



IWSS Newsletter

International Weed Science Society

July 1998

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From the President

Is Weed Science Necessary?

When one scans the weed science research and teaching staff and courses at universities and in government, and compares them to other plant protection disciplines, one quickly sees that weed science is a numerically marginal area.

The farmer and both the agrochemical and agricultural implement industries disagree. Most of the farmers' cash flow and work time goes to weed control, both in developed and developing areas of the world. Most mechanical implements are developed to control weeds and no other pest. The agrochemical industry devotes the majority of its time and expenditure in developing new herbicides, as weed control is the source of most of their sales and profit. Where does this agrochemical industry get most of their weed science specialists when universities train so few? Most come from redirecting plant physiologists, chemists, agronomists, biochemists, entomologist, and plant pathologists into weed problems, leading to fantastically vibrant research groups rarely seen in academia or government service. Most of the sales of the agrobiotech industries are in herbicide-resistant crops. Clearly industry's efforts must have been very effective as there are so few to teach, so few courses to be had, and so little to be learnt about weeds and dealing with them.

This view that weeds are not a problem to be confronted is echoed implicitly in a recent document "Bio-engineering of Crops" published by the World Bank, on what biotechnology can do for world agriculture. The bro-

chure is authored by an all star cast (meaning that no unnecessary weed scientist was included), headed by a Nobel prize winner in physics. Before discussing what biotechnology can do, they discuss the constraints to world food production that need be addressed; these include insects, diseases, and climatic stresses, more insects, diseases, and climatic stresses, but weeds obviously pose no constraints worth discussing. The authors then go on to show where biotechnology can contribute, and by implication where World Bank biotechnology funding should and should not go. In corresponding with four of the authors or their close colleagues, I received the feeling that discussing weed constraints in the brochure was taboo because the "only biotechnological solution to weeds is herbicide-resistant crops", which is a politically incorrect subject in many circles. We can debate the political correctness and needs for such crops, but are there other ways biotechnology can impact on weed control? If weeds are not a problem why consider engineered weed-competing stature in crops; engineered biocontrol agents that might actually become commercial successes; engineered allelochemicals; engineered rapid and weed competitive germination; resistance to parasitic weeds, as just a few examples that sound like science fiction? Most ag-biotech seemed like science fiction a few years ago. But why even think about dreaming up such biotech strategies if weeds aren't a constraint and institutions like the World Bank do not plan on supporting such research?

Luckily, every now and then someone from an international granting organization goes to the field and

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

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From the President, continued

sees the expanding problems of perennial weeds, of parasitic weeds, of urban allergenic weeds, of weeds never controlled well by herbicides or any other means, of the millions and millions of hectares of herbicide-resistant weeds that cost the farmer so much more to control. One positive example is the Rockefeller Foundation, who realized that they must get rid of *Striga* for their major African maize program to succeed. The old ways have not worked and Rockefeller deemed biotech as a straw to grasp. They made it known, and scientists conjured up a wonderful set of novel dreams, of which herbicide-resistant maize is just a minor, mundane, stop-gap measure in their whole program.

Are weed scientists to blame for this marginalization of weed science? I cannot answer that, but clearly we have not got the message out. The message can be trumpeted and unlikely sources sometimes hear. The U.S. book publishers organization awarded the book "Worlds Weeds: Natural Histories and Distributions" by Holm et al. their 1997 prize as the best biology book of the year. That book talks mainly of constraints, a little about overcoming them. That book took >20 years to write and weed scientists are partly to blame. They seem to be either insecure or have such a low opinion of their research and its implications such that ca 40% of the thousands of references that Holm et al. considered cogent enough to cite come from non-journal articles; i.e. experiment station reports, meetings, proceedings, regional meeting abstracts, etc. Imagine the task of hunting all that. This cogent material never makes it into computerized databases, and to most scientists does not exist, as it can not be found. (So as not to abet the problem, our year 2000 IWSS Congress will not be publishing kilograms of

