Strawberry fields forever and fungus-free

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(Phys.org) —Strawberries are one of the most economically important berry crops in the world, and a high value export crop for the Australian horticultural industry.For the first time, researchers at The University of Western Australia have identified mechanisms that strawberry plants use to combat a serious strawberry fungus.

The research identifies the molecular mechanisms in which strawberry varieties respond to a devastating soil-borne fungal infection known as Fusarium wilt which poses a serious threat worldwide to commercial production.

The Fusarium wilt fungus penetrates through the roots and causes severe damage, yield losses and death to strawberry plants. Up to two million

strawberry plants annually die or are seriously damaged from this disease in Western Australia alone.

The researchers' work, published recently in the *Journal of Proteome Research*, will pave the way for developing new strawberry cultivars with improved resistance to the fungus. This will mean growers should be able to use fewer anti-fungal chemicals, with reduced input cost and improved outcome on human health and the environment.

The researchers' findings provide the first understanding of strawberry plant resistance at a molecular level so that more effective and sustainable disease management strategies can be adopted locally and nationally.

The researchers, from UWA's School of Plant Biology and Institute of Agriculture, determined the expressions and functions of different proteins (a study known as proteomics) in the roots of a resistant strawberry cultivar (Festival) and compared this to the expressions in a cultivar that is highly susceptible (Camarosa).

The researchers identified 79 fungus-responsive proteins across both cultivars.

"Proteomic approaches are powerful tools to understand the defence responses of plants against pathogens," the study authors write. "Proteins reflect the true biochemical outcome of genetic information and indicate the biochemical pathways that may be involved."

The lead author of the study was PhD student Ms Xiangling Fang. The co-authors were UWA's Winthrop Professor Martin Barbetti, Assistant Professor Ricarda Jost and Associate Professor Patrick Finnegan.

Provided by University of Western Australia