

## INTERNATIONAL BIOHERBICIDE GROUP

# IBG NEWS

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### THE CHAIRMAN'S COMMENTS

Dear Friends,

I hope you are making plans to attend our V IBG Workshop on 5 and 6 June 2000 in Foz do Iguassu, Brazil. Our workshop is being held in conjunction with the III International Weed Control Congress. The Call for Papers is out, please consider making a presentation. Information for registration and submission of titles and abstracts is provided below. We appreciate very much the efforts of **Robert Barreto** who is working very hard planning an excellent program, but he needs our papers to make it a resounding success.

Our newsletter editor, **Maurizio Vurro**, has done an excellent job putting together another interesting and informative newsletter. Thank you, Maurizio. Please do not forget that he needs your progress reports, information and news items originating from your laboratories to put it together, that is the only way our newsletter will work. So "thank you" to those that contributed this time, and we look forward more of you contributing next time.

**Please Note - Final Notice:** We are updating our mailing list. If you wish to receive future issues of this News, you must provide an e-mail address. Printed copies will be mailed only in exceptional cases and only to those who have no e-mail access. If you are in this category, you must inform us.

See you in Brazil,  
Alan

## **CONTACT ADDRESSES**

### **CHAIR**

**Alan K. Watson**

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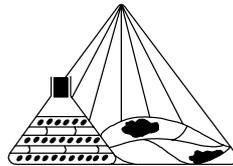
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## **MEETINGS**



## **Vth INTERNATIONAL BIOHERBICIDE GROUP WORKSHOP 5 and 6 June 2000 Foz do Iguassu, Brazil**

### **Main Theme**

**New Strategies for Commercial Development and Registration**  
Papers covering other aspects of this discipline are also welcome

The Vth International Bioherbicide Group Workshop, as in the past, will immediately precede a major related scientific congress – the III International Weed Science Congress - and will take place at the same venue, Hotel Rafain's Conference Centre. Organization of the two events is interconnected financially and administratively and information about the two conferences is available at the site: <http://www.sercomtel.com.br/ice/plantas>.

The workshop will begin with papers on Monday morning and afternoon, followed by a cocktail. Paper presentations will continue on Tuesday morning and afternoon.

### **CALL FOR PAPERS.**

The official language of the Vth IBG Workshop will be English. No contributions in other languages will be accepted. Titles and abstracts of oral presentations or posters should be submitted by 30<sup>th</sup> April 2000. Format and scope of this meeting will be similar to those of the previous IBG workshops. Any contribution related to bioherbicides will be welcome. Oral presentations will be for 20 minutes,

including 5 minutes for questions and answers. Boards will be available for attaching posters (details on sizes will be provided later in the web site).

Abstracts should be printed on an A4 sheet, must be no longer than 200 words and headed with the title and name(s) of author(s), affiliation(s) and address (es). Abstracts should be included with the registration form, and may be forwarded on IBM-compatible floppy disc (Word) or (preferably) sent to the organizer by e-mail as a Word document attachment. Hard copies may also be sent. All contributions should be sent to the organizer:

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## REGISTRATION

Registration for the workshop must be paid together with registration for the International Weed Science Congress (use the form provided here). The registration fee for the Vth IBG Workshop is US\$ 100.00, which will cover, besides the general meeting costs, cocktail (Monday night, June 5<sup>th</sup>), lunch tickets (two days), and the Abstracts booklet. Registration for Vth IBG Workshop is in addition to the registration for IWSC (which is not optional). Registration form for IWSC is available at the IWSC home-page; please follow the instructions presented there. Deadline for registration for Vth IBG Workshop will be 30<sup>th</sup> of April 2000.

You can pay for your registration by charging one of the credit cards listed in the AUTHORIZATION FORM, or sending a check payable in the USA, to the Oregon State University (OSU): address below.

A. To charge your credit card:

1. Fill in the authorization form completely, credit card number and expiration date.
2. Attach a photocopy of your credit card (both sides).
3. Sign the form and send it along with the copy of your credit card by fax to Oregon State University. The fax number is 1-541-737-3187 (**for all nationalities except Brazilian**) or +55 42 372-1415 (**for Brazilian registrations**).

B. To pay by check:

1. Write a check payable in the USA to the Oregon State University and send it with your registration form to Oregon State University (**all nationalities except Brazilian**).
2. Brazilians may write a check payable in the national currency (real) to the III International Weed Science Congress, and send it with the registration form directly to the Secretariat (address below). Use the exchange rate for the day of payment.

