

Pesticide Resistance Management – What to do??

As all growers know, many pests (plants, insects and diseases) can develop resistance to most pesticides applied to protect tree fruits from losses due to their presence. To avoid development of resistance, growers are constantly reminded to follow a pesticide resistance management (PRM) plan that is based on rotation of chemical groups within each pesticide category (insecticides, fungicides, herbicides). But how does one go about designing a proper PRM plan? This article describes four steps to implementing a successful PRM plan.

Step 1: Learn about the pesticide Group Number classification system by reading Section 15 of the *Integrated Fruit Production Guide* which contains a table of recommended pesticides sorted according to their Group Numbers. The Pesticide Management Regulatory Agency (PMRA) adopted this classification system to make it easier for growers to identify control products that belong to the same chemical group within each pesticide category. Products with the same Group generally kill their target pests the same way.

The Group Number is printed on the front of every pesticide label:

Group	4	Insecticide
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This system is much simpler to use than trying to remember what chemical group each product belongs to which are not printed on labels (e.g. organophosphates, diacylhydrazines, acylalanines, bipyridyllums).

Resistance to one product in a group generally causes resistance to all other products with the same Group Number. Repeated use of a single product or of products with the same Group Number will select for insects/mites, weeds, or disease pathogens that are already somewhat resistant. The pest population gradually becomes more and more resistant until field failure occurs – no control even when the product(s) is applied according to label instructions.

Step 2: Create a list of the pesticides along with their Group Numbers that you plan to use against each of the pests that may appear in your orchard. Follow the production guide Spray Schedules which list the Group Number for each pesticide recommended as the growing season progresses. Make sure that no products with the same Group Number are applied consecutively (preferably not more often than every third application per pest). For example, Admire, Alias, Assail, Calypso, Actara, and Clutch along belong to Group 4. Therefore do not list any of these products one after the other against a specific pest. Also, limit the use of products that have a high risk of resistance development such as fungicides with Group Numbers 3 or 11.

Step 3: Apply the correct rate of product/ha at the correct timing using a calibrated, well maintained and properly operated sprayer. Pesticide resistance is often identified as the reason for poor pest control when poor mixture preparation, application or timing are the real culprits. The target pests do not take in enough pesticide to be killed because they can break it down before it does any harm. This will also contribute to development of pesticide resistance.

Step 4: The most important step – follow the planned sequence of pesticide applications and keep accurate records of every application using the reporting forms in the production guide. These records will help determine if poor control was due to increased pest tolerance, poor mixing and/or application, or some other factor.

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