proceeding volumes, as we have done in the past). An enormous portion of what Holm et al. considered globally-significant research about major weeds was not considered relevant for journal publication by the researchers. Yes, we are not getting the message out about weeds. We cannot wait for the farmers to scream that they have weed problems that need to be addressed. We must make it clear to anyone who can be cajoled to listen that we are dealing with major constraints to world food production. Weed scientists have predicted that some practices will lead to more problems. Weed scientists have ideas for some answers, but the message must get out that we need more people with novel ideas to help us. Your president, at the behest of IWSS board member Ashok K. Seth, presented a seminar at the World Bank to try to express the importance of weeds and our worries about being considered irrelevant. We need expanded multidisciplinary weed science groups in centers of excellence to deal with weeds, the major constraint to world agriculture. Most major weeds are global in scope, which is the justification of an International Weed Science Society. We need a strong, large and well-based IWSS to raise a loud cry that weeds are starving us; if not everywhere, in too many places; if not now, in the near future as populations grow. Weeds starve us more than all other pests combined. Being quiet about weeds means that we accept the view that they are unimportant and what we are doing is marginal. Do we acquiesce?

Jonathan Gressel, President

Minutes of the 1998 Board Meeting

Chicago Hilton
February 10, 1998

The meeting was called to order at 7:00 p.m. by President Jonny Gressel. Board members in attendance were Steve Duke, Larry Foy, Jonny Gressel, Ricardo Labrada, Carol Mallory-Smith, James Rigglesman, Dale Shaner, Jens Streibig, and Robert Zimdahl. Others in attendance included members of the scientific advisory board for the Third International Congress, society members, and interested observers.

President Gressel reported on a mini-board meeting during the Brighton Conference November 19, 1997. The scientific program of the Third International Weed Science Congress was discussed and names for program organizers were gathered.

Finance and Membership. The minutes of the 1997 meeting were approved as printed in the June 1997 IWSS Newsletter.

The treasurer's report was presented. Total assets of the IWSS as of December 31, 1997 were \$4757.26. In 1997 expenditures were \$2245.84 and income was \$6346.10. The Brazilian Weed Science Society will cover the \$824 expense of printing the December 1997 newsletter.

Jim Rigglesman and Carol Mallory-Smith are still working on new financial procedures and budgeting processes for the society.

The membership report was presented by Mallory-Smith. At

present there are: 16 affiliate, 3 associate, 35 charter, 142 lifetime, 487 individual, 16 sponsored, and 2 sustaining members of the International Weed Science Society.

Constitution Committee. Robert Zimdahl presented changes to the constitution. The changes will be mailed to the membership for a vote.

Changes in the operating procedures were approved by the board. Those changes are as follows (These approved changes are underlined and the highlighted words deleted):

Awards Committee. The selection committee will consist of three members, one designated as chair, and all appointed by the President and ratified by the Executive Board. The nominee must have been active in Weed Science but need not be a member of IWSS.

Finance Committee. Generate more revenue through an aggressive proactive campaign with individual members and industry the donor community.

Membership Committee. a. Be chaired by the Vice President.

Third IWSS Congress. João Baptista Silva presented an update on the site arrangements for the Third International Weed Science Congress to be held June 6 to 11, 2000 in Foz do Iguassu, Brazil.

There was a discussion of the scientific program for the international meeting. Several satellite meetings will be held in conjunction with the meeting. Satellite meetings planned at this time are Herbicide Resistance, Aquatic Weeds, Exotic

Weeds, and Formulation Technology.

Names were suggested and accepted for most of the main topic sessions for the meeting and others will be selected soon.

Jim Rigglesman along with the finance sub-committee have begun securing financial support for the International Congress.

Shipment of Publications. Clyde Elmore reported that shipments of WSSA publications have been made to weed scientists in developing nations and that the income from T-shirts sold at the 1998 meeting will be used for additional shipments.

Other IWSS Functions. There was a spirited discussion on other functions that the IWSS could and should fulfil in co-organizing workshops, courses, and publications. The society awaits the concrete suggestions and requests from individual members, local, and regional societies.

