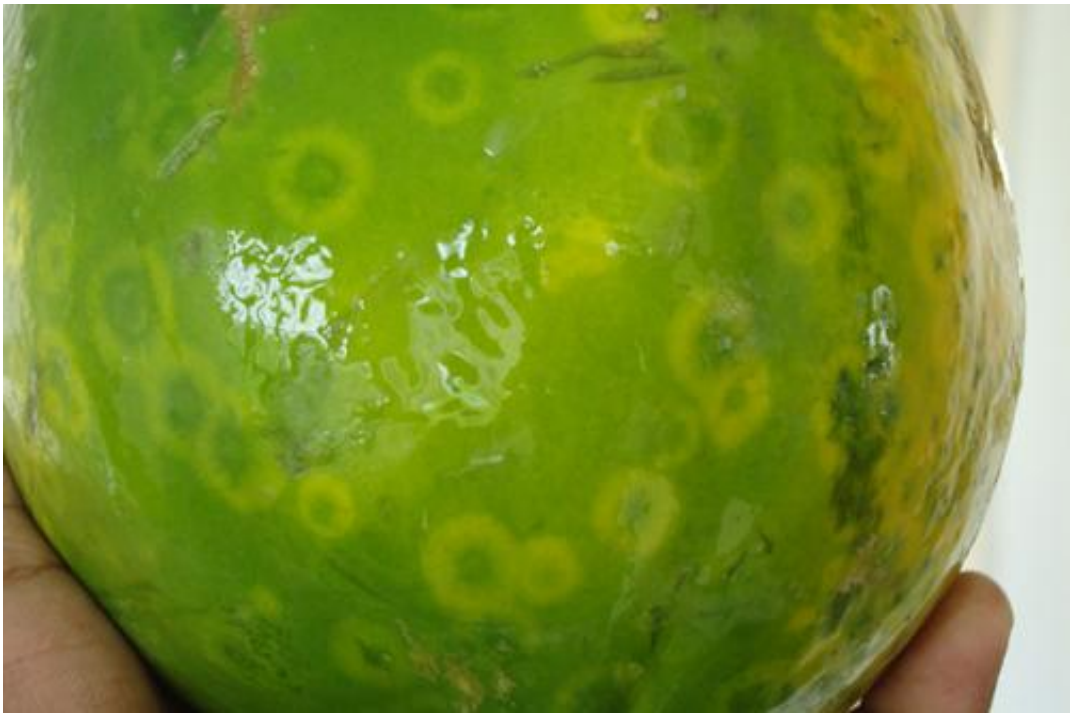
Mexican technology saves papaya production by detecting virus

January 6 2014



Mexico is considered one of the leading countries in papaya productions, but its crops are usually affected by the virus of the ringed spot, which leaves ring marks in the skin of the fruit and causes softening of the papaya, where fungi start to digest it. This is why the Center of Research and Advanced Studies of the National Polytechnic Institute (Cinvestav) designed a method capable of identifying the pathogens in just a day,

stopping the propagation inside the crop.

The system developed by Laura Silva Rosales and her team, part of the Laboratory of Virus-Plant Interactions, is comprised of plastic tubes filled with reactive, called detection cartridges. It's only necessary to deposit one of them in a sample of a leaf to determine, in one day, if it's infected by one or two of the viruses that usually attack papaya.

One of the main pathogens is the PRSV, or virus of the ringed spot of the papaya, although the crop is also affected by the PapMV or mosaic virus, which produces deformations or lesions in the leaves.

Silva Rosales says that the viral problem not only affects Mexico, but all the countries where papaya is cultivated. "Some infections are not dangerous, but if the temperature rises and, at the same time, there exists a precise combination of viral strains with plant genes, the infection goes into necrosis."

She adds that the developed cartridge is for laboratory use only, which implies shipping a sampling of leaves to the lab, which is not always practical for producers. Hence, Silva Rosales and her team are working in a field device that would give test results in just an hour.

"It is still in an experimental phase, and although the first tests have been effective, currently it gives results in two hours."

With this kit, the producer would only have to macerate a leaf of the plant, place it in the cartridge, add the reactive substance and wait for the results. The resulting color indicates negative or positive presence of one or both viruses.

Although the Mexican papaya producers have experts that can identify the presence of the viruses visually, they require a scientific backup and lab test that would allow them to know which plants are infected. "The visual detection can have a margin of error up to 20 percent," the researcher says.

Papaya crop is considered of great importance to Mexico, given that more than 80 per cent of the production is exported to the United States and, according to the Mexican Association Industry of Plant Sanitation

(AMIFAC), Europe and Asia are possible markets for 2014.

Hence the fruit has to comply with sanitation laws of other countries, being free of microorganisms and having the right appearance (no spots, indentations or softening of the fruit) is of most importance.

Provided by Investigación y Desarrollo