

INTERNATIONAL BIOHERBICIDE GROUP

IBG NEWS

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THE CHAIRMAN'S COMMENTS

Greetings to all. Let's hope that 1999 will bring continued advances in biological weed control with pathogens and good health to all.

It is with great pleasure that we welcome Maurizio Vurro as the new Newsletter Editor. Thank you Maurizio for accepting this task. Maurizio has put together a great newsletter, but he needs our help as contributors. So please respond when he requests input for the next newsletters.

Welcome also to our new Vice Chair, Charu (R. Charudattan). Charu, I appreciate your acceptance of the position and look forward to working with you in the next two years.

To Bruce Auld, thank you for being our Chairman for the past two years. You have been great to work with and I look forward to your continued support.

Now a very special THANK YOU to Louise Morin. Louise created, fostered, nurtured, and mothered (?) our Newsletter. The IBG News is much of what the International Bioherbicide Group is about. I know you have been a tremendous help to Maurizio as he takes over from you. Louise you have done a fantastic job and we will always be indebted to you.

Finally, please accept my apology for the delay in getting this issue of IBG News out to you. Our next issue will be more timely.

CONTACT ADDRESSES

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NEWSLETTER EDITOR**Maurizio Vurro**

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EDITOR'S INFORMATION

Dear Colleagues,

I am very glad to inform you that, as it was proposed and approved during the last International Bioherbicide Group Meeting, in Glasgow, I am the new editor of the IBG Newsletter, replacing Dr Louise Morin, to whom I send once again all my thanks for her help and my best wishes for the future and for her new-born child.

To make my contacts with you (and vice versa) easier, and to give more diffusion to our Newsletter, a mailing list (ibg-news@area.ba.cnr.it) has been created. This will permit to receive automatically the electronic version of the IBG Newsletter (that could be enriched for example with colour images), and also to be periodically informed about deadlines for sending news to be published. If you have received this newsletter by "classical" mail this means that your e-mail address (if you have one) is unknown by the Editor. You can register to the mailing list sending an e-mail to majordomo@area.ba.cnr.it with the following command in the body of the message (not in the subject!):

subscribe ibg-news

Otherwise, if you are registered and want to remove from it, please send an email to majordomo@area.ba.cnr.it with the following command in the body of the message (not in the subject!):

unsubscribe ibg-news.

If you know colleagues that could be interested in receiving the IBG Newsletter, please tell them they can register as above mentioned. Previous issues of the IBG Newsletter will be available, by downloading, at the following WEB address: <http://area.ba.cnr.it/~itmpmv01/ibg.htm>. In the future, this mailing list could also be available for discussion group.

To optimize and simplify the diffusion and the distribution of the Newsletter, and to reduce postage, we are trying to send it by e-mail as much as possible. If you still want to receive the newsletter by mail, please fill in the form you find at the end of the bulletin, and send back to me. People that will not send the confirmation will be removed by the list.

Thank you for your kind collaboration

RECENT MEETINGS

The year 1998 was filled with several important meetings and conferences featuring biological control of weeds and I had the honor and pleasure of participating some of these forums. The first was an International Symposium titled "The Future of Fungi in the Control of Pests, Weeds, and Diseases," sponsored by the British Mycological Society, and held simultaneously with the COST-816 Working Group Meetings, both at Southampton University, England. There were a number of bioherbicide-related papers and lectures given by Dr. Harry Evans, Dr. Jonny Gressel, Dr. Alan Watson, Dr. Mark Jackson, Dr. Richard Medd, and others. There was also a special COST-816-sponsored session on Risk Assessment and Registration, chaired by Heinz Müller-Shärer. This session included lectures by J.C. Zadoks (What is Risk? How do we Assess it and Why?), R. Charudattan (Risks Associated with Genetic Variability), A. Hammer (Registration of Fungi Used as Pesticides: the UK Perspective), J. Waage (Risk and Related Issues in the Use of Exotic Biological Control Agents), M. DeJong & G.W. Bourdot (Biocontrol Using Pathogens with Wide Host-Ranges Like *Chondrostereum purpureum* and *Sclerotinia sclerotiorum*: Special Problems of Registration).