Call for Proposals for Venue of Fourth Congress 2004. An ad hoc subcommittee is to be set up to define criteria to call for and examine proposals for the fourth congress.

Elections. A call for nominations is to go out based on the decisions on the proposed constitutional changes.

The meeting was adjourned at 10:00 p.m.

Respectfully submitted,
Carol Mallory-Smith, Sec.-Treas.

MEMBERSHIP DUES

Please check the date on the mailing label on this newsletter. If it does not say "0" (Lifetime Member) or "1998", 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.

**FAO Expert Consultation
on Weed Ecology and
Management
F. Forcella**

On September 22-24, 1997, a small international group of weed scientists met at FAO Headquarters in Rome. The objectives of the consultation were two-fold. The first objective was to review those aspects of weed ecology that hold the most promise for improving weed management in developing countries. The second objective was to consider the means by which results of weed research can be generated and transferred to farmers and extension personnel who need this information.

The two objectives represented a tall order for a tiny group. Although the participants understood that definitive recommendations would be difficult enough for any single country, not to mention all developing countries, some attempt at making recommendations was still felt to be warranted. This belief arose because of the rapid changes in weed management technologies occurring in many developing areas. Changes are arising for a variety of reasons, but foremost among them is the lack of labor for hand weeding and hoeing.

In some instances the cost of a potent herbicide is less than that of a comparable volume of Coca Cola. Consequently, many farmers are switching to herbicides quickly. Although low costs of herbicides are decidedly beneficial for weedy fields managed by cash-poor and labor-strapped farmers, attendant difficulties arise when these chemicals are used by untrained and inexperienced applicators. To address this issue, one of the group's primary recommendations was to initiate farmer-field schools for weed management, along the same lines as those recently developed by FAO for insect control in rice.

What types of information and knowledge can be investigated and transferred through farmer-field schools? Naturally, the Expert Consultation participants considered the value of applicator training in alleviating application problems. However, many other types of information and knowledge are equally important, both for the short- and long-term aspects of weed management, extension, and research. These types of information included: (a) potted soil samples for farmer-initiated analysis of seed banks and potential infestations; (b) comparisons of crop varieties for weed-suppressive attributes, either through crop architecture, physiology, or allelopathy; (c) simple tables or charts of emergence patterns (times) or different weed species; (d) comparisons of mulches or cover crops; and (e) biological and economic models that provide guidance for management. The group recognized that this last type of information is not yet feasible at the field level in developing countries, but as times change, the resident and incipient research and extension establishments in these regions, as well as visiting foreign experts, should explore these powerful new information-based tools.

Participants included R. Labrada (FAO), who organized the meeting; O. Akobundu (Nigeria/USA); B. Auld (Australia); C. Fernandez-Quintanilla (Spain); F. Forcella (USA); B. Gerowitt (Germany); G. Harvey (USA); M. Kropff (Netherlands); M. Mortimer (Philippines/UK); S. Narwal (India); and M. Satin (Italy). FAO staff members P. Kenmore, C.-Y. Shen, and W. Bae also participated. A full FAO report of this meeting will be available by mid-1998.

For copies, interested individuals should contact: R. Labrada, FAO, Vialle delle Terme di Caracalla, 00100, Rome, Italy. Email: ricardo.labrada@fao.org.

In Press

CROP WEEDS (Updated and reprinted 1998) By J.L. Wilding, A.G. Barnet and R.L. Amor. 154 pages, \$65.00 plus \$10.00 postage in Australia.

MORE CROP WEEDS By M.R. Moerkerk and A.G. Barnett. 124 pages, \$55.00 plus \$10.00 postage in Australia.

THE BIOLOGY OF AUSTRALIAN WEEDS, Volume 2. Edited by F.D. Panetta, R.H. Groves and R.C.H. Shepherd. 328 pages, \$59.50 plus \$10.00 postage in Australia.

