

Gene may help reduce GM contamination

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Credit: SC Department of Agriculture

Genetically modified crops have long drawn fire from opponents worried about potential contamination of conventional crops and other plants. Now a plant gene discovered by University of Guelph scientists might help farmers reduce the risk of GM contamination and quell arguments against the use of transgenic food crops, says Sherif Sherif, lead author of a new research paper describing the findings.

This is believed to be the first-ever study to identify a gene involved in

altering fruit trees that normally cross-pollinate - needing one plant to fertilize another - into self-pollinators, said Sherif.

The paper was published recently in the journal *BMC Biology*.

Sherif said researchers might one day insert this gene into GM [crops](#) to prevent their pollen from reaching other plants.

Plant agriculture professor Jay Subramanian, Sherif's PhD supervisor and a co-author on the paper, said: "There are a lot of [transgenic crops](#) worldwide. There is concern about pollen from them being able to fertilize something in the wild population, thus creating 'super weeds.'"

The researchers found a gene making a protein that naturally allows a small handful of plants to self-pollinate and make fruit before the flower opens. Peaches, for example, have closed flowers, unlike their showy-flowered plum and cherry cousins that need pollen from another tree to fertilize and set fruit.

Subramanian studies tree fruits at the Vineland Research and Innovation Centre in Vineland, Ont. Sherif worked with him on studies of plant responses to stresses such as drought or disease.

Other co-authors on the paper are Guelph professors Jaideep Mathur, Department of Molecular and Cellular Biology and Gopi Paliyath, Department of Plant Agriculture, along with Islam El-Sharkawy, a former research associate with Subramanian; and colleagues at the National University of Singapore.

Besides aiding crop farmers and food producers, their discovery might be a boon to perfume-makers, said Subramanian.

Used in fragrant perennials such as jasmine, the gene might keep flowers

closed and allow growers to collect more of the aromatic compounds prized by perfume-makers. "That's when volatile compounds are peaking," said Subramanian. "When the flower opens, you lose almost 80 per cent of those volatiles."

Most plants develop open flowers to attract pollinators, but it takes energy to make flowers as well as nectar and pollen. Subramanian said plants with closed flowers - called cleistogamous, or Greek for "closed marriage"—might have developed in environments lacking pollinators or under adverse conditions.

"This is the first time we know of that someone has shown that, using molecular tools, you can induce cleistogamy in plants," he said.

Provided by University of Guelph

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