

Variety Of GMO Tests Are Available To Farmers

COLUMBUS, Ohio — Farmers who grow non-GMO (genetically modified organism) crops for specialty markets can utilize a variety of tests that determine whether or not their crop is truly GMO-free.

Ohio State University researchers have outlined a number of tests available that measure the level of herbicide and insect tolerance of such crops as corn or soybeans. "These tests are commonly used by grain elevators, crop consultants and others when they check grain before it's sent off to market," said Ohio State agronomist Peter Thomison.

Thomison said such tests could tell farmers what percentage of their crop, if any, contains GMOs, and would allow them to compete in national and international markets where non-GMO certification standards are strict.

Currently the standard for GMO certification is set at zero tolerance, although several proposals have been developed to set the maximum allowable levels between one and three percent. Japan recently established new legislation that sets a zero tolerance for seed and food imports containing unap-

proved biotech material. StarLink corn is an example of such a product. Japanese legislation also outlines food products containing less than five percent of approved biotech crops to be labeled as non-GMOs. The European Union (EU) has also proposed rules on the labeling of foods containing GMOs, stating that accidental traces of GMOs would be allowed in food and feed up to a maximum of one percent without being subject to labeling requirements.

"I would imagine a grower would be in quite a bind if the contamination level of his crop exceeded that one percent or the tolerance level that is set by the end user. He'd have to sell his corn or soybeans at the conventional market," said Thomison. "This is something that organic producers are concerned about. They want to make sure their end users are willing to take their products and these tests will help them achieve that."

The most common types of GMO tests used include herbicide bioassays, ELISA (enzyme-linked immunosorbent assay) tests and the PCR (polymerase chain reaction) method.

Herbicide bioassays are

used to detect GMO herbicide-resistant traits in Roundup Ready and Liberty Link soybeans. The test involves placing seeds in a germination medium containing diluted solution with the herbicide or directly spraying the seeds with the herbicide. Seeds that develop normally test positive for the GMO herbicide trait, while those that die or do not develop normally are considered GMO-free. The assay is inexpensive (\$20-\$30), but takes up to a week to obtain results.

ELISA tests detect for the presence of a specific protein that the GMO DNA produces in the plant. Several versions of the ELISA test exist, including the "strip test" or "dipstick" procedure that uses lateral flow strips and delivers results in two to five minutes, and the "plate test" that uses color intensity to determine what percentage of the GMO is present.

The PCR method is more accurate than ELISA tests in that it measures exactly where the GMO is present on the DNA gene sequence. The PCR method is advantageous due to its sensitivity, but takes up to three days to complete and is expensive (\$75-\$300 per sample).

"A typical procedure for a

food-grade corn or soybean producer, for example, might be for him to test samples or ask a certifying association to come out and monitor his field throughout the season," said Thomison. "The association would then certify his field as non-GMO and finalize the procedure by taking samples of grain from the field and checking it in their lab. The grower would then present that certification to the end user, who would probably turn around and retest the product again."

Thomison said the tests are designed to identify traits of different GMO "events," such as Bt-corn, or Roundup Ready or Liberty Link herbicide-resistant soybeans. He said end users would subject a farmer's grain to a battery of tests based on the types of crops grown in Ohio and how prevalent the GMO "events" would be. Currently six GMO "events" exist. Rootworm Bt, a new GMO "event", is expected to be released to the market next

year.

"While there is a sizable number of farmers who want GMO crops, there are also a number who don't want them either. Some farmers don't want GMO crops because they have reservations about possible risk to human health and adverse effects to the environment. Others are somewhat indifferent to the GMO issue and are trying to take advantage of the market that is there," said Thomison.

"The industry hopes that the furor of GMO products will die down when the public sees there are no negative issues resulting from the use of GMO products," said Thomison. GMO corn grown in Ohio is less than five percent, while GMO soybeans with regard to Roundup Ready tolerance is nearly 70 percent.

For a list of labs that test crops for GMOs, log onto Ohio State's C.O.R.N. newsletter at <http://corn.osu.edu/archive/2001/sep/01-31.html#linkc>.



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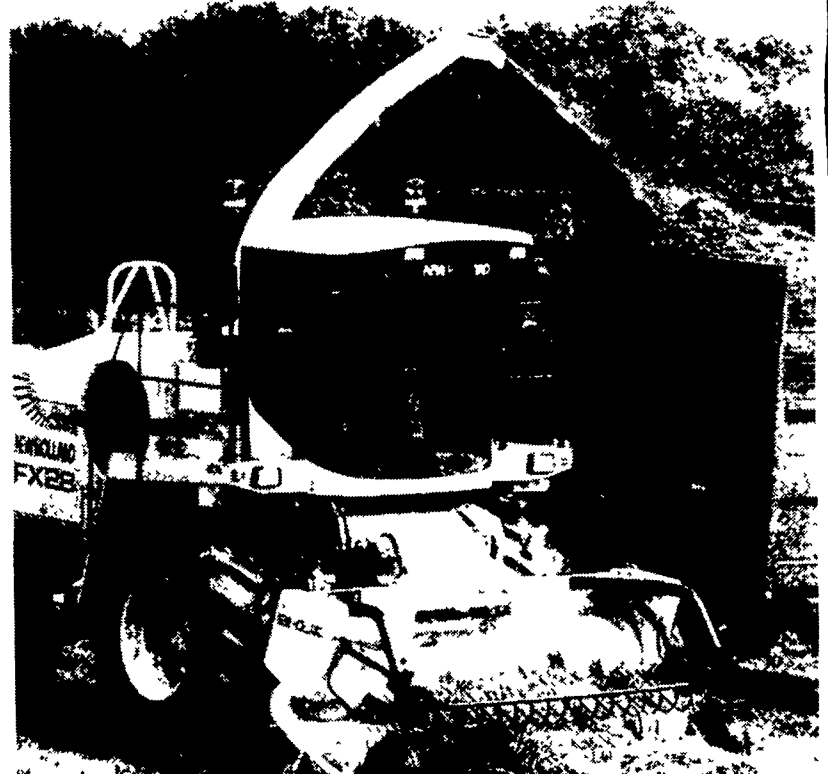
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