All of the above are available from: R.G. and F.J. Richardson, PO Box 42, Meridith, Victoria 333, Australia.
Phone/Fax: +61 3 5286 1533
Email: robfiona@iaccess.com.au

AQUATIC WEED DRAWINGS Drawn by A. Murray, 25 line drawings of aquatic and wetland plants have been added as a supplement the earlier 115-drawing collection.

Contact: APIRS, Center for Aquatic Plants, 7922 NW 71st St, Gainesville, FL 32653-3072, USA Tel: 1-352-392-1799
Email: varamey@nervm.nerdc.ufl.edu

IWSS Outstanding Achievement Award

The International Weed Science Society makes awards for outstanding international achievements in global weed science. The awards are in two categories viz. for developing countries and developed countries. Nominations were called for in the December 1997 IWSS Newsletter and through various other Society Newsletters.

For the developing countries, IWSS Awards Committee, chaired by Anis Rahman, along with members LeRoy Holm and Bernal Valverde selected Dr. Rashid Ahmad Shad as the recipient for 1998. A weed scientist from Pakistan, Dr. Shad has made an outstanding contribution to weed science at the international level for nearly 15 years. He is presently serving as the Director of the Weed Science Program, Pakistan Agricultural Research Council based at NARC in Islamabad, with principal role in coordinating research, extension agencies, and the end user of technologies. He received his Masters degree from the American University of Beirut, Lebanon and Ph.D. from the University of Philippines.

Dr. Shad is regarded as the father of weed science in Pakistan. He developed a small program, with little practical focus and no cohesiveness, into a sensible national program with a practical applied focus. He served as the founding President of the Pakistan Weed Science Society and initiated the Pakistan Journal of Weed Science Research, serving as its founding Chief Editor. He has served on the FAO Panel of Experts on IPM and UNEP and organized two Indo-Pakistan Weed Science Conferences, one in each country. He organized several training courses on Integrated Weed Management in Pakistan and has himself participated in numerous international

conferences, workshops, and seminars in various countries around the world. He has published 62 research papers, 20 popular articles, a large number of reports and has edited several books and proceedings. He has covered a large breadth of research projects and has also supervised two Ph.D. and several Masters students. An executive member of APWSS, Dr. Shad has excellent vision, enthusiasm, direction, and ability to seek funding which has helped develop weed science in South Asia. His colleagues are impressed with his ability to assess both technical and human needs.

Nominations for the Awards will be called for again in early 2000.

World Weed Book Wins Publishers' Award

For the first time, a Weed Science book has been awarded one of the highest honors in American publishing. *World Weeds: Natural Histories and Distribution* (Holm et al., 1997; John Wiley and Sons, Inc., pub.) has received the 1997 Award of Excellence in Professional and Scholarly Publishing in the Biological Sciences. The award is presented by the Association of American Publishers, whose 200 members represent all of the major commercial publishers and University presses. The book was written by University of Wisconsin Professors LeRoy Holm and Jerry Doll, College of Agriculture and Life Sciences; Eric Holm, former Wisconsin student in Geography; professor Juan Pancho, taxonomist and illustrator, Museum of Natural History, University of the Philippines; and James Herberger, former University of Wisconsin student in Horticulture.

World Weeds describes the natural history and distribution of 125 weed species found in crops in almost 200 countries of the world. The authors have gathered all or most of the known biology for each species, including habitat, seed behavior, morphology, ecology and physiology. Full-page illustrations of each species are supplemented by detailed botanical descriptions and maps of their world distribution.

Donation of Weed Science Journals
If you are interested in donating your used and old issues of Weed Science/Weed Technology/Weed Research or other journals, please contact one of the following:

Prof. V. Nepalia, Dept. of Agronomy,
Rajasthan Agriculture College, Rau,
Udaipur, India, 313001

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Research, Rajasthan Agricultural
University, Bikaner, India, 334002

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Modipuram, Meerut (UP), India,
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Prof. J.C. Patel, Principal, Gujarat
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Dr. S. Hassan, Rice Research & Training
Centre, Sakha Kafr El Sheikh,
Egypt

Dr. Jorge Garro, Dept de Fitoproteccion,
Ministerio de Agricultura, Y
Ganaderia, Apartado 10094, San
Jose, Costa Rica

These journals will be used in the libraries for research and teaching and the recipients may share the cost of shipping. Your generosity is greatly appreciated by weed scientists in these developing nations.

