

Section II

Bee Poisoning, Environmental Toxicology, Regulatory Issues

INSECTICIDIAL PACKAGE MIXES: GREAT DEAL FOR GROWERS OR THE DEATH OF IPM AND AN INVITATION FOR INSECT RESISTANCE

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For the past five years, the only commonly used insecticidal package mix product registered in the Pacific Northwest was Leverage (Bayer CropScience), a combination of the neonicotinoids, imidacloprid, and the pyrethroid, cyfluthrin. For the past four years this product has been the most widely used insecticide on potatoes in the Pacific Northwest. In the past six months five additional insecticidal package mixes have been registered on various crops in the PNW, although potatoes has been a primary target for all of them. Interestingly two companies, Syngenta and FMC, are responsible for all five. Several other companies are engaged in research and development for more than a dozen other combinations or look-a-like products. Since some products will contain only off patent products, generic versions will undoubtedly soon follow.

Insecticidal package mixes share some common features, five of the six contain a pyrethroid. Three of the six contain a neonicotinoids. Most future package mixes are expected to contain one of these two classes of chemistries and most will contain both. Five of the six contain one post patent product.

Registrant motivations are several. Many products contain a single post patent product combined with a patented protected product. The combination of the two products affords some protection and allows an increased financial margin to be included in the cost of the product. A second common motivating factor is the increase in spectrum of control. A third factor is increased efficacy. Grower's like package mixes because they tend to be broad in spectrum, highly effective and often the products are priced comparably to single ingredient products. The combination of registrant and grower motivation is a potent force that will drive increased reliance on this type of product.

Pest management professionals with responsibility for creating, implementing and delivering integrated pest management programs prefer products that are selective for target pest insecticides and that minimize negative impact on beneficial organisms. WSU tree fruit IPM guideline recommenders will not include a package mix in their recommendations. The PNW potato insect IPM guidelines include an extended period that contains a pyrethroid prohibition that excludes the use of most package mixes.

Colorado potato beetle has developed resistance to pyrethroid insecticides in Idaho and to neonicotinoid insecticides on the East Coast and in the Mid West. Currently neonicotinoids are commonly used at planting time in potatoes. Due to concerns associated with resistance development, all current neonicotinoid labels contain a prohibition on foliar use if a product of that class has been used at planting. This prohibition is based on a joint voluntary agreement among base manufacturers of neonicotinoids. With the widespread use of package mixes coming to the PNW it is likely that use of neonicotinoids and pyrethroids will increasingly be used whether a particularly active ingredient is the appropriate choice. With the increase in generification of neonicotinoids and pyrethroids, it is likely that reliance on these classes will increase.

The increased use of insecticidal package mixes has the potential to negatively impact beneficial populations, flare secondary pest outbreaks and foment the development of resistant insect pest populations. Careful consideration should be made on use of package mixes when developing or implementing insect IPM programs.