The second was the VI SICONBIOL (Symposium of Biological Control), May 24-28, 1998 in Rio de Janeiro, Brazil, convened by EMBRAPA (Brazilian agricultural research and enterprise organization) and Ministry of Health-Foundation of Oswaldo Cruz and sponsored by several national and international organizations and private companies. Included in the symposium was a session titled Biological Control of Weeds: Opportunities and Challenges to Progress in Biotechnology, organized and moderated by Dr. Robinson Pitelli, UNESP, Jaboticabal, Brazil. The topics included classical biological control using plant pathogens (Robert Barreto), bioherbicides (Charudattan), and biological weed control using arthropods (Gary Buckingham, USDA-ARS, Gainesville, FL).

The Brazilian governmental agency IBAMA held a two-day workshop (June 3-4, 1998) in Brasilia to discuss options for control of aquatic weeds. Brazil, like many other parts of the world, is experiencing serious problems with floating and submerged aquatic weeds. Of main concern are the hydroelectric reservoirs that are generally used also for drinking water and irrigation. The participants in this workshop that included experts in chemical, mechanical, and biological controls, ecologists, a U.S. EPA representative, and IBAMA personnel discussed various control methods available, relative merits and risks involved, examples of Brazilian experience with aquatic weed control, etc. Use of plant pathogens was considered

an option. In my opinion, basic research, currently underway in Brazil and the USA, might offer at least partial solutions to the aquatic weed problems discussed.

The fourth was the IV International Bioherbicide Workshop at University of Strathclyde, Glasgow, Scotland, superbly organized and convened by Dr. Mike Burge and Dr. Doreen Main. The full program of this workshop appeared in the June 1998 issue of IBG News.

A day after this bioherbicide workshop, the International Plant Pathology Congress began in Edinburgh, Scotland. The Congress, although well organized to cover most of the advancing research fronts in traditional plant pathology, did not do justice to the field of biological control of weeds by plant pathogens. There were only two sessions in which this topic was covered at length: an evening session on Beneficial Use of Plant Pathogens: Biological Control of Weeds, sponsored by the ISPP Biological Control Committee and organized by Dr. William Bruckart and Dr. Simon Shamoun. There was a regularly featured session on Exotic Pathogen Threats: Risk Assessment in which Dr. Harry Evans gave a stimulating analysis titled, "A Lateral View of PRA: Evaluating Fungal Pathogens as Biocontrol Agents of Weeds." There were, of course, several posters on classical biological control agents, bioherbicides, production and formulations, molecular tools, and others.

Another conference of interest was the First Global Working Group Meeting for the Biological and Integrated Control of Water Hyacinth held at St. Lucia Park Hotel, Harare, Zimbabwe on November 16-19, 1998 sponsored by the International Organization for Biological Control (IOBC). This meeting was attended by about 70 delegates, from 14 African nations and representatives from Argentina, Australia, Canada, India, New Guinea, PR China, U.K., and U.S.A. There were several papers outlining the experiences in the control of this weed. The need to find and utilize new biocontrol agents including pathogens was a recurrent theme. Discussants also pointed out the continuing need to rely on chemical herbicides to solve severe water hyacinth infestations requiring quick action. There were two presentations on pathogens: Ms. Alana den Breeyen reported on her work on the interactions of three pathogens and the insect biocontrol agent, *Neochetina eichhorniae*. R. Charudattan reviewed the status of water hyacinth control in Florida and summarized recent research on pathogens from his group. Some new projects on pathogens are currently underway in several African nations, such as, Egypt and Kenya. It appears there is renewed interest in bioherbicides for water hyacinth control.
(Prof. R. Charudattan)

IVth International Bioherbicide Workshop 6-7 August 1998

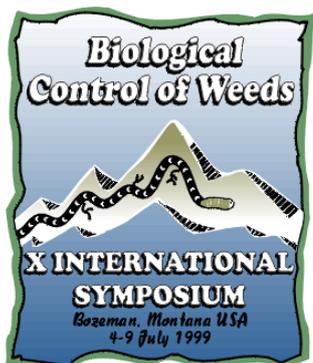
University of Strathclyde, Glasgow, UK

The workshop, was attended by 55 delegates. A programme of excellent presentations consisted of 18 papers, ten of which were on the major theme of chemical adjuvants to microbial biocontrol agents. Useful contributions were also presented on classical control and one on suggested revisions/clarifications of terminological definitions. Some encouraging papers on projects in late stages of development indicated enviable levels of success in the field including ones which have achieved, or are close to attaining registration. Sessions were under the meticulous control of chairpersons Harry Evans, Bruce Auld, Don Daigle, Mike Greaves and Piet Scheepens.