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

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

In spite of years of agronomic and genetic research, the parasitic weed *Striga* spp. continues to ravage the maize fields of sub-Saharan Africa. *Striga hermonthica* alone has been estimated to affect crops on over 21 million ha in Africa (Sauerborn, 1991). No estimates are available on the percentage of total losses that occur on maize; however, Kim et al. (1986) estimated that under adequate management practices, *Striga* still reduces maize yields in Africa by 20-29%. As maize cultivation continues to increase throughout the continent, it is clear that *Striga* is destined to become a greater problem for African farm families and for countries struggling to gain food security. In Kenya, it is estimated that 80,000 ha of land planted to maize are infested with *S. hermonthica*, causing an estimated \$10 million in losses each year (Hassan et al., 1995). In northern Ghana and Togo, *S. hermonthica* is estimated to infest 27% of all farms. In Malawi, a national survey on the incidence of *S. asiatica* found that 62% of fields surveyed were infested, with an average harvest loss in infested fields of approximately 29%. Moreover, because *Striga* infestations tend to increase as soil infertility and management constraints mount, the majority of these losses occur on the farms of the most disadvantaged people on the continent. Surveys conducted in western Kenya in recent years have revealed *Striga* to be an especially serious problem on farms cultivated by women farmers (Moessner, 1994).

Due to the intractable nature of breeding for genetic resistance to *Striga* in maize to date, most emphasis has focused on agronomic aspects of control, including aspects of fertility management, catch cropping, improved fallows, weed control, and others. Some promising results have been obtained that are now the subject of concerted technology transfer efforts in western Kenya (Ransom et al., 1991). Recently developed tools in genetic engineering and breeding, however, may bear new promise that development of a resistant cultivar is possible (Ejeta et al. 1993). Thus, coordinated research that pursues both promising new avenues of genetic research and takes advantage of newly prioritized research and technology transfer in the area of farmer practices may result in important reductions in *Striga* infestation in both the short and medium terms.

As part of a larger program on maize pest and disease resistance, The Rockefeller Foundation has, in collaboration with CIMMYT, IITA, the Kenya Agricultural Research Institute (KARI) and a number of other research institutions, initiated a research effort focused on the development of *Striga*-resistant maize for Africa. Comprising complementary research initiatives in leading biotechnology laboratories and field-based studies in various parts of Africa, the *Striga*-resistant maize program is modeled after previous Rockefeller Foundation research initiatives which focused the attention of a diverse group of scientists on solving specific, challenging problems associated with crop yield loss. Within the Foundation there is cautious hope that following new developments in maize transformation, marker-assisted selection, and research involving wild relatives of maize, these new tools and approaches may prove of value in

creating maize varieties with genetic resistance to *Striga*.

Striga research coordination in Kenya is designed to facilitate and optimize the progress of work ongoing in four major areas: breeding, biotechnology, cropping systems and technology transfer. The *Striga* Working Group, formed at a meeting of *Striga* researchers in Kisumu in December of 1997 is made up of teams based on these same categories. The operating strategy of the group is basic: individual research efforts will advance more rapidly when pursued in full knowledge of the results and learning of others. Such a "team approach" may contribute both to earlier "breakthrough"-type developments, as well as essential adaptations of present results and recommendations produced through on-going projects. The full spectrum of research on *Striga* on maize in Kenya is summarized in the outline below.

