Response to the EPA action on methyl parathion and azinphos-methyl

The EPA (Environmental Protection Agency) has announced the banning of one pesticide, methyl parathion, and restrictions on use of another, azinphos-methyl. This action was anticipated to a certain extent as a result of congressional passage of the 1996 Food Quality Protection Act. What will this action mean to fruit growers in Washington?

Methyl parathion

Methyl parathion is used annually by 20 to 30% of Washington’s apple growers. Pear and cherry growers do not use, or use very little, methyl parathion in their pest control programs. Methyl parathion has been used primarily as a last resort or "rescue" treatment to protect apples from the attack of pests such as leafrollers and codling moth, especially codling moth populations that have developed resistance to azinphos-methyl. If suitable alternatives are not available to protect apples, then 5-10% of growers would be expected to lose 1-2% of their crop. This would translate into a loss of $40-80 per acre or, for the apple industry of Washington, a loss of $300,000-600,000 per year.

It is unlikely that loss of methyl parathion will have a sudden and dramatic impact on most Washington apple growers. Chlorpyrifos (Lorsban®) is available as an alternative for leafroller and codling moth control in summer. Washington State University (WSU) research has demonstrated the utility of bacterial insecticides, Bacillus thuringiensis (Bt), for leafroller suppression. WSU research has also developed information and strategies for using newly registered insecticides, such as spinosad (Success®) and tebufenozide (Confirm®), for management of leafrollers and codling moth. These newly registered insecticides are more expensive than methyl parathion or alternatives like chlorpyrifos. They are also not fast acting; that is, they do not act on contact so are not good "rescue" treatments. Alternative control tactics, such as mating disruption, have also been developed to manage codling moth populations resistant to azinphos-methyl. A real concern for Washington apple growers is what will be available to control pests like stink bugs or the lacanobia fruitworm or the next new pest that appears? The most likely outcome resulting from a loss of methyl parathion will be more expensive pest management programs and possibly higher fruit prices for the consumer.

Azinphos-methyl

Azinphos-methyl is used in Washington fruit orchards to combat several pests. It is effective for the control of codling moth, cherry fruit fly and grape mealybug. It is used on most (90-95%) of Washington’s apple orchards, primarily to control codling moth. An average of 3 applications of azinphos-methyl is made per year. Three to 4 lbs. (active ingredient) of azinphos-methyl are used each year by Washington apple growers. Therefore, the action of EPA to reduce the maximum allowable annual use of azinphos-methyl from 6.0 to 4.5 lbs. (active ingredient) should impact only a few growers, those with the most severe pest problems. The restriction of azinphos-methyl should not place an extreme burden on most of Washington’s apple growers.
Why has azinphos-methyl been used by fruit growers in Washington? It has been the most effective insecticide for controlling certain pests, it has allowed survival of certain biological control agents that are key parts of Washington’s integrated pest management (IPM) efforts, and it has been economical. If growers have to shift to alternative products their IPM programs will become more expensive. A single application of azinphos-methyl costs about $15 per acre. The cost of a likely alternative, phosmet (Imidan®), would be about $25 per application and would require one or more additional applications to achieve codling moth control equal to azinphos-methyl. Use of a newly registered insecticide, tebufenozide (Confirm), would cost $35-40 per application, and it is not highly effective against codling moth. None of the alternative insecticides (new or old) is as effective as azinphos-methyl for codling moth control.

Have apple growers in Washington been trying new technologies in an attempt to reduce the use of products like azinphos-methyl? The answer is a definite yes! Mating disruption, a technology which confuses the codling moth with its own sex attractant, has been used since 1991. Research in Washington has shown mating disruption to be a reliable control for codling moth; however, in most situations it must be supplemented with insecticides to achieve acceptable crop protection. In 1999, Washington apple growers applied codling moth mating disruption products on about 60,000 acres, or nearly 35% of the state’s apple acreage. Use of mating disruption has reduced insecticide use in many apple orchards by 1 to 2 sprays per year. The cost of mating disruption is $55 to $110 per acre compared to the cost of a typical insecticide control program of $45 per acre. New restrictions on the use of azinphos-methyl will likely encourage more growers to adopt mating disruption as part of their codling moth management program at an increased cost of $25 to $75 per acre, the cost of mating disruption plus supplemental insecticides.

There is little doubt that mating disruption as a control for codling moth has been very effective in many apple orchards. However, this tactic affects only one pest, the codling moth. Other pests have increased as problems in orchards using codling moth mating disruption. In particular, leafrollers have increased as a problem. Additional controls for leafrollers have added to the cost of IPM programs by $15 to $30 per year. New pests, such as the lacanobia fruitworm and stink bugs, are starting to show up in codling moth mating disruption orchards and causing crop losses as high as 10%.

The most likely scenario resulting from the EPA decision on azinphos-methyl is that Washington’s apple growers will use more codling moth mating disruption, more insecticides for control of other pests, and will lose more of their crop to secondary pests. The cost of IPM programs on apple will most likely increase by $40-100 per acre, or an annual increase of $6-16 million for Washington’s apple industry. Expected increases of crop damage by secondary pests of 0.5% will mean an additional loss of $4 million each year.

Will Washington’s apple growers survive this latest EPA action against methyl parathion and azinphos-methyl? Yes, they will be able to adjust their IPM programs and still protect their crops from pest attack.
Will the cost of apple IPM programs increase? Yes, probably in the range of $50-75 per acre in most orchards.

Will losses in apple and other crops increase? Yes, over time crop losses will be expected to rise 0.1-0.5% ($0.8-4 million), due primarily to activities of secondary pests.

Are Washington’s fruit crops safe for people to eat? There is little doubt that they are as safe today as they will be in 2000. EPA’s action on methyl parathion and azinphos-methyl stems from requirements of the Food Quality Protection Act. Even the EPA administrator, Carol Browner, states that fruits currently treated with these "old" insecticides are safe. The regulation over pesticides prior to FQPA has provided a very high degree of safety for consumers and the environment. The FQPA seeks to reduce risks even further, especially for children, and who can argue with that?

Jay F. Brunner
Director and Entomologist
Washington State University
Tree Fruit Research and Extension Center
1100 N. Western Ave.
Wenatchee WA 98801
Phone: 509-663-8181 ext. 238
FAX: 509-662-8714
Email: jfb@wsu.edu