Eighteen posters were displayed, all of which were of high quality, covering all aspects of bioherbicide research.

Wet weather marred a bus tour through Lowland and Highland Scottish scenery during which some typical arable and pasture weeds could be viewed. Of particular prominence was bracken fern (*Pteridium aquilinum*) which dominates the highland landscape and which is the particular subject for biocontrol research at Strathclyde. However, the organisers hope that the visit to a whisky distillery and the hospitality at Ross Priory on the shore of Loch Lomond where a Scottish dinner *wi' a' the honours* (piper, address to the haggis etc) made up for the dismal weather. We were at least blessed with a sunset over the loch. (Dr. Mike Burge)

UPCOMING MEETINGS



X INTERNATIONAL SYMPOSIUM ON BIOLOGICAL CONTROL OF WEEDS

Bozeman, Montana, USA - 4-9 July, 1999.

Bozeman is the home of Montana State University-Bozeman (MSU-Bozeman), situated among the picturesque Rocky Mountains near scenic areas for hiking, fishing and whitewater rafting. This meeting is co-sponsored by the United States Department of Agriculture/Agricultural Research Service (USDA/ARS) and MSU-Bozeman. Conference facilities and accommodations for the Symposium will be on the campus of MSU-Bozeman. Although alternate accommodations are available, delegates are encouraged to use university residences to enhance interactions among symposium participants. The Symposium registration fee of U.S. \$450 will cover Symposium meeting facilities, published proceedings, and selected activities. Registration for the Symposium will take place on Sunday afternoon, 4 July, beginning at 2:00 PM with a reception and fireworks in the evening. Formal proceedings will end on the evening of Friday, 9 July. The Symposium will run as a series of successive sessions—there will be no concurrent sessions. Therefore, the number of oral presentations will be limited. Organizers will select papers for oral presentation, based on scientific merit, originality, and appropriateness. Submissions that are not selected may be presented as posters, which may also be published as full papers in the proceedings of the Symposium. The language of the Symposium will be English. Current plans are to have the published proceedings available as soon as possible. The deadlines for abstracts, papers and posters will be forthcoming. Further details will be provided in subsequent announcements via the Web site: <http://www.symposium.ars.usda.gov/>

General Information:

Dr Robert M. Nowierski - Symposium Co-Chairman - Department of Entomology- Montana State University - Bozeman, MT 59717-3020 - Phone:406.994.5080 - Fax:406.994.6029 - Email:nowiersk@montana.edu

Dr Neal R. Spencer - Symposium Co-Chairman - USDA / ARS -- Northern Plains Ag Research Lab - 1500 North Central Sidney, MT 59270 - Phone:406.482.9407 - Fax:406.482.5038 - Email:nspencer@sidney.ars.usda.gov



XIVth INTERNATIONAL PLANT PROTECTION CONGRESS

Plant Protection Towards the Third Millennium - Where Chemistry Meets Ecology

Jerusalem, Israel, July 25 - 30, 1999

The XIVth International Plant Protection Congress promises to be an exciting and unique event in 1999's congress diary. A rich and varied scientific program, a full social program in the special atmosphere of Jerusalem, a chance to meet old friends and make new ones and opportunities to visit touristic as well as professional sites of interest. The Organizing Committee and the entire Plant Protection community of Israel are making every effort to ensure a scientifically interesting meeting and to make your stay with us a pleasant one. An outstanding Scientific Program has been organized, focusing on important developments in all aspects of Plant Protection. The Congress will take place in the unique setting of Jerusalem - spiritual center of three great religions and a city of magnificent sites. The venue of the meeting is the ICC Jerusalem International Convention Center and the adjacent Crowne Plaza Hotel which have outstanding facilities for conferences.

Congress Secretariat:

KENES Organizers of Congresses and Tour Operators Ltd.