Outline of a Maize *Striga* Research Strategy

- I. Reduce Presence of Parasite
 - A. Mechanical control of plants
 1. Hand pulling
 2. Removal with green-manure crop
 - B. Cause suicidal germination
 1. Soil treatments
 - a. Ethylene
 - b. Alternative germination stimulants
 - C. Removal through cost-less infection
 1. Planting trap crop
 - a. Intercropping
 - b. Fallow cropping
 2. Herbicide-resistant maize
 - D. Cause seed death
 1. Fertility management
 2. Biological control

- a. Manipulate soil-borne pathogen populations
 - b. Introduce soil-borne pathogens
- II. Host Plant Resistance
- A. Regulate production of germination stimulant
 1. Find big-synthetic mutants
 - a. Transposon mutants
 - b. Discover germination stimulant, engineer pathway
 2. Transfer *Igs* gene
 - a. Clone sorghum genes
 - b. Transfer resistance into maize via wide crosses
 - B. Develop hypersensitivity using barstar/barnase constructs
 - C. Prevent haustorial connection
 1. Alteration of host-plant/pathogen signals
 2. Alteration of root morphology
 - D. Conventional breeding techniques using resistance sources
 1. Use of African land races
 2. Screen wide selection of tropical inbred lines

AFRICA-BASED *STRING* RESEARCH INITIATIVES

Following the establishment in 1996 of an appropriation for maize pest and disease resistance -with resistance to *Striga* forming the principal early focus - The Foundation has chosen to base its *Striga* research efforts in Kenya for the following reasons:

- 1) The presence of a large, capable national agricultural research system with a number of qualified researchers already focusing on *Striga* control;
 - 2) Access to a large area of *Striga* infestation, plus facilities designated for work on *Striga* control;
 - 3) The presence of IARC outreach programs and a Foundation program office in Nairobi.
- To date, the Foundation has funded a number of *Striga* research initiatives either based in Kenya or conducting an important portion of their work in the country. These include:
- IITA/CIMMYT/KARI.** In 1993, the International Institute of Tropical Agriculture performed a number of crosses of maize with the maize progenitors, teosinte and *Tripsacum*. One cross with a *Zea diploperennis* accession of teosinte has since been advanced to the BC4 stage, and resistant lines have been selected under infestation in east and west Africa, in collaboration with CIMMYT and KARI. These same materials have been crossed to adapted lines from Kenya and Nigeria for further selection and generation of a mapping population using molecular markers. Following successful mapping of the resistance gene(s), breeding initiatives can begin using marker-assisted back-crossing techniques which allow breeders to confirm the presence of resistance genes in individual plants, greatly reducing the time required to introgress such genes into a wide variety of parent populations.
- CIMMYT/KARI.** In addition to the CIMMYT/IITA/KARI collaborative program, CIMMYT scientists are pursuing *Striga*-resistant maize via similar and novel techniques. Numerous accessions of both

Tripsacum and teosinte have been transported to Kibos, Kenya for screening for resistance to *Striga* under artificial infestation. Following identification of sources of resistance, molecular markers will again be employed to locate genes and transfer the resistance into African maize populations via marker-assisted backcrossing procedures. The same group will attempt to identify resistance genes by "knocking out" the gene responsible using transposable elements followed by large field screening trials.

CIMMYT/KARI/Weizmann Institute of Science. Researchers have found that resistance to an imidazolinone (common name 'imazapyr') in maize can offer a novel method of controlling *Striga*. By seed-treating resistant varieties with imazapyr at very low dosages (roughly 10% the rate normally applied), the compound becomes systemic within the plant, causing all *Striga* which attach to the plant via the haustorium to die. Repeated field treatments have shown significant decreases in emerged *Striga* at a cost estimated at only \$5 per ha. Originally present only in commercial varieties from the US, researchers are in discussions with industry representatives to transfer the resistance gene into African maize using conventional breeding methods assisted by molecular markers. During late 1998, they plan to field test the technique on farmers' fields in western Kenya. Negotiations are progressing with private companies to conduct experiments aimed at making similar use of resistance in maize to glyphosate.

