Food 'Tattoos' an Alternative to Labels for Identifying Fruit

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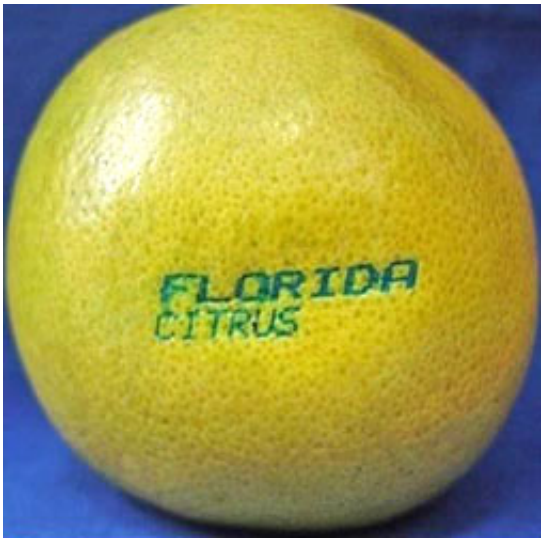

Laser "tattoo" technology now being tested by ARS and University of Florida scientists may one day replace sticky labels on produce.

(PhysOrg.com) -- Those small and sometimes inconvenient sticky labels on produce may eventually be replaced by laser "tattoo" technology now being tested by Agricultural Research Service (ARS) and University of Florida scientists.

Called laser etching, the new technology puts a tattoo on grapefruit and other produce so it can be identified at the supermarket checkout lines. The technology was invented by former UFL scientist Greg Drouillard, now with Sunkist Growers. Grapefruit has always been labeled with

sticky paper labels that mar the fruit and stick to one another in storage. The labels are also easily removed, making it more difficult to track a piece of produce back to the source if the need arises.

Microbiologist Jan Narciso at the ARS Citrus and Subtropical Products Laboratory in Winter Haven, Fla., and UFL researcher Ed Etxeberria investigated laser technology as an alternative to sticky paper labels.

A carbon dioxide laser beam was used to etch information into the first few outer cells of the fruit peel. The mark can't be peeled off, washed off or changed, offering a way to trace the fruit back to its original source. This permanent etching into the fruit peel does not increase water loss or the entrance of food pathogens or postharvest pathogens if the laser label is covered with wax.

Further testing shows the wax may be unnecessary, since the tiny holes etched into the grapefruit peel are effectively sealed by the carbon dioxide, preventing decay and food pathogen entry. However, wax coverage is recommended to eliminate water loss. In testing for fruit decay, the fruit was inoculated with decay organisms and then etched with the laser. No pathogens were found in the peel or the fruit interior.

Narciso and Etxeberria found that the laser cauterizes the peel, much like when a laser is used on human skin. The cauterized area is impenetrable to pathogens and decay organisms and resists water loss. Testing is also being conducted on tomatoes, avocado and other citrus fruits. The process would have to be approved by the Food and Drug Administration before it could be used commercially.

This research was reported in the scientific journal *HortTechnology*.

More information: horttech.ashspublications.org/