PO Box 50006, Tel Aviv 61500, Israel;

Tel: +972 3 5140014; Fax: +972 3 5175674 / 5140077 - E-Mail: IPPC@Kenes.com - <http://www.kenes.com/ippc>



The **11TH EUROPEAN WEED RESEARCH SOCIETY SYMPOSIUM** will be held in Basel, Switzerland, from June 28th to July 1st 1999. Further Information can be asked to: EWRS Symposium 1999, P.O. Box - CH-4332 Stein, Switzerland. Phone: +41.62 8686063; Fax: +41.62.8686439; e-mail: james.allen@cp.novartis.com

In the same dates and place, the **BIENNIAL MEETING OF EWRS WG ON BIOLOGICAL CONTROL** and the **COST 816** Workshop and WGs will be held. For Further Information: Prof. DR. H. Müller-Schärer, Département de Biologie / Ecologie Université de Fribourg, Pérolles CH-1700 FRIBOURG SWITZERLAND
Tel: + (41) (26) 300 88 35/10 - Fax: + (41) (26) 300 97 40 - E-mail: heinz.mueller@UNIFR.CH

WEED SCIENCE SOCIETY OF AMERICA ANNUAL MEETING

Feb 8-10, 1999 - San Diego, CA, USA
Contact: J. Breithaupt, PO Box 1897 - Lawrence, KS 66044, USA
ph: 913 843 1235 - fax 913 843 1274 - jbreith@allenpress.com

AGRO ANNUAL MEETING CHINA 99

Apr 13-16, 1999, Beijing, China
Contact: Mr. Bao shuzheng; Mr. Wu Jiang - China Association of Agricultural Science Societies - No.11 Nongzhanguan Nanli, Beijing 100026, P.R.China
Tel: 0086 10 64194494, 0086 10 64194482 - Fax: 0085 10 64194484, 0086 10 64194491 -
E-mail: bao@cav.net.cn aamc99.htm

2ND EUROPEAN CONFERENCE ON PRECISION AGRICULTURE

Jul 11-15, 1999 - Odense Congress Centre, Denmark
Contact: Conference Secretariat, SCI - 14-15 Belgrave Square - London, SW1X 8PS, UK
Tel: 44 0 171 235 3681 - Fax: 44 0 171 235 7743 - email conferences@chemind.deman.co.uk

12TH AUSTRALIAN WEED CONFERENCE - Weed Management into the 21st Century: Do we know where we're going?

12 - 16th September 1999, Wrest Point Hotel Casino, Hobart, Tasmania, Australia.
Info: <http://www.cdesign.com.au/tasweed/twsweb01.atm>; e-mail: mail@cdesign.com.au

5TH INTERNATIONAL CONFERENCE ON THE ECOLOGY OF INVASIVE ALIEN PLANTS

13-16 October, 1999 - La Maddalena, Sardinia - ITALY
Address for registration and information:
Dr. Giuseppe Brundu - Dipartimento di Botanica ed Ecologia Vegetale - Università di Sassari - Via F. Muroli, 25
07100 Sassari - Italy
e-mail: gbrundu@tin.it or gbrundu@box1.tin.it - ph. + 39 0335 237315 - fax + 39 079 233600

SPRAY OILS BEYOND 2000 - Sustainable Pest & Disease Management

25 - 29 October 1999, Sidney, Australia.
Information: Alison Frost - Hawkesbury Technologies Ltd - UWS Hawkesbury - PO Box 415 - Richmond, NSW 2753, - Australia - Phone: (02) 4570 1690 - Fax: (02) 4570 1520 - Email: a.frost@uws.edu.au

BRIGHTON CROP PROTECTION CONFERENCE

Nov 16-19, 1998
Contact: The Brighton Conference Secretariat - 8 Cotswold Mews, Battersea Square, London SW11 3RA UK
eventorg@event-org.com - fax 44 0 171 924 1790 - ph 44 0 171 228 8034

17TH ASIAN PACIFIC WEED SCIENCE SOCIETY CONFERENCE

Nov 1999 - Bangkok, Thailand
Contact: Dr. Sombat Chinawong - Secretary, Dept. of Agronomy, Faculty of Agriculture, Kasetsart University Chatuchak, Bangkok 10903 - Thailand
Fax: 662 579 8580 - email: agrsbc@nontri.ku.ac.th

PEOPLE & PLACES

Dr **Hamed K. Abbas** of the USDA-ARS, SWSRU in Stoneville, Mississippi, USA was invited to the Depto. de Bioquimca, Facultad de Quimca, UNAM, 04510 Mexico, D. F. to address the faculties and students. His talks were entitled, "Recent Advances In Microbial Bioherbicides" and "The Role of Fumonisin and AAL-toxin as Phytotoxins and in Food Safety". Dates of travel were Oct. 27 to Nov. 1, 1998.
(Hamed K. Abbas)