RESEARCH ON *STRIGA* IN KENYA

Striga research in Kenya dates to the early part of this century (Watt, 1936).

Modern efforts began in earnest in the early 80's under the auspices of the "Striga Research Steering Committee". The committee was comprised of scientists working on *Striga* at Kibos, Kakamega and within Kenyan universities. In 1988, CIMMYT began supporting *Striga* research in a small way at Homa Bay Research Center, Nyanza Province. This effort was strengthened significantly in Kibos following the return of the CIMMYT scientist responsible for *Striga* research from sabbatical at the USDA research program in Whiteville, South Carolina. In June 1990, a National *Striga* Weed Workshop was held in Kisumu. One of the recommendations was to strengthen *Striga* research by appointing a full-time scientist. With increased funding from CIMMYT beginning in January, 1991, a scientist was posted to the NSRC-Kibos, along with additional investments made in laboratory facilities and field infestation procedures. Although short-term research to test technologies developed in other *Striga* endemic countries was initiated in 1988, the main emphasis continued to be focused on long-term studies, including the monitoring of *Striga* seed bank in the soil. These were supported with funds from the "East African Cereals Project" by the Canadian International Development (CIDA) and implemented by CIMMYT until 1995, when additional funding was obtained from BMZ through the German government. This has significantly increased both on-station and on-farm research activities. In addition, funds have also been provided for research and training from The Foundation, while CIMMYT also still supports research activities in addition to providing technical assistance.

The identification and acceptance of a common framework for research on *Striga* in Africa is a goal of the Rockefeller Foundation and its collaborating institutions. To achieve this will require significant interaction between scientists who are actively engaged in research on the control of *Striga*. The idea of developing a team approach to *Striga* research is proposed in view of the need to:

- ensure researcher productivity by continually providing up-to-date information regarding the status of the science both within Kenya and worldwide,
- ensure that all recent ideas and research results are shared in a timely manner between researchers; and,
- to assist in focusing research priorities for greater chances of advancement in the future.

Moreover, given the level of concern over food security in Kenya and throughout Africa, there is a sense of urgency regarding the need for solutions to be advanced to farmers as quickly as possible. By developing a team approach, potential methods of *Striga* control will be able to move quicker from researcher to extension agent.

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- 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.

Note: *Striga* research outside of Africa will be highlighted in the next IWSS Newsletter.

Changes to the Constitution

All of the changes to the constitution have been approved. The constitution requires that changes be approved by majority vote of the membership. If it is impossible to obtain a vote from at least a majority of the members eligible to vote, the Executive Committee may act on behalf of the membership. Since only 128 ballots were cast by the membership and 337 were needed for a majority vote, the changes to the constitution were approved by majority vote of the Executive Committee who felt they were exercising the view of the majority of the membership. The new wording is shown in italics; the vote is shown in parenthesis and bold.

Article VI - Officers

Section 1.

The Officers of the Society shall be the President, the Vice-President, and the Secretary-Treasurer. *Each Officer shall serve without financial compensation of any kind.* (123 approve; 5 disapprove)

Section 3.

Terms of office. *The President and Vice President will be elected in the same election to four (4) year terms. The Vice-President may run for President. The Secretary-Treasurer may hold office for four (4) years and shall be eligible for re-election. The terms of office shall begin at the conclusion of the International Weed Science Congress following the election.* (124 approve; 4 disapprove)

By-Laws Article II - Executive Committee

Section 2.

The Executive Committee shall have the power to incur expenditure of funds in pursuance of the objectives of the Society. *The annual budget will be prepared by the Finance Committee and authorized by the Executive Committee. Funds not included as line items in the budget may not be spent without prior written authorization by a majority of the officers and a majority of the Executive Committee.* (128 approve)

Section 4.

The selection of candidates for Vice-President shall be made by the Executive Committee from those nominated by members of the Society. The

candidates shall not be from the same *world* region as the incumbent Vice-President. (123 approve; 5 disapprove)

Section 5.