As soon as OSU (or PJ Eventos, for Brazilians) receives your credit card authorization, or check, your pre-registration will be ready. A receipt and confirmation will be sent to you by fax or e-mail. Please add your e-mail address or fax number to your registration form.

### **For all nationalities except Brazilian:**

The LaSells Stewart Center  
 Oregon State University  
 100 LaSells Stewart Center  
 Corvallis, OR 97331-3102 USA  
 Phone: 1-541-737-2402, Fax: 1-541-737-3187  
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**For all Brazilian registrations:**

Secretariat

PJ Eventos – Feiras e Congressos

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**Canadian Forum for Biological Control**

On September 30, 1999, the annual meeting of the Canadian Forum for Biological Control (CFBC) took place in Saskatoon. The symposium titled "Mass-production, Fermentation, and Delivery of Biologicals" focussed on issues related to commercial development and production of bioherbicides and mycoinsecticides, mass-rearing of predatory and parasitic insects and mites, and application technology of biological organisms. Speakers included Fred Schendel from Encore Technologies (Minnesota), Stefan Jaronski from Mycotech (Montana), Don Elliott from Applied Bio-Nomics (B.C.), and Tom Wolf from AAFC (Saskatoon). Forty-four participants working in biocontrol of insects, weeds, and plant diseases were in attendance. For more information, please contact Dr. Susan Boyetchko [boyetchkos@em.agr.ca](mailto:boyetchkos@em.agr.ca) (Vice-President, CFBC).

**Annual Meeting of the Regional Research Project S-268**

Scientists in the Weed Biocontrol program at Saskatoon Research Centre will be hosting the Annual Meeting of the Regional Research Project S-268, a U.S. sponsored program focussing on "Discovery and Development of Plant Pathogens for Biological Control of Weeds". This meeting is being held outside of the U.S. for the first time.

The S-268 meetings will be held May 2-5, 2000 at the Radisson Hotel, Saskatoon Saskatchewan, Canada. It will begin with an evening reception on May 2, serving beverages and a selection of hot and cold hors d'oeuvres at 7:00 p.m. in the River Room overlooking the city and the South Saskatchewan River.

Registration includes the evening reception on May 2, continental breakfast and lunch on May 3 and May 4, and coffee breaks during the meeting. The registration is expected to be approximately \$125 CDN (approx. \$90 USD).

A block of rooms has been reserved at the Radisson hotel (Telephone 306-665-3322, Fax 306- 665-0052). When making your reservation please mention you are attending the «USDA S-268 Meetings». The cost of a standard room is approximately \$90-100 CDN (approx. \$70 USD). Details regarding specific hotel pricing and deadline for reservations at the discounted rate will be provided in a registration package to be mailed out in February.

On Friday May 5, 2000, tours of the Agriculture & Agri-Food Canada facilities featuring the Weed and Insect Biocontrol programs and Containment facilities will be offered. Also, a visit to Innovation Place (a biological-based industrial complex) featuring the Saskatchewan Research Council's Fermentation Pilot Plant and AgWest Biotech will be organized.

If you are looking for a change of pace, golf courses usually open the first week in May, but arrangements will require advance booking, particularly for the Willows Golf and Country Club which was designed for the professional golf circuit. Details on the golf courses in Saskatoon and area will be provided in the registration package. Of interest, Saskatchewan has more golf courses per capita than any other Canadian province.

If you are planning to take advantage of lower airfares by staying the weekend or if bringing the family, we recommend the following:

- 1) Stay in Saskatoon and visit Wanuskewin Heritage Park (native Indian cultural and heritage site complete with buffalo jumps and archeological digs; try buffalo stew, bannock, and Saskatoon berry pie), tour the local art galleries for unique Canadian artists or the museums on agricultural development and our ethnic settlers in western Canada, go golfing, stroll the Broadway shopping district with eclectic shops and eateries, visit the Berry barn (a Saskatoon berry farm, restaurant, and gift shop) or take a day trip to Batoche and Fort Carleton to learn about Canadian history.
- 2) Visit Prince Albert National Park and stay overnight in the park townsite «Waskesiu». The townsite has shops, restaurants, a nature interpretative centre, biking, golfing, and lots more. Take a hike during the day along the many trails or drive through the park at sunset to spot moose, elk, deer, wolves, and more. (2 ½ hours north from Saskatoon, advance booking required for cabins or hotels; information will be provided with the registration package)
- 3) Travel south to Moose Jaw, Saskatchewan and soothe your aching bones in the mineral spas at Temple Gardens or tour the underground tunnels used by bootleggers and gangsters like Al Capone during the prohibition years. Overnight stay recommended and a stay at the luxury hotel with the spa requires advance booking. (3 hours from Saskatoon)

To help us with the planning of the meeting and the other optional activities, please email [baileyk@em.agr.ca](mailto:baileyk@em.agr.ca) or [boyetchkos@em.agr.ca](mailto:boyetchkos@em.agr.ca) by MARCH 15, 2000 to indicate:

- coming to Saskatoon for S-268
- want to tour AAFC and Innovation Place
- want to golf
- want the weekend options ( please specify)

Looking forward to seeing you in Saskatoon for S-268!