Dr. **Jürgen Kroschel** will move to the University of Kassel, Institute for Crop Science, Steinstr. 19, 37213 Witzenhausen, Germany. Phone: 0049/(0)5542/981-311 Fax: 0049/(0)5542/981-230, e-mail: Kroschel@wiz.uni-Kassel.de

Dr. **K. V. Sankaran** from the Kerala Forest Research Institute, Kerala, India, visited CABI Bioscience UK Centre (Ascot), from 9-23 October 1998. This visit was a component of the RNRRS (DFID, UK) project; 'The development of a biocontrol strategy for the management of the alien perennial weed *Mikania micrantha* H.B.K. (Asteraceae) in tree crop based farming systems in India'. Dr. Sankaran took the opportunity to discuss current and future project developments, as well as to learn inoculation and assessment techniques of the main candidate classical biological control agent, *Puccinia spegazzinii*, a highly specific rust strain from Trinidad. It is envisaged that this isolate will be introduced into India for the control of the alien weed, once the rigorous host specificity tests have been completed, and permission gained from the relevant Indian authorities. In addition, prior to the anticipated release of the biocontrol agent, a regional forum will be held in India to debate the issues involved, particularly since this will be the first weed pathogen to be considered for classical biological control within this region. A further component of the programme, led by Dr. Sankaran, is to investigate the possibility of a local pathogen being developed as a mycoherbicide against the weed. Isolates of two fungi, *Myrothecium lecotrichum* and *Corynespora cassicola* (identifications to be confirmed), have been selected for further analysis. (C. A. Ellison).

GRADUATE STUDENTS

PhD thesis:

Daniel Guntli, Swiss Federal Institute of Technology, Zürich, Switzerland.

Project (Ph.D. 1998): Biological Control of Bindweeds using a Mycoherbicide, Plant Competitors and a rhizobacterium degrading alkaloids. Supervisors: Prof. Dr. Geneviève Défago, Prof. Dr. Yv an Moëgne-Loccoz, Dr. Hans Ulrich Ammon, Prof. Dr. Peter Stamp

BIOHERBICIDE RESEARCH - STATUS REPORTS

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

Encore Technologies

Encore Technologies is now producing Collego (one of two registered bioherbicides in the U.S.) for the Delta region rice market. Encore produced test market amounts of the bioherbicide during 1997, and full market quantities for 1998. We anticipate greater sales of Collego during 1999 because growers are having trouble with drift of conventional herbicides onto cotton and other sensitive crops. This is a great success story for the bioherbicide community, and we have Dr. David TeBeest, University of Arkansas, to thank for bringing all the pieces of this technology back from the brink of extinction. Since Encore has now gained a foothold in the biocontrol industry (we have two disease biocontrol products also), we would like to invite researchers to collaborate with us on development and production of your biopesticide products. While we are a small company with limited resources (we can't bankroll your project), we do have considerable expertise, and new, state-of-the-art fermentation equipment. We are always interested in new projects. Visit our web page at www.encoretechnologiesinc.com

(David R. Johnson - Encore Technologies)

Granular products

Five fungal biocontrol agents useful in agriculture were grown on rice flour in plastic bags. The flour, infested with *Colletotrichum truncatum*, an *Alternaria* sp., *Paecilomyces fumosoroseus*, or atoxigenic *Aspergillus flaus* and *A. parasiticus*, was mixed with wheat flour, kaolin, and water and extruded into granules. The inoculum produced by solid state fermentation survived extrusion and fluid bed drying at 50° C 3-92 times better than inoculum produced in liquid fermentation. Depending on the agent, the high level of flour infestation permitted a 1:9 to 1:1600 dilution to yield the 1x 10⁶ cfu/g in the final product which is usually needed for biocontrol efficacy. Solid state fermentation plus extrusion is an effective combination of commercially-available technologies for matrix-encapsulation of fungal propagules in granular products. (Donald J. Daigle and William J. Connick, Jr.; ddaigle@nola.srrc.usda.gov) Southern Regional Research Center, ARS, USDA, New Orleans, LA, USA. This work appears in *Biotechnology Techniques* 12:715-719 (1998).

Fight against *Striga*

The use of microorganisms against *Striga hermonthica* is pushed one step further by a joint effort of two research teams. McGill University researchers along with a student of Laval University (Quebec) are investigating the combined effect of a strain of *Fusarium oxysporum* and legume intercropping in sorghum to control the emergence of *S. hermonthica*. *Fusarium* inoculum stored as a dry powder and applied as a coating agent on sorghum seeds reduced *Striga* emergence in pot and field experiments. Preliminary results on the exposure of *Striga* seeds to plant extracts at various concentrations showed the suppressive effect of some legume species on seed germination. The coupled effect of both fungal inoculum and intercropping bring new hope for cereal growers in Mali.

