

Can we solve the problem of contraband foods?

LANCASTER — Each year 45 million travelers enter the continental United States. Along with the usual souvenirs and remembrances, these travelers often bring with them prohibited agricultural products which may carry exotic pests and diseases not normally found in the country.

Agricultural Research Service researchers and cooperators are working to solve what is a multibillion dollar problem—the detection of contraband products entering the United States, says Terry Kinney, Jr., acting administrator of Agricultural Research Service.

P. Gary Snyder, chief staff of-

U.S. Customs Service to examine incoming travelers' baggage for contraband.

Snyder said that with increasing numbers of travelers, especially air passengers, there is an urgent need for a mechanized detection method.

Currently, he concedes that a considerable amount of contraband agricultural products carried by travelers entering the U.S. gets through without detection. "The problem of imported pests is intensified," Snyder says, "because they don't have natural enemies in this country."

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ficer, Port Operations Development Staff of USDA's Animal and Plant Health Inspection Service, explained the research challenge laid out by APHIS.

"We need an inexpensive instrument that can quickly probe, look at, or sniff baggage as it moves across a conveyor belt, and detect contraband agricultural products," he said.

APHIS tries hard to maintain a tight barrier against introductions of plant and animal diseases and pests. The agency carries out this responsibility primarily by working with other border clearance agencies, such as the

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"It is difficult for travelers to believe that just one insect-infested orange, for example, can cause a widespread infestation leading to millions of dollars in lost agricultural crops, not to mention the additional millions of dollars spent for eradication measures," Snyder said.

Over a year ago, the



James Purcell (left) and Paul Magidman discuss infrared spectra used to fingerprint odors. A combination gas chromatograph and infrared spectrometer separates compounds in the odors and identifies them by distinctive peaks and valleys on a printout.

Mediterranean fruit fly, which had been eradicated in the U.S. in 1966, was discovered in California—perhaps arriving in a piece of fruit carried by an unsuspecting traveler. About \$28 million has already been spent by State and Federal governments to eradicate

the fruit flies. Additional millions and an aerial pesticide application program will be necessary before eradication can be achieved. And if medflies spread to all of California's prime agricultural areas, the loss of crops plus eradication measures could total \$450 to \$500 million per year—not to mention the costs of a serious infestation in Florida and other fruit- and vegetable-producing states.

In addition to crops, the American livestock industry could suffer tremendous losses from the introduction of foreign animal diseases. For example, Rift Valley Fever is an African viral disease affecting cattle, sheep, and humans. It recently increased in virulence and is now rapidly spreading to countries in the Mediterranean area. The disease is a serious threat because during the incubation stage, humans can unknowingly carry it to any part of the world where the disease can be introduced into the livestock population. Livestock losses can be

exceptionally high as recently experienced in Egypt where a 25-percent loss of the livestock population was attributed to Rift Valley Fever.

Pests like the khapra beetle, the Asiatic rice borer, the apple leaf roller, flag smut of wheat, and the giant African snail could all wreak havoc on U.S. agricultural productivity.

Reginald Handwerk, ARS national research program leader, Processed Fruits and Vegetables, said ARS research efforts are focused on three approaches to the contraband detection problem. One approach involves detecting food odors in luggage, another concentrates on identifying contraband through the use of x-rays, and the third utilizes sophisticated electromagnetic devices.

Any detection method must be able to deal with the wide range of objects and materials transported in luggage and the many designs

(Turn to Page B28)



Thomas Schatzki and Richard Young, electrical engineer, compare stored TV image of suitcase items with actual contents. The suitcase was opened after it emerged from the

x-ray scanner. Such comparisons will help Schatzki perfect an x-ray system to electronically detect contraband items.



James Cavanaugh explains how insects, spores, and larvae can be prevented from entering the United States by electronic detection of host items.