Karen Bailey, Sue Boyetchko, and Gary Peng

#### Trivia:

Saskatchewan is the regional name derived from the Cree Indian word «Kisiskatchewanipi» meaning swift current. The province has a range of diversity in its sprawling area ranging from grain covered plains, rolling hills, sand dunes, glacial lakes, and acres of unspoiled wilderness and woodlands.

Saskatoon was formed in 1882 as a temperance colony. It's name was derived from the Indian name for the local wild berries — «misaskwatomin». The Saskatoon berry pie is still a local treat.

Saskatoon became a city in 1906, and was known as the City of Bridges as it straddles the South Saskatchewan River. The Meewasin Valley Authority was established to preserve and protect the riverbanks; walking trails follow the entire length of the city along the river. If you are quiet you can see beaver, otters, pelicans, foxes, and other wildlife living at the river's edge.

The temperature in early May is usually 18 C (65 F) during the day and 4 C (40 F) at night with occasional showers. But, the only guarantee is to expect the unpredictable.

## **International Symposium on the Biosafety of Genetically Modified Organisms**

The 6<sup>th</sup> International Symposium on the Biosafety of Genetically Modified Organisms will be held in Saskatoon, Saskatchewan on July 8-13, 2000. The symposium address the scientific basis for biosafety (environmental and human and animal health issues) associated with genetically modified organisms. The symposium series is designed for senior scientists, policy makers, regulators, environmentalists, and industry representatives involved in the commercial release of GMOs. For more information, visit the website: [Biosafety@usask.ca](mailto:Biosafety@usask.ca) or contact [Sue Boyetchko](#) and [Karen Bailey](#).

## **Asian-Pacific Weed Science Society Conference**

The seventeenth Asian-Pacific Weed Science Society Conference was held in Bangkok, Thailand on 22-27 November 1999. Its theme was weeds and environmental impact. There were three Vietnamese scientists attending the conference. One of them was Mrs. Ho Le Thi, a weed scientist from the Cuulong Delta Rice Research Institute. She presented a paper entitled: "Research on some fungi to control barnyard grass (*Echinochloa crus-galli* (L.) Beauv.) and red sprangletop (*Leptochloa chinensis* (L.) Nees) in rice." Results revealed that the most promising fungi for controlling *E. crus-galli* were *Exserohilum monoceras* and *Cochliobolus lunatus*. The fungi did not affect Rice varieties IR 50404 and CR 203. The fungus *Setosphaeria* sp. cf. *rostrata* was found to be effective in controlling *L. chinensis* and safe to rice variety IR 64. The APWSS Executive Committee decided to give her an award with the prize of USD 500 for this research performance.

([Duong Van Chin](#))

## **PEOPLE & PLACES**



**Knud Mortensen** retired from Agriculture and Agri-Food Canada on March 31, 1999. Although Knud will be sorely missed, he is very happy working on his farm in Balgonie, Saskatchewan (close to the former Regina Research Centre). For his retirement, we bid a farewell to Knud who was provided with a limited edition print of a Saskatchewan farm scene and a couple of Viking hats in honor of his Danish ancestry. Also, William Connick Jr. and Donald Daigle from the USDA/ARS, New Orleans were able to join us in celebration and presented Knud with some tasty formulations in the form of recipes of New Orleans cooking. However, Knud will maintain some research activity in bioherbicides. He is setting up a consulting company to conduct weed disease surveys and will be in contact with the group at Saskatoon.

Dr. **Gary Peng** joined the weed biocontrol group in Saskatoon in August 1999. Gary has significant experience in biological control from his work at Agrium. Gary will be focussing his efforts on foliar fungal pathogens of grass weeds and root bacteria associated with Canada thistle. He will also be initiating new research on scentless chamomile. Gary also has experience in the registration of microbial pest control product that was developed while he was employed at Agrium.

Dr. **Lisette Xavier** recently joined the Saskatoon group as a PDF in October. Lizzy has a background in soil microbiology with a specialization on mycorrhizal fungi. She completed her Ph.D. research in February 1999 at the University of Saskatchewan in the Department of Applied Microbiology and Food Science on mycorrhizal fungi and their impact on lentils and wheat. She is currently working on a

project with Sue Boyetchko and Doug Derksen, a weed ecologist in Manitoba, on the impact of mycorrhizal fungi on grass weeds and implications for weed management.