(M. Ciotola, Dr A.K. Watson and Dr A. Olivier)

Mysterious serrated tussock fungi

Serrated tussock, *Stipa (Nassella) trichotoma* Nees is a serious pasture and environmental weed in south-eastern Australia. It now occupies more than 700,00 hectares in New South Wales and 100,000 ha in Victoria and has the potential to infest more than 4.2 million ha in Victoria. It is an insidious weed in Australia because it resembles a number of native tussock grasses and can easily remain unnoticed until significant infestations have developed. It is unpalatable to grazing animals with the leaves having a very high fibre content (around 86%) and a low protein content (around 4%) equivalent to that of wheat straw. The fibrous leaves can form indigestible balls in the rumen, causing loss of condition and eventual death. Stock forced to eat serrated tussock can starve to death despite having a full stomach. Serrated tussock is also a significant weed in New Zealand and South Africa, and more recently in North America. The first stage of a large scale biological control program involving the search for natural enemies of serrated tussock in South America is about to begin. Two fungi observed in the Melbourne area appear to kill and damage the seeds of serrated tussock. One causes black lesions on flowering stems and reduction in flowering. Infected flowering stalks are grey-brown in colour. The upper flowers do not develop properly and so produce no seed. This fungus is *Zizipegasa argentinensis*. The other, more recently identified, is a species of *Dimenospodium* which causes high seed mortality and appears to have great potential as a biological control agent.

(Ishrat Hussaini and Ann Lawrie, RMIT; David McLaren and Ian Faithfull, KTRI)

Under Control - Pest Plant and Animal Management News No. 7 October 1998

Parasitic weed Project

The supra-regional project "Ecology and Management of ParasiteWeeds" of the GTZ and the University of Hohenheim ends in December 1998. Results and experiences of this project are summarized and presented on the World Wide Web (www.uni-hohenheim.de/~www380/parasite/start/htm). A working group on the development of bioherbicides for the control of *Orobancha* spp. and *Striga* spp. will further exist. Dorette Müller-Stöver will continue her research work with regard to the granular formulation of *Fusarium oxysporum* to control *Orobancha cumana* within a trilateral project between Israel, Palestine and Germany. In spring, Mr. Abuelgasim Elzein from Sudan has received a scholarship for his Ph.D. program, which will concentrate on the granular formulation of *Fusarium oxysporum* to control *Striga hermonthica*. (Jürgen Kroschel -University of Kassel)

Evaluation of some fungi for bioherbicidal potential against leafy spurge (*Euphorbia esula* L. "complex").

Research to develop a bioherbicide aimed at controlling leafy spurge was continued. Field collection of samples of infected leafy spurge plants and soil samples was made during summer-1998 in Southern and South-Eastern Russia. Isolates of all fungi (more than 200 strains) found during the survey were tested against *Euphorbia esula* in express-test. In each test, a part of leafy spurge stem with several leaves was placed on a sterile media in a Petri dish and inoculated with aqueous suspension of spores. Four best isolates killed all the treated samples during 10 days, while all control plants survived more than a month. These isolates are chosen for further experiments.

Potential projects: other projects aimed at biocontrol of invasive weeds of Eurasian origin may be conducted, although funds in Russia are severely limited so potential collaborators should have sufficient funding. Such projects may include field collection, isolation, laboratory and greenhouse screening of naturally occurring pathogens and insects, and also field test of their bioherbicide effect. (Dr. Sergey Ya. REZNIK, Biocontrol Group, Zoological Institute, 199034, St.Petersburg, Russia. Fax:+7 (812) 114 0444; Phone:+7(812)1145167;E-mail: reznik@weed.zin.ras.spb.ru)

Stagonospora

At the Swiss Federal Institute of Technology, Zürich, two researches on *Stagonospora* are still going on: the role of the *Stagonospora* toxins on the aggressiveness (in collaboration with R. Tabacci and Blaise Nicolet from the University of Neuchâtel in Switzerland) and the mixture of *Stagonospora* with herbicides. Here is a list of papers of the group on this topic:

- Guntli D, Pfirter HA, Moëne-Loccoz Y and Défago G. 1998. *Stagonospora convolvuli* LA39 for biocontrol of field bindweed infesting cotoneaster in a cemetery. *Hortscience* 33, 860-861.
- Pfirter HA and Défago G. 1998. The potential of *Stagonospora* sp.as a mycoherbicide for field bindweed. *Biocontrol Science and Technology* 8, 93-101.
- Pfirter HA, Ammon HU, Guntli D, Greaves MP and Défago G 1997. Towards the management of field bindweed (*Convolvulus arvensis*) and hedge bindweed (*Calystegia sepium*) with fungal pathogens and cover crops. *Integrated Pest Management Reviews* 2, 61-69.
- Guntli D, Burgos S, Moëne-Loccoz Y and Défago G. Calystegine degradation capacities of microbial rhizosphere communities of *Zea mays* (calystegine negative) and *Calystegia sepium* (calystegine positive). Accepted for publication in *FEMS Microbiology*.
- Guntli D, Burgos S, Kump I, Heeb M, Pfirter HA and Défago G. Biological control of hedge bindweed (*Calystegia sepium*) with mycoherbicide *Stagonospora convolvuli* strain LA39 in combination with competition from red clover (*Trifolium pratense*). Submitted for publication.
- Guntli D, Heeb M, Moëne-Loccoz Y and Défago G. Contribution of calystegine catabolic plasmid to colonisation of the rhizosphere of calystegine-producing plants by *Sinorhizobium meliloti* Rm41. Submitted for publication.

- Pfirter HA, Guntli D, Ruess M and Défago G. Mass production, storage and preservation of *Stagonospora convolvuli* strain LA39 pathogenic on field bindweed (*Convolvulus arvensis*). Submitted for publication.
- Guntli D, Pfirter HA, Défago G and Klimes L. Performance of rhizome- and seed-propagated *Calystegia sepium* in presence or absence of the pathogen *Stagonospora convolvuli* strain LA39. Submitted for publication.
- Pfirter, H.A. and Défago, G. (1998). The potential of *Stagonospora* sp. as a mycoherbicide for field bindweed. *Biocontrol Science and Technology* 8, 93-101.
- Pfirter, H.A., Marquis, F. and Défago, G. Genetic and pathogenic characterisation of different *Stagonospora* sp. isolated from field bindweed. Submitted for publication.
(Genevieve Defago- Swiss Federal Institute of Technology, Zürich)

University of Florida

At the Department of Plant Pathology, University of Florida, work is in progress on the following weed-pathogen systems: *Dactylaria higginsii* - purple nutsedge, *Phomopsis amaranthicola* - pigweeds, species of *Drechslera* and *Exserohilum* - various grasses including cogongrass, and *Ralstonia solanacearum* - tropical soda apple. In addition, in collaboration with South Africa (Alana den Breeyen) and Brazil (Robinson Pitelli), studies on the life cycle and biological control effects of *Uredo eichhorniae* is in progress. Further activities will be reported in the next newsletter.
(R. Charudattan)

Bioherbicide Product for Broadleaf Weed Control in Turf

A collaborative R&D project was started in 1995 to develop a broadleaf weed bioherbicide for the turf market. Project participants were the University of Guelph, McGill University, the Nova Scotia Agricultural College, Dow AgroSciences Canada Inc., the Saskatchewan Wheat Pool and the BioProducts Centre Inc. The NSERC Technology Partnership Program provided matching funding until the end of 1998. In 1997, MAC1, a fungal isolate discovered at McGill University, emerged from the extensive screening program as the lead organism. Collaborative field efficacy and environmental safety testing were carried out in 1997 and 1998. McGill also developed various test formulations and the industrial partners carried out market and production analyses.

