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## PREFACE

The X International Symposium on Biological Control of Weeds set yet another attendance milestone at its meeting 4-14 July 1999 at Montana State University in Bozeman, Montana, USA. Altogether, 304 participants registered for the symposium representing 140 organizations from 27 countries across the globe. The record attendance is due, in part, to the extra effort made to ensure that all interested scientists from underrepresented countries would be able to attend despite limited funds, an issue that symposium participants have wrestled with in the past. For this X Symposium, a number of participants received fee waivers and/or travel or other financial assistance to join in this preeminent scientific gathering. Funding for the effort was provided through registration fees and additional funds from the Agricultural Research Service of the United States Department of Agriculture.

For the past 30 years, this truly international symposium has attracted the best and brightest researchers engaged worldwide in the biological control of weeds, beginning with a mere 22 participants at its inaugural 1969 meeting to the more than 300 gathering in Bozeman in 1999. During the X Symposium, more than 70 lectures and 163 posters were presented, with 13 formal discussion groups and innumerable impromptu gatherings held. Those scholarly exchanges form the basis for these Proceedings and represent virtually all that is known in the field of biological control of weeds through the 20<sup>th</sup> Century.

### THE PROCEEDINGS

Featured herein are papers and abstracts on: the successes of biological control of weeds and its failures; the roles of molecular biology and plant pathogen/microbe and insect interactions; safety issues and complications in implementation of biocontrol; ecological principles of biological control introduction and host selection and specificity; post release and impact studies and the negative economic and ecological effects of invasive weeds, and finally, a look at biological control efforts concerning weeds of aquatic systems and wetlands. (Note: While the abstracts from the host selection and specificity section can be found in this 1,100-page volume, the complete papers from that section were published separately in a [companion volume](#) by the U.S. Forest Service and edited by Roy Van Driesche. The two publications combined represent the cutting edge of science in biological weed control and indicate how far we've come in the last Century, as well as providing the building blocks for research in the next Millennium.

Just as researchers around the globe have benefited from ever more sophisticated technologies, so, too, have symposium organizers and proceedings publishers. For the first time, X Symposium participants registered for the gathering via the Internet, an innovation that allowed for vastly improved and almost immediate communication between participants and organizers. The Internet was also the conduit of exchange for many of the papers and abstracts incorporated here. New technology, too, has

been harnessed to expand distribution of these two-volume Proceedings. In addition to the printed versions, both volumes are also available on a single CD-ROM. The new electronic format has allowed X Symposium organizers to affordably expand the previously limited distribution of printed symposium proceedings. Altogether, 2,000 CDs of the X Symposium Proceedings were produced at a fraction of the cost of publishing the 500 printed manuals.

## **TOURS**

In addition to the oral and poster presentations and discussion groups, the X Symposium featured two mid-Symposium tours, the first, a full-day excursion to Yellowstone National Park; the second, a tour of pertinent research facilities at Montana State University in Bozeman followed by a field tour to weed biocontrol sites in the surrounding Gallatin Valley. Following the symposium's conclusion, interested participants also joined in the post-Symposium tour, a five-day excursion to some of the most scenic areas in Montana, but also some of the most infested by invasive alien weeds. Featured stops included visits to area historical sites and Glacier National Park, as well as to biocontrol weed sites along the way.

## **BUSINESS MEETING**

In the business portion of the X Symposium, participants voted to hold the XI Symposium in Canberra, Australia in 2003.

## **AWARDS CEREMONY**

A highlight of the 1999 X Symposium was a special awards ceremony recognizing three pioneers of biological control of weeds, all of whom are, or shortly will be, retiring. The Honorees included: Lloyd Andres, a 30-plus year veteran research entomologist with the USDA-ARS; Peter Harris, a 36-year biocontrol researcher with Agriculture Canada, and Dieter Schroeder, director of the CABI Bioscience Centre, Switzerland and another 30-year veteran in the biocontrol research field. Schroeder also organized the first Symposium on Biological Control of Weeds. All three are giants in the field, having spent a combined total of nearly 100 years in biocontrol research. Their vision, their expertise, their enthusiasm, and their collective works set the standard for biocontrol weed research in the last half-century and continue to guide us into the next. Our enduring thanks and best wishes to them all!

## **SPECIAL THANKS**

The success of this symposium — and any of the same magnitude — is, of course, due to the hard work and dedication of many individuals and to them we offer heartfelt thanks. In particular, special thanks is extended to Dr. Robert Nowierski of

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Montana State University, who served as co-chair of the event and who, along with Daniel Violett, even found time to help design the X Symposium logo. Special thanks are also accorded Organizing Committee member Nancy Rush of the Northern Plains Agricultural Research Laboratory in Sidney, Montana for her extraordinary efforts in coordinating (at a considerable distance) the many disparate, but vital details needed to ensure a successful event. Nancy, along with the other members of the Organizing Committee and their support staff, did a superb job of putting together all aspects of the actual affair, enabling the rest of us to sit back and take in the proceedings unperturbed. Committee members included: Richard Hansen, USDA/APHIS PPQ; Anthony Caesar, USDA/ARS; Barb Frederick, USDA/ARS; Dave Hein, producer; Jeff Littlefield, Montana State University; Barb Mullin, Montana Department of Agriculture; Bob Richard, USDA/APHIS; Tom Shanower, USDA/ARS, and Lincoln Smith, USDA/ARS.

Support staff for this event included Megan Flynn, Amber Carr, Kevin Dahl, Kirk Hartel, Chad Pedersen, and Mark Gaffri, all with the USDA/ARS Northern Plains Agricultural Research Laboratory in Sidney, Montana, and Vera Christie with USDA/APHIS PPQ in Bozeman, MT. Their “behind the scenes” contributions — organizing the food, battling technology conflicts in the many varied media presentations, and cheerfully serving in any capacity needed—proved invaluable to the success of this event.

And finally, a special thanks is also extended to Terri Moore, who unflinchingly dedicated herself to the typesetting and formatting of this extensive manuscript these past several months.



Neal R. Spencer, USDA/ARS

*X Symposium Co-Chair and Proceedings Editor*