(S. Boyetchko [boyetchkos@em.agr.ca](mailto:boyetchkos@em.agr.ca), K. Bailey [baileyk@em.agr.ca](mailto:baileyk@em.agr.ca), G. Peng)

**José Maurício Pereira** is finishing a one-year period as a split Ph.D. at CABI Biosciences – Ascot, UK. There, under the supervision of Carol Ellison and with the guidance of others, including Paul Bridge, he used DNA tools in order to try to clarify the life cycle of *Prosopodium tuberculatum*, a rust, now regarded as having great potential as a classical biocontrol agent for lantana. Results indicated that there is no connection between the imperfect rust *Aecidium lantanae* and *P. tuberculatum*. Additionally he also undertook studies on a lantana isolate of *Corynespora cassiicola* obtained from the state of Paraná (Brazil) and concluded that this is a highly specific form of this fungus meriting further consideration as a biocontrol agent for lantana.

**Alan W. V. Pomella** has successfully completed his Ph.D. with a thesis on *Duosporium yamadatum* as potential biocontrol agent for purple nutsedge (March, 1999) and is now working in the biocontrol of witches broom of cocoa, under a CNPq postdoc fellowship at CEPLAC (Itabuna, Bahia). Marcelo P. do Nascimento (M.Sc. student) will be continuing Alan's research work on biocontrol of purple nutsedge, now also involving additional agents, particularly *Ascochyta cyperiphthora*.

(Roberto Barreto, [RBarreto@mail.ufv.br](mailto:RBarreto@mail.ufv.br))

**Antonio (Toni) DiTommaso** ([ad97@cornell.edu](mailto:ad97@cornell.edu)) has moved (September 1999) on to the Weed Science position in the Department of Crop & Soil Sciences, Cornell University, Ithaca, NY. His work plan includes (1) examining the impact of *Colletotrichum coccodes* and reduced herbicide rates on velvetleaf growth and reproduction in both corn and soybean, (2) determining the impact of growth environment of parent weed plants on seed dormancy, germination ability, and seedling vigour, (3) elucidation of general weed seedling emergence patterns, and (4) impact of various tillage practices on weed emergence and weed spatial variation.

**Rhomela Masangkay** ([masangkay@macdonald.mcgill.ca](mailto:masangkay@macdonald.mcgill.ca)) has taken over some of Toni's former responsibilities in the Department of Plant Science, McGill University including the overseeing of the biocontrol projects and teaching the undergraduate Weed Biology and Control course while **Alan Watson** is on secondment to the International Rice Research Institute, Los Baños, Philippines until the end of June 2000.

(Alan Watson, [a.watson@cgiar.org](mailto:a.watson@cgiar.org))

## **BIOHERBICIDE RESEARCH - STATUS REPORTS**

**TOP**

*This is by no means a complete account of all research projects on bioherbicides.*

### **Landcare Research, New Zealand**

Development of a mycoherbicide against gorse (*Ulex europaeus*) and broom (*Cytisus scoparius*) in New Zealand.

In the June 1999 issue of IBG news we reported the results of our first two field trials using *Fusarium tumidum* as a bioherbicide against the woody weeds gorse and broom. The invert emulsion formulations we tested in these trials were shown to successfully retain moisture around *F. tumidum* conidia in the laboratory. However, to date they have failed to induce severe disease epidemics in the field except in young (11 week old) glasshouse-grown seedlings. We have been working with Forest Research staff to improve our formulations and plan to conduct a third field trial in March or April 2000.

Meanwhile, experiments exploring the host range of *F. tumidum* have now been completed. We reported the results of tests with ten plant species, either closely related to gorse and broom (belonging to the Fabaceae family) or of commercial importance to the forestry industry, in the June issue. Those results indicated that only plants closely related to gorse and broom (within the same subtribe or tribe within the Fabaceae) developed significant quantities of necrotic tissue in response to inundation with *F. tumidum*. Since then a further ten species, either of economic importance (peas, beans, lucerne) or legumes native to New Zealand (*Sophora* spp., *Carmichaelia* spp., *Clanthus puniceus*), have also been exposed experimentally to *F. tumidum*. Conclusions are preliminary at this stage as these latter tests have only been completed recently, and data has not been statistically analyzed. Nevertheless, results of the latest tests support the findings from the first, and some general trends are apparent:

- 1) Disease symptoms that developed on the economically important or native legumes were minor compared with the damage on gorse and broom.
- 2) Younger non-target plants were generally more susceptible than older ones (with one exception, the native kowhai (*Sophora tetraptera*)).
- 3) Gorse and broom plants were also shown (in field trials as well as these host range tests) to become less susceptible to damage with increasing plant age.

