

Killer bees test a double win for Australian honeybees

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A genetic test that can prevent the entry of 'killer' bees into Australia and worldwide spread has been created by researchers at the University of Sydney and their collaborators at York University in Canada.

The news is of critical importance to Australia, which produces an estimated \$4 to \$6 billion of farm and garden crops that rely on honeybee pollination.

Australia faces the paradoxical problem of needing to import bees resistant to a pest that threatens to devastate Australia's bee population but being unable to do so while the risk of introducing 'killer' bees still exists.

"Having a tool that can identify desirable and undesirable bee subspecies will be of value to breeding and conservation programs throughout the world," said Dr Nadine Chapman from the School of Biological Sciences at the University of Sydney.

She is lead author of an article on the research published in *Molecular Ecology Resources* today.

"Pollination of crops by honeybees adds many billions of dollars to the world economy, so any strategy that can prevent losses is an important contribution to food security."

Before publication the work won Dr Chapman a CSIRO Biosecurity

Flagship Award.

The looming threat to Australian honeybees comes from the Varroa mite, present in all bee-keeping countries except Australia. It devastates colonies by sucking bees' blood and spreading blood-borne diseases.

School of Biological Sciences' researchers, working with the United States Department of Agriculture, have previously found that no Australian honeybees have resistance to the mite and it could destroy bee stocks within a couple of years.

"The answer is to import Varroa-resistant bee semen and [queen bees](#) so we can breed resistance into our bee stocks as a form of 'inoculation' that could protect our bees," said Dr Chapman.

"Until now this option has been restricted because Australian beekeepers are only able to import bees from the small number of countries that are free of 'killer bees', which originated in Africa.

"As the name implies, killer bees, (as Africanised bees are commonly called), are highly aggressive and are considered unacceptable for beekeeping. It is assumed that they would replace our current honeybee populations in the key beekeeping regions."

Dr Chapman worked with Professor Ben Oldroyd from the School of Biological Sciences and with researchers at York University in Canada, the US Department of Agriculture and the Agricultural Research Council in South Africa.

The researchers developed a test that identifies how much of three main ancestral lineages - Eastern European, Western European and African - are present. To lower the risk of killer bees coming to Australia, those with high African ancestry will be denied entry.

"Using this test Australia will be able to import honeybees, including Varroa resistant bees, from countries where [killer bees](#) are present, including the United States," Dr Chapman said.

More information: "A SNP test to identify Africanized honeybees via proportion of 'African' ancestry." *Molecular Ecology Resources*.
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Provided by University of Sydney

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