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Scientists scramble to find alternatives to banned pesticide

By Elliott Minor

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TIFTON, Ga. - University of Georgia scientists are part of an international effort to find an earth-friendly replacement for methyl bromide, a lethal farm fumigant that was supposed to be banned in the United States and 32 other industrialized nations last year after it was found to damage the ozone layer.

Although officially prohibited, methyl bromide is still used as a pesticide on a limited basis for some crops, such as strawberries and tomatoes, for which there is no effective alternative.

"It kills basically everything," said University of Georgia plant pathologist Alex Csinos.

Methyl bromide has served farmers well since the 1940s as a stunningly lethal soil fumigant for all types of pests: fungi, weeds, insects, micro-organisms and rodents. Because it was colorless and odorless, it was often mixed with a small amount of chloropicrin - tear gas - to warn people of its presence.

Csinos said farmers liked methyl bromide because it was cheap, efficient and it dissipated in a few days, allowing them to return quickly to their fields.

The alternatives that are being developed may involve using a "cocktail" of chemicals that are more expensive, more costly to apply, less efficient and possibly toxic for days or weeks, he said.

The methyl bromide phase-out is a result of the United Nation's 1992 Montreal Protocol, which identified the gas that damages the stratosphere's layer of ozone, a form of oxygen, that filters the sun's ultraviolet radiation. Humans would be at greater risk of skin cancer and other health problems with further ozone depletion.

Industrialized countries were supposed to phase it out by Jan. 1, 2005. The deadline for developing countries is 2015.

Csinos and other researchers at the university's Coastal Plain Experiment Station in south Georgia have been testing an alternative fumigant in a one-quarter acre test plot. Their work is funded by the federal Agricultural Research Service.

Over the past 20 years, a flourishing vegetable industry has developed in the area, where the mild climate allows farmers to grow them year-around. Growers cover their rows with plastic, which gives them more control over the growing conditions. They fertilize and water the crops through plastic tubes buried in the soil.

Csinos' test rows also are covered with plastic and have the usual irrigation tubes, but the similarity ends there.

Sprouting from the rows are small clear, plastic tubes for collecting gas samples and larger black tubes attached to gas cylinders for pumping the test fumigant under the plastic. Buried in the ground are 24 electronic sensors to measure water distribution in the bed. Periodically, the researchers place bags loaded with micro-organisms under the plastic through slits to check the fumigant's distribution and killing power.

"We're trying to determine how well it distributes and how well it kills specific pests," Csinos said. "That is the scientific unknown."

Gary Obenauf, manager of Methyl Bromide Alternatives Outreach, said Csinos and his team of researchers are among a network of scientists around the world searching for alternatives.

Obenauf's group has been hosting annual conferences on the research since 1994. These meetings normally attract about 300 scientists from up to 30 countries.

The use of alternative chemicals, plus cuts in the production and importation of methyl bromide, have already reduced the agricultural use of the fumigant by more than 70 percent since 1991, the U.N.'s baseline year, Obenauf said.

"We're making progress," said Obenauf, a farm consultant in Fresno, Calif. "But unfortunately, we still have gaps. We still have places where we don't have viable alternatives. Those are the areas where we are really concentrating the research. ... Without tremendous amounts of money, there is no quick fix, so it's just taking time to go through this."

The methyl bromide ban covered only the quantity used for soil fumigation and post-harvest fumigation, for example killing pests that get on cheese and country-cured hams.

The ban did not reduce the amount used for quarantine fumigation, such as killing moths on U.S. produce bound for Japan, or ridding imported grapes of bugs before they are shipped to supermarkets.

The U.N. agreed to allow "critical exemptions" beyond last year's deadline on a few crops. The California Strawberry Commission and the Florida Fruit & Vegetable Association were among a handful of groups that requested and received exemptions.

"It's not dodging the protocol to ask for exemptions because that is part of the protocol for phasing it out," said Ken Vick, who heads the U.S. Agriculture Department's methyl bromide alternative program. "There has been a steady decline in the amount that has been approved for exemptions."

Elliott Minor has covered Georgia agriculture and rural issues for The Associated Press since 1984.

On the Net:

Agricultural Research Service:
http://www.ars.usda.gov/research/programs/programs.htm?np_code308&docid282