*Fusarium tumidum* was recovered from diseased tissue of 18 of the 20 species, as well as gorse and broom that were inoculated. We could not isolate the pathogen from tree lupin (*Lupinus arboreus*) or lotus (*Lotus corniculatus*), but disease symptoms observed on these species strongly suggest it was present in their tissues. Therefore it would appear that *F. tumidum* is capable of infecting, and damaging, a wide range of hosts under ideal conditions. However, our results indicate that the more closely related a plant is to gorse and broom, the more likely it is to be damaged by the fungus. Significant damage appears to be limited to a subset of plant species in the same family as gorse and broom. Distantly related plants, such as *Pinus radiata*, are unlikely to be adversely affected by the pathogen. The results from these host range tests will be used to prepare advice on appropriate use of the bioherbicide.

(Jane Frohlich: [FrohlichJ@landcare.cri.nz](mailto:FrohlichJ@landcare.cri.nz))

## **Agriculture and Agri-Food Canada, Saskatoon Research Centre, Canada**

Sue Boyetchko received a 3-year grant to work on fermentation of bacteria. She will be focusing on evaluation of nutritional factors for mass-production of bacteria and methods of stabilization bacteria into granular formulations. Ms. Diana Veit-Schick is the technician hired to work on the project. In addition, a research collaboration between William Connick Jr. and Donald Daigle was established to evaluate field performance and shelf life of the pesta formulation for application of the bacteria for grass weed control. In collaboration with Dr. Soledade Pedras, a natural product chemist at the University of Saskatchewan, Sue Boyetchko received a 3-year grant to conduct research on characterization of bacterial metabolites for herbicidal and antifungal activity. A PDF and technician were hired for the project. ([S. Boyetchko](#), [K. Bailey](#), G. Peng)

## **Pacific Forestry Centre, Victoria, BC, Canada**

Dr Prasad at the Pacific Forestry Centre, Victoria, BC, Canada has been conducting research on the bioherbicide agent *Chondrostereum purpureum* and has found that its new formulations can retard the sprouting behavior of the alien weed (*Cytisus scoparius*) under the greenhouse conditions. Besides, this bioherbicide formulation has been extensively researched in Canada for suppression of resprout growth of some hard wood weeds in forestry. (Raj Prasad [rprasad@pfc.forestry.ca](mailto:rprasad@pfc.forestry.ca)).

## **Departamento de Fitopatologia, Universidade Federal de Viçosa, Brasil**

### Miconia calvescens

It took two and a half years after the introduction of the specific form of *Colletotrichum gloeosporioides* from Brazil into the island of Hawaii until severe outbreaks of antracnose were finally observed in the field. It is still early for a celebration but, according to Eloise Killgore (HDOA), the scenario looks promising at last. Parallel to this she is finishing with host range studies of *Pseudocercospora* (also from Brazil) and preparing a report for the Hawaiian authorities to decide about the introduction of this fungus.

A detailed study of the life cycle, host range and handling techniques of another promising fungal agent (*Cocodiella miconiae*) is being considered for development after an extension of the cooperative agreement between RCUH (EUA) and FUNARBE (Brazil).

The continuation of surveys for pathogens of miconia in Brazil and other countries in South and Central America has yielded an increasing list of pathogenic organisms associated to it. Now, besides *C. gloeosporioides* f. sp. *miconiae*, *Pseudocercospora* sp., *C. miconiae*, a (still unidentified) foliar nematode and a witches broom causing MLO (recently confirmed after TEM studies) the following additional fungal pathogens have also been recorded: *Pythium* sp. (root rot), *Phyllachora* sp. (tar spot), *Myrothecium* sp. (leaf blight), *Ceratobasidium* sp. (?) (leaf blight), *Melanconium* sp. (leaf spot) and *Pestalotiopsis* sp. (leaf spot). A Ph.D. student (Claudine Dinali dos Santos) is now starting her thesis work on the taxonomy and biology of these organisms.

### Commelina benghalensis

Denise C. Lustosa (M.Sc. student) studied three endemic pathogens of *C. benghalensis* in Brazil. These were a bacterium (*Erwinia* sp.) and two fungi (*Corynespora cassiicola* and *Cercospora* sp.). This appears to be the first study aimed at the biocontrol of this plant, which is native from the Indian subcontinent and became one of the worst weeds in soybean and coffee plantations in Brazil. This weeds shows tolerance to chemical treatments and problems with this weed are expected to increase in Roundup-Ready soybean plantation areas. Various aspects, ranging from the characterization of the organisms to some mass production studies, were contemplated in Denise's work. Field trials are now being planned.

