

## Feed the Future: Innovation Lab for Integrated Pest Management Trip Report

**Country Visited:** Switzerland

**Dates of Travel:** 24 August to 2 September 2018

**Traveler's Name and Affiliation:** Lorraine Strathie, Agricultural Research Council – Plant Health and Protection, Private Bag X6006, Hilton 3245, South Africa

**Purpose of Trip:** Participate in XV International Symposium on Biological Control of Weeds in Engelberg, Switzerland. Present poster on biological control of *Parthenium hysterophorus* in South Africa. Interact with conference delegates on all weed biocontrol matters, including the IPM Innovation Lab director, IPM Innovation Lab Parthenium project coordinator and partners, and the IOBC Global Executive Committee representatives.

**Sites Visited:** Engelberg, Switzerland (via Zurich)

### Description of Activities/Observations:

Biological control of weeds (invasive alien plants) is a globally practiced science. The International Symposium on Biological Control of Weeds (ISBCW), held every four years, discusses a diversity of topics pertaining to the biological control of invasive alien plants worldwide. The XVth International Symposium on Biological Control of Weeds was held 26<sup>th</sup> to 31<sup>st</sup> August, 2018 in Engelberg, Switzerland. The symposium brought together practitioners, scientists and regulators working in the field of weed biological control to share their experiences, network, foster collaborations, and discuss emerging issues that affect invasive plant management specifically using biological control. Diverse aspects of research such as insect and pathogen-plant interactions, evolutionary processes, socio-economics and international regulations were discussed. Presentations and discussions were held on novel methods to determine the efficacy, environmental safety and predictability of biological control, including the role of chemical ecology, modelling, evolutionary processes, and the -omics field, with the general aim of advancing the science and success of weed biocontrol.

This Symposium was attended by 203 scientists representing over 100 institutes in 25 countries. The countries most represented were USA (55 delegates), South Africa (30), Australia (21), China and Switzerland (19), and New Zealand (13). Ten keynote

addresses, and 81 oral presentations covered topics on Target and agent selections; Opportunities and constraints for classical weed biocontrol in developing countries; Biopesticides; Novel methods to determine efficacy and environmental safety of agents; Making classical biological control more predictive: moving from ecological to evolutionary processes; Regulation for agent release and access to genetic resources; Social and economic assessments of biological control; Opportunities and constraints for classical weed biocontrol in developed countries; Post-release monitoring and evaluation; Integrated weed management and restoration. In addition to the oral presentations, there were more than 30 1-minute speed talks and 105 poster presentations. Five workshops were held during three evenings, as well as a panel discussion on Alien Invasive Plants: Do We Need to Control Them and If Yes, How?, to highlight the importance and potential of weed biological control in Europe.

Ms Strathie presented a poster: Strathie, L., den Breeyen, A., Sambo, S., Chidawanyika, F., Goodall, J., Gareeb, M. & Magoso, X. Evaluating establishment and impact of four biological control agents on *Parthenium hysterophorus* in South Africa.

Ms Strathie was a co-author on Cowie, B., Venter, N., Strathie, L., Goodall, J., Witkowski, E. & Byrne, M. New insights and prospects into *Parthenium hysterophorus* biocontrol from South Africa; this poster received a best poster award.

Ms Strathie attended workshops on (i) Arts and Science of Native Range Explorations, and (ii) The Nagoya Protocol and its implications for classical weed biological control. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, also known as the Nagoya Protocol on Access and Benefit Sharing (ABS), impacts on classical weed biological control for all countries involved in weed biocontrol. Difficulties have been experienced by many countries, including South Africa, in obtaining weed biocontrol agents from some native range countries, as a result of this Protocol. Presentations on the Nagoya Protocol were made by South American delegates and discussions were held around the experiences of different countries, and implications of the Protocol, to find a way forward. Interpretations of the Protocol differ among countries. No easy solution seems apparent and countries are still debating how ABS agreements apply to non-commercial uses.

