

Enhancing food production with bee–friendly pesticides

August 4 2020



Credit: CC0 Public Domain

The development of eco-friendly pesticides urgently required to protect crops will be accelerated with funding from the Australian Research Council.

Researchers from the University of Queensland, government and

industry will be developing pesticides from the butterfly pea plant that could help to reduce the 20–30 percent of [crop yields](#) eliminated by plant pests worldwide.

Professor David Craik from UQ's Institute for Molecular Bioscience will work with Mr Nicholas Watts and Mr Kerry Watts from Innovate Ag Pty Ltd, and Dr. Karen Kirkby from the NSW Department of Primary Industries (NSW DPI).

Professor Craik said his team were [world leaders](#) in harnessing cyclotides, circular mini-proteins made by plants, which are potent insecticides and antifungals.

"An ecofriendly pesticide called Sero-X, extracted from the butterfly pea plant, is already on the market due in part to this partnership," Professor Craik said.

"Sero-X is now successfully used on cotton plants and some vegetables, but a deeper understanding of how these active molecules work is crucial to allow it to be rolled out to other crops.

"One of the clear benefits of Sero-X is that it is non-toxic to bees, who are important pollinators of our food crops and under threat."

Pesticide qualities of the butterfly pea plant were discovered by Dr. Robert Mensah during his research for the NSW Department of Primary Industries when he noticed that the plant was not attacked by insects.

Since then, 79 different insecticide and antifungal properties have been characterised within the plant.

"Cyclotides are very stable molecules which make insects feel sick, so they avoid coming back to eat the plants," Professor Craik said.

Insects consume five to 20 percent of major grain crops and this figure is set to rise with [climate change](#).

Pests include [fungal diseases](#), which cost Australia's wheat and barley industry \$1 billion per year.

"Sero-X also exhibits antifungal properties, so we are testing to see if we can use it more broadly and on a wide variety of crops," Professor Craik said.

"We will investigate the environmental impact of these molecules after they have done their job by determining how long they persist in field runoff and waterways.

Innovate Ag will cultivate and harvest butterfly pea plants across Queensland and Professor Craik's lab will use these [plants](#) to identify more bioactive molecules.

"With the expertise of plant pathologist Dr. Kirkby from NSW DPI, we can characterise the modes of action of Sero-X and fast-track the development of the next generation of bio-pesticides," Professor Craik said.

"By protecting a wide variety of [crops](#) both here in Australia and overseas, we have the potential to generate significant and wide-reaching economic, social and environmental benefits."

Provided by University of Queensland

Citation: Enhancing food production with bee-friendly pesticides (2020, August 4) retrieved 11 May 2024 from <https://phys.org/news/2020-08-food-production-beefriendly-pesticides.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.