(Robert Barreto [RBarreto@mail.ufv.br](mailto:RBarreto@mail.ufv.br))

## **Istituto Tossine e Micotossine da Parassiti vegetali, Italian National Research Council, Bari, Italy**

A new project funded by the Italian Ministry of University and Scientific Research entitled "Biological control of *Orobanche* by using fungal pathogens and phytotoxins" has been proposed within a framework on "Use of microorganisms and bioactive metabolites in crop protection". In the project, that will start at the beginning of 2000 and last three years, three Italian Research Institutions will be involved: the Institute of Toxins and Mycotoxins from Plant Parasites in Bari, that will act as coordinator, the Institute of Agronomy of the University of Bari, and the Department of chemical-agrarian Science of the University of Portici, Naples. The first aim of the project is to conduct a field survey to find fungal pathogens of *Orobanche*, having potential in biological control of those parasitic weeds and also to estimate the distribution in Italy of *Orobanche* species (mainly *O. ramosa* and *O.*

*crenata*) and the damage they cause. After that, the more promising pathogens will be evaluated for the direct use as bioherbicide and/or for the production of phytotoxic metabolites to be used in integrated weed management. ([Maurizio Vurro](#))

 **Department of Plant Science, McGill University, Ste-Anne-de-Bellevue, QC Canada**

**Biological Control of *Striga hermonthica*** - the financial support of the  International Development Research Centre ([www.idrc.ca](http://www.idrc.ca)) is gratefully acknowledged.

*Fusarium oxysporum* isolate M12-4A is currently being evaluated for the biological control of *Striga hermonthica*. In field trials, chlamydospore powder harvested from small-scale fermentors reduced *S. hermonthica* emergence by 92%. Complete inhibition of *S. hermonthica* emergence occurred when the chlamydospore powder was added to the soil at sowing and when sorghum seeds coated with chlamydospores were sown. Effective biological control of *S. hermonthica* was achieved using a simple fermentation system with sorghum straw as the inoculum growth substrate. For inoculum delivery to the farmers' fields, sorghum seeds were coated with the inoculum using arabic gum as the adhesive. This simple delivery system permits a uniform inoculation of the field as well as the proper positioning of the inoculum in the immediate environment of sorghum roots, where *S. hermonthica* attaches to its host. To facilitate a broad usage of *F. oxysporum* M12-4A for the biocontrol of *S. hermonthica*, we are promoting an inoculum production strategy based on a cottage industry model that utilizes a liquid fermentation process and inexpensive locally available substrates including sorghum straw and arabic gum.

To assure quality control, primary inoculum is produced centrally and encapsulated in small gelatin capsules as starter cultures. Each capsule contains 0.001 g of inoculum and a one kilogram box of capsules is sufficient to produce *Fusarium* inoculum for treating up to 8,000 hectares of land infested with *Striga*. At the village level, traditional cooking pots filled with water and a small amount of ground sorghum straw are sterilized over a fire, allowed to cool, and the starter culture added. The mixture will ferment for 10 to 14 days, the product is then air-dried and ground, and can be stored for up to several months. When planting season arrives, the farmers' cereal seeds are coated with a thin film of arabic gum solution and the dry powdered *Fusarium* inoculum sprinkled onto the seed surface. The farmer plants his seeds and at the same time protects his crop from the ravages of *Striga*. The application rate of *Fusarium* is equivalent to approximately 80 grams per hectare.

The village-level manufacture of *Fusarium* will give women in rural communities more economic and social power. The preparation of the dried inoculum both fits into women's traditional sphere of work and provides a new source of income. This year, field testing of the *Fusarium-Striga* biocontrol process will occur in six Malian villages. The process will involve local women in the production process and farmers in testing and data collection. We plan to phase this technology in gradually, from village to village and then from country to country, to include all regions afflicted with *Striga*. (M. Ciotola [mciotola@citenet.net](mailto:mciotola@citenet.net), Roger MacLean [maclean@ietc.ca](mailto:maclean@ietc.ca), Alan Watson [watson@macdonald.mcgill.ca](mailto:watson@macdonald.mcgill.ca))

**CLASSICAL BIOLOGICAL CONTROL OF WEEDS WITH PATHOGENS**

**TOP**

**CABI Bioscience, Ascot, UK**

CABI Bioscience has been developing a project for the classical biological control of Japanese knotweed (*Fallopia japonica* syn. *Reynoutria japonica*) in the UK for over a decade. Interest from the US, in response to a poster presented at the Xth International Symposium for the Biological Control of Weeds, has brought the realization of this programme a step closer.