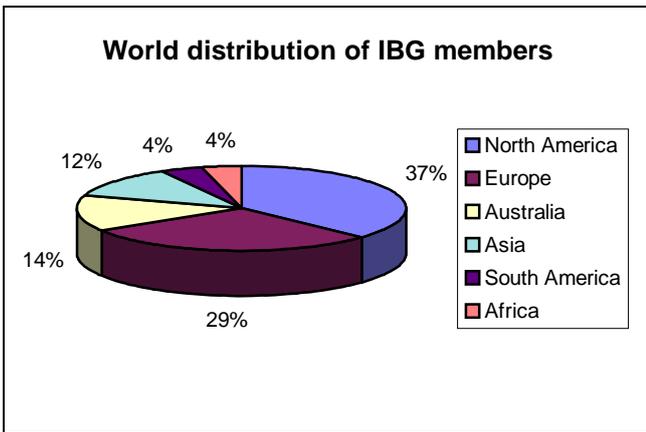
MAC1 is a safe and well-characterized plant pathogenic fungus with narrow agronomic host range, which can be cultured in liquid or solid fermentation. When formulated as a granular product, an application of MAC1 to dandelions in turf results in very rapid control of the weed with no injury to turf grasses. In suitable conditions, lesions develop quickly and a complete kill can be achieved within 7 days. In these conditions, overall activity is often better than Killex while speed of kill is about twice that of Killex. The risk of poor performance in hot and dry weather can be minimized through simple use recommendations. The product is compatible with normal lawn maintenance operations such as mowing, fertilization and irrigation. Other broadleaf weeds can also be controlled. Based on a pre-submission consultation with federal government regulatory authorities (fall 1997) and experimental results, registration should be straightforward.

Preliminary estimations of field, registration and scale-up R&D costs, anticipated production costs, target pricing and market penetration demonstrated a good potential profitability, with a recoupment of investment 2-3 years after launch. However, expectations of target markets and initial penetration are more in line with those of smaller bioherbicide manufacturers than large multinationals and in 1998, Dow AgroSciences decided against taking on the commercial development of the product and withdrew from the project. The Saskatchewan Wheat Pool remains committed to the project and efforts are currently underway to bring new industrial partners into the project. For more information please contact Alan Watson (watsona@agradm.lan.mcgill.ca) or Stephane Dupont sdupont@innovationplace.com

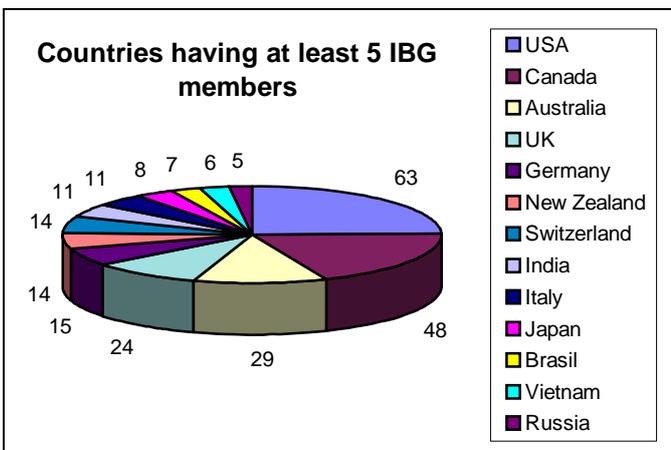
(A. Watson and S. Dupont)

THE STATUS OF IBG MEMBERS

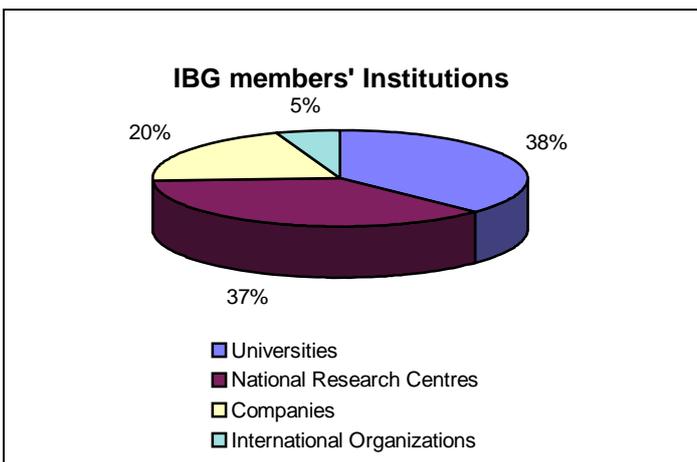
At the present, there are more than 300 persons registered in the IBG list. In the chart below, you can see the world distribution of the IBG members, from which it appears that more than 65% are from European or North American Countries. More than 70% of the whole number of members have e-mail facilities, and have been registered to the IBG-news mailing list (see above for information of self-registration), so they can receive the electronic version of the Newsletter.



With regard to the distribution of IBG members among countries, you can see in the chart below that there are 12 countries having at least 5 members, and more than 40 countries have at least 1 representative in the list.



In the end, in the chart below you can have a rough idea of the distribution of people included in the IB Group among different Research Institutions.



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