A simple majority (half, plus one) of the Executive Committee, including the President or Vice-President shall constitute a quorum for transaction of Executive Committee business. In the event a quorum is not obtained, the decisions of the Executive Committee must be ratified by writing by *a majority of the remaining Committee members.* (127 approve; 1 disapprove)

SPECIAL ELECTION

The change in the constitution requires a Vice-President be elected to serve until June 2000 at the end of the Third International Weed Science Society Congress. According to the change, the new Vice-President can not be from Europe. The duties of Vice-President are to perform the duties of the President if the President can not serve and shall perform other duties as requested by the President or the Executive Committee. The Vice-President shall chair the Membership Committee. Please send your nominations to any of the officers listed on Page 2 of this newsletter. Ballots will be mailed to the membership in November, 1998.

New 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

1998

September 14

Ecology and Management of Riparian Weeds Workshop

Venue: Loughborough, United Kingdom
 Contact: M. Wade, Intl. Centre of Landscape Ecology,
 Dept. of Geography, Loughborough University,
 Loughborough LE11 3TU, United Kingdom
 Tel: 44-1509-223030
 Fax: 44-1509-223931
 Email: p.m.wade@lboro.ac.uk

September 22-25

10th International Symposium on Aquatic Weeds

Venue: Lisbon, Portugal
 Contact: APRH Secretariat, 10th EWRS Aquatic Weed
 Symposium, Laboratorio Nacional de Engenharia Civil,
 Avenida do Brazil 101, 1799 Lisboa Codex, Portugal

September 23-26

Fourth International Workshop on Orobanche Research

Venue: Albena, Bulgaria
 Contact: Dr. Klaus Wegmann, Waldhauserstrasse 37,
 D-72076 Tübingen, Germany
 Tel & Fax: 497071164658

October 18-23 (repeats October 25-30)

Herbicide Action Intensive Course

Venue: West Lafayette, IN, USA
 Contact: S.C. Weller, 1165 Horticulture, Purdue University,
 West Lafayette, IN 47907-1165
 Tel: 765-494-1333
 Fax: 765-494-0391
 Email: weller@hort.purdue.edu

1999

February 8-10

Weed Science Society of America Annual Meeting

Venue: San Diego, CA, USA
 Contact: WSSA, J. Breithaupt, PO Box 1897, Lawrence,
 KS 66044, USA
 Tel: 1-913-843-1235 Fax: 1-913-843-1274
 Email: jbreith@allenpress.com

February 14-18

Gordon Conference: Agricultural Sciences Genomics in Crop Production

Venue: Harbortown Resort, Ventura, CA, USA
 Contact: Gordon Research Conferences, POB 984, West
 Kingston, RI 02892-0984 USA
 Fax: 401-783-7644
 Email: app@grcmail.grc.uri.edu

February 16-19

1st International Workshop on Weed Risk Assessment

Venue: Adelaide, SA, Australia
 Contact: GPO Box 1671, Adelaide, SA 5001, Australia
 Email: virtue.john@pi.sa.gov.au

February 18-19

II Asian Pacific Crop Protection Conference: Recent Advances in the Control of Insect Pests, Diseases and Weeds

Venue: Hotel Centaur, Juhu, Mumbai, India
 Fax: +91-22-437-6856
 Email: pmfai@bom4.vsnl.net.in

March

5th International Conference for Plant Protection in the Tropics

Venue: Kuala Lumpur, Malaysia
 Contact: NZ Radziah
 Fax: 60-3-656-5251 Email: sivasam@mardi.my

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 23-25

4th European Symposium on Industrial Crops and Products

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

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

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

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

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 6-11

III International Weed Science Congress

Venue: Foz do Iguassu, Brazil
 Contact: PJ Eventos - Fieras e Congressos, Rua José Risseto, 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.orst.crops/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/>

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 IWSC 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.

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:

Carol Mallory-Smith, Secretary-Treasurer
 International Weed Science Society
 107 Crop Science Building
 Oregon State University
 Corvallis, Oregon 97331-3002 U.S.A.