This weed is unique in that, as well as posing a threat to local biodiversity, especially in riparian corridors; it is also an urban-industrial problem. The vigorous rhizomes are capable of producing plants from fragments as small as 0.7g and these plants can physically damage buildings, paths and roads as well as flood protection works. Chemical treatment is practically ineffective and eradication almost impossible and prohibitively expensive. Amazingly the whole infestation in the UK is believed to be clonal, originating from one introduced mother plant.

A study carried out by CABI Bioscience and IACR Long Ashton, for the UK Environment Agency, revealed a considerable number of natural enemies in the native range of Japanese knotweed including at least two pathogens *Puccinia polygoni-weyrichii* and *Aecidium polygoni-cuspidati*. The possibility also exists that surveys in the countries of introduction would reveal native pathogens amenable to the bioherbicide approach.

A meeting was recently held at CABI Bioscience's HQ in Ascot for potential sponsors and stakeholders to hear more about the biocontrol approach with reference to this problematic weed. It was agreed that biological control was the only sustainable control method for the long term and that a Japanese Knotweed Alliance group be formed with a website to raise the profile of this plant and inform land managers and National bodies of the problem and the biological control alternative. This site will be hosted by CABI Bioscience ([www.cabi.org/bioscience](http://www.cabi.org/bioscience)) will shortly be online with links to other knotweed related sites

It is hoped that funding will come on line this year to begin initial overseas surveys and develop links with potential collaborators, particularly in Japan where the plant is a primary colonizer of volcanic soils, so that the forgotten alternative can soon become a reality.

Dick Shaw (CABI Bioscience)– [r.shaw@cabi.org](mailto:r.shaw@cabi.org)

## **Landcare Research, New Zealand**

### Mist Flower Project:

A year has passed since the white smut *Entyloma ageratinae* was introduced to New Zealand as a classical biological control agent against mist flower (*Ageratina riparia*, Asteraceae). The fungus has become established at all nine of its release sites in the North Island and has been found up to 14 km from the nearest release point. An application is before the Environmental Risk Management Authority to import a second biological control agent for mistflower, a gall fly (*Procecidochares alani*).

A substantial monitoring programme will examine (1) the spread of the weed, (2) the dispersal of the biological control agents, (3) the direct impacts of the biological control agents on the weed, and (4) the indirect effects of the agents on other vegetation. We have established that the weed has probably not colonized the entire suitable habitat available to it. *E. ageratinae* appears to be spreading rapidly outwards from release sites, especially along water-ways and walking tracks. We have begun to take quantitative measurements of the impact of *E. ageratinae* on mist flower at release sites, and we have set up permanent plots (both with and without mist flower) so that we can monitor changes in vegetation as the weed (hopefully) comes under biological control.

It would appear that mistflower has the capacity to expand its range further into the native forests of New Zealand. However, our monitoring results lead us to be optimistic about the potential of the white smut (especially when assisted by the gall fly) to significantly reduce the competitive ability of the weed.

#### Other biological control projects involving pathogens:

A number of other weeds have been identified in New Zealand as potential targets of biological control projects using pathogens. Landcare Research staff have completed studies on the feasibility of using pathogens to control: banana passionfruit (*Passiflora mollissima* and *P. mixta*, Passifloraceae), blackberry (*Rubus fruticosus*, Rosaceae), bone-seed (*Chrysanthemoides monilifera* ssp. *monilifera*, Asteraceae), climbing asparagus (*Asparagus scandens*, Asparagaceae), wild ginger (*Hedychium* spp., Zingiberaceae), nassella tussock (*Nassella trichotoma*, Poaceae), Chilean needle grass (*Nassella neesiana*, Poaceae), and woolly nightshade (*Solanum mauritianum*, Solanaceae). Other New Zealand weeds which merit the attention of plant pathologists are alligator weed (*Alternanthera philoxeroides*, Amaranthaceae), Californian thistle (*Cirsium arvense*, Asteraceae) and pampas (*Cortaderia jubata*, Poaceae), privet (*Ligustrum sinense* & *L. lucidum*, Oleaceae), moth plant (*Araujia sericifera*, Asclepiadaceae) and variegated thistle (*Sibyl Marianna*, Asteraceae).

