PhD student steps up fight against ragweed which is rated world's fourth most serious invasive weed

CABI is co-supervising a new PhD student who is stepping up the fight against one the common ragweed (*Ambrosia artemisiifolia*) which is considered the world's fourth most serious invasive weed.

The common ragweed, which originates from North America, is a nuisance to humans and agriculture. Its pollen causes a range of symptoms from sneezing to itchy eyes and aggravates conditions such as asthma and eczema. It is also a key weed in crop production such as in sunflower.

One biocontrol solution is a leaf beetle, called *Ophraella communa*, who's adults and larvae heavily feed on common ragweed whilst reducing its pollen shed. It is a successful biocontrol agent in east Asia, Italy, and Switzerland. Whether it will also perform well in the European hot spots of ragweed in Central Europe is unknown.

Dora Ivanyi is conducting her PhD research – to investigate the leaf beetle as a biological control agent for common ragweed – under the Plant Science Doctoral School at the Department of Integrated Plant Protection of the Hungarian University of Agriculture and Life Sciences (MATE) in Godollo in Hungary.

This is being conducted together with CABI's centre in Switzerland. She is being supervised by weed scientists Dr Zita Dorner and Dr Mihaly Zalai from MATE as well as by CABI's invasive species experts Dr Urs Schaffner and Dr Stefan Toepfer.

Moreover, entomology experts from the Hungarian Academy of Science and global ragweed expert Dr Heinz Mueller Schaerer from the University of Fribourg will also contribute towards supporting Ms Ivanyi's PhD research.

Scientists from the EU-COST Action on Sustainable management of *Ambrosia artemisiifolia* in Europe (SMARTER) – which was launched in 2012 with the aim of initiating and coordinating long-term management options to reduce ragweed in Europe – will also play a supporting role.

Ms Ivanyi's investigation includes ways to understand how the biocontrol agent *Ophraella communa* will be able or not able to reduce ragweed populations under different climates, such as in some of the hot and dry areas of central Europe.

This is of particular interest as climate change – with increasing frequency of extreme weather events – is also hitting central Europe. She will also study how to enhance existing control attempts – such as cultural control approaches – through the use of *Ophraella communa*.

PhD student Dora Ivanyi is studying the biological-based integrated weed management of common ragweed at MATE University of Godollo, Hungary, and CABI in Switzerland. From

left: Dr Heinz Mueller Schaerer, Dr Mihaly Zalai, Dora Ivanyi, Dr Zita Dorner, Dr Stefan Toepfer and Dr Urs Schaffner (Photo: CABI).

Dr Dorner said, “Ragweed is, next to causing human health problems, also the most important weed of wheat stubbles, maize and sunflower in Hungary according to the 6th national weed survey, 2018-19.

“It is important that a viable safer-to-use and more environmentally friendly biological control agent – such as *Ophraella communa* – is proven to be effective against common ragweed and we support Dora in her effects to research this prospect.”

In the long-term, it is hoped Ms Ivanyi’s research will help reducing airborne pollen concentrations in Central Europe to a similar extent as currently observed in northern Italy. This could relief millions of citizens from the yearly recurring allergic reactions.

Dr Mueller Schaerer said, “The evolvability of a target weed and of its biological control agent, when they interact, needs to be combined with further demographic studies of ragweed and *Ophraella* across their suitable areas in Europe. This is to identify those regions where a biological-based weed control approach is likely to reduce impacts of common ragweed.”

The PhD project is financed by the Hungarian state scholarship (magyar állami ösztöndíj) (2022-2026) as well as by ADOPT-IPM: EU-China joint action to increase development and adoption of IPM tools (HORIZON-CL6-2021-FARM2FORK-01-19).

Additional information

Main photo: PhD student Dora Ivanyi is searching for common ragweed`s major natural enemy, the leaf beetle *Ophraella communa*, in Hungary (Photo: Stefan Toepfer).

Relevant news and blogs

See also the news and blogs on common ragweed:

Study shows low risk of non-target attack of European plant species by hay fever-causing ragweed ‘bug.’

Managing the invasive allergen, Ragweed

Humble bug holds key to relieving millions of allergy sufferers in Europe

Relevant book

Read the CABI-published book ‘Invasive Species and Global Climate Change,’ edited by L.H. Ziska and J.S. Dukes, which has a chapter entitled ‘Ragweed in Eastern Europe.’