural product-based algicides for use in aquaculture, developing allelopathic crops in order to reduce synthetic herbicide use, manipulating the production of phytopharmaceuticals in medicinal plants. He has published more than 200 refereed publications on a weed science-related topics. He is co-author of a text book used in some advanced weed courses. He has almost 200 invited presentations in North America and many foreign countries on weed science topics. He has participated in weed science and weed science-related meetings in Brazil, England, Germany, Spain, Denmark, Australia, Hungary, Canada, Italy, and Japan and has had visiting scientists and students from all over the world in his laboratory.

Service to professional societies has included tenures as President of the Weed Science Society of America (WSSA), the Southern Weed Science Society (SWSS), and the Mississippi Weed Science Society (MWSS). He is a Fellow of WSSA and American Society for the Advancement of Science and has received awards for his research and service from USDA, WSSA, SWSS, and MWSS, as well as other scientific societies. He gave the 1996 Council of Australian Weed Science Societies Oration. He is currently serving as chair of the WSSA Strategic Planning Committee and as IWSS Liaison.

Congratulations Dr. Duke!

IWSS Web Site

The IWSS web site has been resurrected. Please send information that you would like posted on the site to the Secretary-Treasurer. The new address is:

<http://www.css.orst.edu/weeds/iwss/>

DATES AND EVENTS

1999

March 8-10

International Conference, Emerging Technologies in IPM: Concepts, Research, and Implementation

Venue: Raleigh, NC, USA

Contact: T. Sutton, Dept. of Plant Pathology, Box 7616, NCSU, Raleigh NC 27695

Tel: 1-919-515-6823

Email: turner_sutton@ncsu.edu

Website: ipmwww.ncsu.edu/ipmconference/

March 15-18

5th International Conference for Plant Protection in the Tropics

Venue: Kuala Lumpur, Malaysia

Contact: I. Hashim, c/o C.I.P.U., RRIM Exp. Station, 47000 Sg. Buloh Selangor, Malaysia

Fax: 60-3-6576745 Email: drismail@lgm.gov.my

March 16

Managing Beneficial Organisms in Practical Integrated Crop Management

Venue: London, United Kingdom

Contact: SCI, 14/15 Belgrave Square, London SW1X 8PS, United Kingdom

Tel: 44-171-598-1563

Fax: 44-171-235-7743

Email: conferences@chemind.deomn.co.uk

March 18-19

Symposium on Biological Control in the Tropics

Contact: Anwar Ismail

Fax: 603-9487639

Email: anwar@mardi.my

Website: <http://www.mardi.my> and <http://cabi.org/>

March 18-19

Conference on Environmental Risk Indicators for Pesticides

Venue: Amsterdam, The Netherlands

Contact: B. de Groot

Email: beadegroot@clm.nl

March 22-27

Integrated Pest and Disease Management in Protected Cultivation, International Postgraduate Course

Venue: Wageningen, The Netherlands

Contact: International Training Centre, WAU, POB 8130, 6700 EW Wageningen, The Netherlands

Tel: 31-317-484092

Fax: 31-317-426547

March 23-25

4th European Symposium on Industrial Crops and Products

Venue: Bonn, Germany

Contact: Marketing Secretariat, 4 Castle Road, Wootton, Woodstock, Oxon OX20 1EG, United Kingdom

Tel: +44 (0) 1993 811775

Fax: +44 (0) 1993 811775

Email: bluezulu@dial.pipex.com

April 12-14

Gene Flow and Agriculture: Relevance for Transgenic Crops

Venue: University of Keele, Staffordshire, UK

Contact: British Crop Protection Enterprises, 49 Downing Street, Farnham, Surrey GU9 7PH, UK

Tel: +44-1252-733072

Fax: +44-1252 727194

Email: md@BCPC.org

Website: <http://www.bcpc.org>

May 4

51st International Symposium on Crop Protection

Venue: Gent, Belgium

Contact: S. P. De Clercq, Dept of Crop Protection, University of Gent, Coupure Links 653, B-9000 Gent, Belgium

Fax: 32-0-9-264-6239

Email: Patrick.DeClercq@rug.ac.be

Website: allserv.rug.ac.be/~hvanbost/symposium/index.html

June 28-July 1

11th European Weed Research Society Symposium

Venue: Basel, Switzerland

Tel: ++41 1783 6111

Fax: ++41 1780 6341

Email: daniel.gut@wae.faw.admin.ch

Website: <http://www.res.bbsrc.ac.uk/ewrs>

July 5-9

10th Biological Control of Weeds International Symposium

Venue: Bozeman, MT, USA

Contact: NR Spencer, USDA/ARS, 1500 N Central, Sidney, MT 59270

Tel: 406-482-9407

Fax: 406-482-9407

Email: nspencer@sidney.ars.usda.gov

Website: www.symposium.ars.usda.gov

July 25-30

14th International Congress on Plant Protection

Venue: Jerusalem, Israel

Contact: D. Loebel, Congress Secretariat, PO Box 50006, Tel Aviv 61500, Israel

August 10-12

52nd NZ Plant Protection Conference

Venue: Auckland, New Zealand

Contact: A. Rahman, Ruakura Agric. Research Centre, PB 3123, Hamilton, New Zealand

Tel: 64-07-838-5280

Fax: 64-070838-5073

Email: rahmana@agresearch.cri.nz

September 12-16

12th Australian Weeds Conference

Venue: Hobart, Tasmania, Australia

Contact: Conference Design, PO Box 342, Sandy Bay, Tasmania 7006, Australia

Fax: 61-03-6224-3774

Email: mail@cdesign.com.au

October 25-29

Spray Oils Beyond 2000: Sustainable Pest and Disease Management

Venue: Sydney, Australia

Contact: A. Frost, Hawkesbury Technologies, UWS Hawkesbury, PO Box 415, Richmond, NSW 2753, Australia