Jane Frohlich [FrohlichJ@landcare.cri.nz](mailto:FrohlichJ@landcare.cri.nz)

## **Departamento de Fitopatologia, Universidade Federal de Viçosa, Brasil**

### Fungal pathogens of Neotropical aquatic weeds

An extensive survey of the basins of the rivers Doce (states of Minas Gerais and Espírito Santo) and São Francisco (states of Minas Gerais, Bahia, Pernambuco, Alagoas and Sergipe) was carried out by Cláudio B. S. Maia (M.Sc. student) with the help of Rogério E. Hanada (from INPA Manaus) aimed at collecting fungal pathogens of ten different aquatic weeds (*Eichhornia crassipes*, *Eichhornia azurea*, *Paspalum repens*, *Echinochloa polystachya*, *Pistia stratiotes*, *Typha domingensis*, *Alternanthera philoxeroides*, *Salvinia auriculata*, *Myriophyllum aquaticum* and *Polygonum spectabile*). Few new records resulted from the examination of the abundant material brought to the lab. Our feeling is that although the picture of the pathogenic mycobiota of those weeds is becoming clearer we are still missing the true centre of origin of some of these plants. Particularly of *E. crassipes*, *A. philoxeroides*, *P. stratiotes*, *P. spectabile* and *S. auriculata*. The pathogenic mycobiota of those weeds in the two river systems is either limited or absent or poor of highly specialized pathogens. The continuation of surveys in other basins such as those of the Paraguay and Paraná rivers may yield better results for those weeds. Parallel to this a detailed study of the fungus *Colletotrichum Typhoo* (newly found on this host) was made with encouraging results concerning its potential use as a biocontrol for cattail.

(Robert Barreto [RBarreto@mail.ufv.br](mailto:RBarreto@mail.ufv.br))

## **EDITOR'S CORNER**

Dear Colleagues and Friends,

Thank you once more for your help to prepare the newsletter, sending, as usual, your numerous contributions, and excuse me for the delay in preparing and posting this latest issue.

As you probably know, the bulletin is sent by e-mail to the whole ibg-news list as Word97 file, but you can see the Internet version, visiting the following WEB address: <http://ibg.ba.cnr.it>, where you can find and download latest and previous issues in different formats.

**Final Notice:** We are updating our mailing list. If you wish to receive future issues of this News, you must provide an e-mail address. Printed copies will be mailed only in exceptional cases and only to those who have no e-mail access. If you are in this category, you must inform us.

To always more improve the "look" of our newsletter, I would be very grateful if in the future you could send to me images regarding your research, as well as logo of your Institutions, or their Internet addresses.

Many thanks. I wish you all the best

Ciao

Maurizio Vurro

**Vth INTERNATIONAL BIOHERBICIDE GROUP WORKSHOP  
5 and 6 June 2000**

**Foz do Iguassu, Brazil**

**REGISTRATION FORM**

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

e-mail \_\_\_\_\_ phone: \_\_\_\_\_ fax \_\_\_\_\_

Name of accompanying person (s): \_\_\_\_\_  
\_\_\_\_\_

Please provide the following information, which will be useful additions to the list of participants, facilitating communication between delegates:

Weed(s) you are working on: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Pathogen(s) studied: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Research category (e.g., exploration, formulation, epidemiology, pathogenicity, etc.):  
\_\_\_\_\_

**Presentations**

Do you wish to present an oral paper? YES/NO or a poster? YES/NO

(If there were insufficient time, would you be willing to present your oral paper as a poster? YES/NO)

**Accommodation**

Arrangements for accommodation are to be done individually. Hotel reservations can be organised through Golden Foz Turismo e Cambio (golden@foznet.com.br) which is handling III IWSC reservations.

See III IWSC site: <http://www.sercomtel.com.br/ice/plantas>.

**Registration fee: Vth IBGW: US \$ 100.00** (Includes cocktail on Monday night, June 5<sup>th</sup>; lunch tickets for two days; and an Abstracts booklet).

**Note:** Support is being given by the organisers of III IWSC to host Vth IBGW, using the congress facilities. It is therefore a condition that all IBGW attendees would also register for III IWSC.

**Registration fee: III IWSC (up to 30<sup>th</sup> of April) US \$ 325.00** (IWSS Members)

US\$ 375.00 (IWSS Non-members)

US\$ 235.00 (Students)

**TOP**

### AUTHORIZATION FORM

I, \_\_\_\_\_ **hereby**  
authorize the charge of US\$ \_\_\_\_\_ to my credit card, to pay for registration in the Vth International  
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NOTE: A separate form for payment of registration for the 3<sup>rd</sup> IWSC (which is mandatory for Vth  
IBGW attendees) is available at the IWSC web site.

