

Can we control contraband foods?

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and materials commonly used in luggage construction.

At the ARS Eastern Regional Research Center (ERRC), in Wyndmoor, Pa., researchers are attempting to identify the compounds responsible for the odors associated with contraband foodstuffs. Jim Purcell, research chemist, Physical Chemistry and Instrumentation Laboratory, explained that current efforts are aimed at identifying the volatile compounds in grapefruits, limes, passion fruit, mangoes, and coffee berries—fruits most often confiscated by APHIS—and fish and cured meats.

"Once the volatile chemicals in foods have been identified, they must be analyzed and evaluated in relation to other volatile compounds commonly carried in luggage, such as toiletry items and cosmetics, to establish methods for discrimination," Purcell explained.

"We are actually looking for a limited number of volatile compounds which could serve as indicators of all contraband fruits, vegetables, and meats.

"Certain chemical compounds such as limonene have been identified in lemons and limes. However, limonene is also present in many lemon- and lime-scented shaving creams and lotions. So any detection method must be sensitive enough to differentiate between limonene in the fruit and limonene in other products," he said.

Researchers at the Monell Chemical Senses Center in

Philadelphia are working with researchers at the ERRC to determine what background compounds might interfere with the detection of agricultural contraband.

"These might be odors associated with dirty laundry or perfumes and cosmetics," said John Labows of the Monell Center.

Purcell and Paul Magidman, research chemist, and Calvin J. Dooley, research physicist, at ERRC, are working with sophisticated analytical instruments that will separate and identify volatile compounds in agricultural products.

Once they catalogue the volatile marker compounds that will identify major contraband items of interest, the ERRC research team will study available methods for sensing them.

These methods are now in limited use in laboratory research. The primary question is whether adaptations can be made to meet APHIS' operating needs and budget limitations.

Another approach being investigated at the ERRC involves detecting carbon dioxide levels in the baggage.

"When fruits and vegetables are picked, they continue to breathe, giving off carbon dioxide," Purcell said. "In a closed surrounding, like a bag or suitcase, the level of carbon dioxide will be perhaps 100 times greater than the level of carbon dioxide found in the outside atmosphere."

James Cavanaugh, chief of ERRC's Physical Chemistry and

Instrumentation Laboratory, said that the instrument finally developed must be able to detect a given property related to contraband foodstuffs, produce a signal, and be ready for the next sample rapidly. It must do so repeatedly and reliably for long periods of time and be able to convert the signal into some type of alarm to alert the APHIS inspector. The instrument also must be rugged and easy to use.

"To accomplish all these goals will require extensive modification of any existing analytical instrumentation and may require development of new technology," Cavanaugh said.

Researchers at ARS' Western Regional Research Center, in Berkeley, Calif., have successfully used x-ray imaging to detect agricultural contraband in luggage.

T.F. Schatzki, research leader of the WRRC's Chemical and Structural Analysis Research Unit, explained that the x-ray imaging process is similar to that now being used in airports to detect weapons in luggage.

USDA reports USSR export sales

WASHINGTON, D.C. — Private exporters last Thursday reported

to the U.S. Department of Agriculture export sales of:

—400,000 metric tons of wheat for delivery to the USSR during the 1981-82 marketing year and the sixth year of the long term grain supply agreement;

—325,000 tons of corn for delivery to the USSR during the 1981-82 marketing year and the sixth year of the long term agreement; and

—100,000 tons of wheat for delivery to unknown destination during the 1981-82 marketing year.

The marketing year for wheat ends May 31 and for corn Sept. 30.

To date, the USSR has purchased 9,645,600 tons of grain for the sixth year of the long term agreement—Oct. 1, 1981, to Sept. 30, 1982. Of this amount, 4,829,700 tons are wheat and 4,815,900 are corn.

"So far we have been able to detect agricultural contraband items we know are in the luggage. The next step is to see whether it is possible to identify agricultural contraband if we don't know it is in the luggage," Schatzki said.

Snyder said APHIS will purchase x-ray imaging devices for field testing in the near future.

"One machine will be sent to Hawaii for pre-departure inspection of luggage," he said. "The other will be used by the APHIS Methods Development Laboratory in Hoboken, N.J., to test various contraband elements and to develop videotapes of contraband images for training inspectors."

Further sophistication of the x-ray system to electronically recognize images of contraband items will be Schatzki's next goal.



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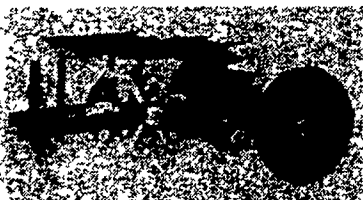
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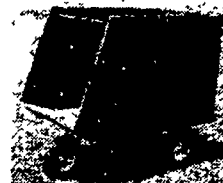
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