During the Symposium, Ms Strathie met with Dr R. Muniappan, Dr Wondi Mersie, and Ms Lidya Alemayhu Chala to discuss IPM Innovation Lab *Parthenium* project matters regarding progress with biocontrol of *Parthenium hysterophorus* in East Africa. Ms Strathie also met with Dr Dhileepan to discuss parthenium weed biocontrol. Ms Strathie met with Dr George Heimpel, President of the IOBC Global Executive Committee, to discuss matters related to the IOBC Working Group on Biological Control and Management of *Parthenium hysterophorus*, which Ms Strathie currently convenes. Discussions included the forthcoming Third International Workshop of this Working Group, to be held in conjunction with the International Conference on Biological Control in Bengaluru, India in September 2018. Ms Strathie also met Dr Ronny Groenteman and Dr Barratt of the IOBC Global Executive Committee.

The formation of an IOBC Global Working Group for Classical Biological Control of Weeds, for ISBCW, was discussed at the Symposium and was supported by the majority of delegates.

Ms Strathie and Dr Angela Bownes (ARC-PHP Cedara) met with Dr Philip Weyl and Corin Pratt of CABI Switzerland and UK regarding contract research on the host-specificity of the biocontrol agent *Listronotus setosipennis* on *Parthenium hysterophorus* for Pakistan. A service agreement for this work was subsequently signed in November 2018 (until May 2019), to incorporate (i) host-specificity testing of the weevil *L. setosipennis* on *Helianthus annuus* cultivars from Pakistan, (ii) training in South Africa for Pakistani scientists, and (iii) provision of a starter culture of the weevil. A quarantine facility is being constructed at CABI, Pakistan to conduct host range research on invasive species. Research on biological control of *Parthenium hysterophorus* marks the first formal weed biocontrol project in Pakistan.

Ms Strathie hand-carried field-collected specimens of the pathogen *Cercospora dolichandrae* on *Dolichandra unguis-cati* from South Africa for research on this agent by CABI UK. Ms Strathie hand-carried *Arundo donax* material with the biocontrol agent *Tetramesa romana*, that Dr A. Bownes had collected in France, on return to South Africa, for research in quarantine at ARC-PHP Cedara, South Africa.

Attendance at this symposium was an invaluable opportunity to share experiences, gain information on current research and technologies, and develop networks which may lead to potential collaborative partnerships in future.

## Training Activities Conducted:

Program type (workshop, seminar, field day, short course, etc.)	Date	Audience	Number of Participants		Training Provider (US university, host country institution, etc.)	Training Objective
			Men	Women		
XV International Symposium on Biological Control of Weeds, Engelberg, Switzerland	26-31 August 2018	203 scientists from >100 institutes in 25 countries			CABI, Switzerland (conference organisers)	Participate in XV International Symposium on Biological Control of Weeds; present poster; engage with IPM Innovation Lab Parthenium project leaders and partners, and other symposium delegates.

## Suggestions, Recommendations, and/or Follow-up Items:

It is imperative that research on managing invasive alien plants using natural enemies continues as biological control is the most cost-effective and sustainable invasive alien plant management strategy for developing and developed countries. The ARC-PHP Weeds Research programme undertakes excellent research on classical biological control of invasive alien plants in South Africa and has assisted other countries. Research and collections of natural enemies of invasive alien plants in their native range relies heavily on networks and strong collaborations. Attendance at the weed biocontrol symposia provides an excellent opportunity for weed biocontrol researchers to expand networks for research, and current and future collaborations, as well as to showcase their research.

Attendance at the symposium provided valuable opportunities for weed biocontrol researchers to interact with foreign colleagues and collaborators, and to gain insights into new approaches and methodologies in classical and augmentative biological control. The symposia are held every four years, are well attended by renowned scientists in this field, and are highly relevant. The XVI ISBCW will take place in Puerto Iguazú, Misiones Province, Argentina, in May 2020, organised by FuEDEI in Argentina, and by FURB and the Universidad Federal do Viçosa in Brazil.

Ms Strathie will continue collaborations for the Virginia Tech IPM Innovation Lab project on *Parthenium hysterophorus* in East Africa, as well as with other interested countries regarding biocontrol of parthenium weed. Ms Strathie will continue to follow up on matters related to the IOBC Working Group on *Parthenium hysterophorus*. Ms Strathie organised the Third International Workshop of this Working Group, in Bengaluru, India from 27-29 September 2018, held in conjunction with the First International Conference of Biological Control.

### List of Contacts Made:

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