

How do we combat strawberry crop pathogens?

July 4 2014, by Geoff Vivian



In the strawberry industry, disease is mostly controlled by chemicals. Credit: Xiangling Fang

A microscopic fungus that kills up to one million strawberry plants each year in WA strawberry farms is the focus of research which aims to eliminate the need for chemical fungicides in crops.

UWA research associate Xiangling Fang concentrated on strawberries for her PhD dissertation, and continued researching strawberry disease control in her post-doctoral research, due to the high levels of fungicides and fumigants growers use.



"Mostly in the strawberry industry, disease is controlled by chemicals," she says.

"This is research into how to control the disease in a very environmentally friendly method—that's the purpose of this study."

Her PhD supervisor Martin Barbetti says growers used to fumigate soils with <u>methyl bromide</u>.

"Methyl bromide was really effective but became banned because of the residues going into the ozone layer," he says.

"They replaced methyl bromide with other fungicides and the alternative fungicides have probably not been as effective."

As a result, he says, growers found they had to make heavy use of fungicide-fumigant combinations.

"They had to do it every year if they were to have any chance to manage the problem so there is a huge amount of chemical going into the environment," he says.

Most damaging pathogens studied for non-chemical solutionsDr Barbetti says Dr Fang identified Fusarium wilt (*Fusarium oxysporum f. sp. Fragariae*) as the major killer of new strawberry plants.

It is featured in a series of her papers.

"She started by looking at all the pathogens which are on the <u>strawberry</u> <u>plant</u>, particularly below ground, and then of those worked out which ones were causing damage," he says.

She then researched various cultural techniques such as composting and



crop rotation to see if they affected the level of disease, and found possibilities for better management practices.

"[But] we always knew that if you really want to control the problem you need to have strawberry plants which are resistant to the problem," Dr Barbetti says.

"She screened some of the Australian cultivars and she found a cultivar which was quite resistant to Fusarium wilt.

"She then wanted to understand why some types of <u>strawberry</u> were resistant and why some were susceptible, and eventually try to understand within the Fusarim oxysporum wilt pathogen itself the variation in the pathogen.

"It's trying to show, at a molecular level, why different strains of the wilt pathogen are highly virulent, in other words cause lots of disease, or are less virulent and cause less disease.

"Nobody in the world had ever worked to try and understand that."

Read their latest paper <u>Differential protein accumulations in isolates of</u> the strawberry wilt pathogen Fusarium oxysporum f. sp. fragariae <u>differing in virulence</u>.

Provided by Science Network WA

Citation: How do we combat strawberry crop pathogens? (2014, July 4) retrieved 24 May 2024 from <u>https://phys.org/news/2014-07-combat-strawberry-crop-pathogens.html</u>

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.