Tel: 61-02-4570-1690

Fax: 61-02-4570-1520

Email: a.frost@uws.edu.au

Website: www.hawkesbury.uws.edu.au/events/sprayoils

November

17th Asian Pacific Weed Science Society Conference

Venue: Bangkok, Thailand

Contact: Dr. Sombat Chinawong, APWSS Secretary, Department of Agronomy, Faculty of Agriculture, Kasetsart University, Chatuchak, Bangkok 10903, Thailand

Fax: 662-579-8580; Email: agrsbc@nontri.ku.ac.th

Website:aggi.kps.ku.ac.th/APWSS/index.html

November 15-18

Brighton Crop Protection Conference, 1999, Weeds

Venue: Brighton, United Kingdom

Contact: The Event Organization, 8 Cotswold Mews, Battersea Square, London SW11 3RA, United Kingdom

Tel: 44-171-228-8034

Fax: 44-171-924-1790

Email: 44-171-228-8034

Website: www.BCPC.org

2000

February 5-10

Weed Science Society of America

Venue: Westin Harbour Hotel, Toronto, Canada

Contact: J. Breithaupt, PO Box 1897, Lawrence, KS 66044, USA

Tel: 1-913-843-1235 Fax: 1-913-843-1274

Email: jbreith@allenpress.com

June 3-6

22nd Brazilian Weed Science Congress

Venue: Foz do Iguassu, Brazil

Contact: B.N. Rodrigues

Email: sbcpd@cnpsa.embrapa.br

or noedi@pr.gov.br

June 6-11

III International Weed Science Congress

Venue: Foz do Iguassu, Brazil

Contact: PJ Eventos - Fieras e Congressos, Rua José Risetto, 1023 - Curitiba, Paraná - Brazil

CEO 82.015010

Tel/Fax: 55 41 372 1177

Email: pj@datasoft.com.br

WEED SCIENCE WEB SITES

The International Society of Weed Science (IWSS), the European Weed Research Society (EWRS), and the Weed Science Society of America (WSSA) maintain active web sites that include electronic versions of their respective periodic newsletters, and a variety of other information items and links to related sites around the world.

For IWSS: <http://www.css.orst.edu/weeds/iwss/>

For EWRS: <http://www.res.bbsrc.ac.uk/ewrs/>

E-mail contact: cussans@bbsrc.ac.uk

For WSSA: <http://piked2.agn.uiuc.edu/wssa/>

E-mail contact: dpike@piked2.agn.uiuc.edu

Other weed database addresses are:

Exotic-Plants US mail list: Exotic-Plants@igc.apc.org

IUCN-ISSG-Aliens-L: aliens-l@ns.planet.nz

USDA-APHIS-noxious-weeds: weeds@infor.aphis.usda.gov

World Weed Database UK: wwd-l@plant-sciences.oxford.ac.uk

The Weed Science Group in Western Australia:

<http://www.agric.wa.gov.au/progserv.plants/weeds/>

Cooperative Research Center (CRC), Weed Management Systems, Victoria, Australia

<http://www.waite.adelaide.edu.au/CRCWMS>

Weed Science Society of Victoria

<http://www.vicnet.net.au/~weedsoc/>

International Survey of Herbicide Resistant Weeds

<http://www.weedscience.com>

Presidents' Invitation

On behalf of the International Weed Science Society (IWSS), the Brazilian Weed Science Society (SBCPD) and the Host Organizing Committee, we are pleased to invite you to participate in the Third International Weed Science Congress, that will take place 6-11 June 2000, in the city of Foz do Iguassu, in the State of Paraná, Brazil.

The International Society, The Brazilian Society and the Organizing Committee are working together to ensure a Congress of high scientific value to deal with the presently acute global weed problems and those that we envisage will occur.

The Congress will be held in a place of majestic beauty, the city of Foz do Iguassu, at the border of Brazil, Argentina and Paraguay, which should provide a congenial environment for our joint endeavours.

The Congress will take place immediately following the 22nd Brazilian Weed Science Congress, beginning on June 3 at the same venue. This will allow Latin American colleagues to discuss issues of specifically regional importance, before the International meeting. The Brazilian meeting will be held predominantly in Portuguese (with simultaneous translation to English for plenary sessions) and the IWSS will be held solely in English.

We are looking forward to seeing you in the year 2000 at a venue of great beauty at an event designed to be a scientific landmark for our colleagues from all over the World who accept our invitation.

Jonathan Gressel - IWSS President

Robinson A. Pitelli - SBCPD President

João Baptista Silva and Ricardo Labrada - Co-Chairmen of the Host Organizing Committee

<http://www.sercomtel.com.br/ice/plantas>

Application for Membership -- International Weed Science Society

Membership in the International Weed Science Society (IWSS) is open to individuals of all nations interested in encouraging and promoting the development of knowledge concerning weeds and their control. Membership fees are: Individual Membership, US \$10 annually; Affiliate Membership (for companies, institutions, and national and regional weed science societies), US \$50.00; and Lifetime Membership, US \$200.00. Payment of dues entitles active members to voting privileges and receipt of the IWSS Newsletter and Membership Directory. Payment must be in U.S. currency. Credit card payments cannot be accepted.

Name _____
 Company _____
 Address _____

 City _____
 State/Zip/Country _____
 Phone _____ Fax _____ Email _____

Type of Membership: Individual Amount enclosed \$ _____
 Affiliate
 Lifetime

Mail your application and check payable to the International Weed Science Society to:

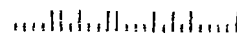
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**Deadline for July 1999 Newsletter articles is
June 1, 1999**

**Send newsletter material to:
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