

What Are the “New” Pesticides for Use in Greenhouse Production Systems?

Question: *I am wondering if you could provide an update on the “new” pesticides (insecticides and miticides) that can be used against insect and mite pests of greenhouse-grown horticultural crops.*



Raymond A. Cloyd is professor and Extension specialist in horticultural entomology/plant protection at Kansas State University. He can be reached at rcloyd@ksu.edu.

Answer: You ask a very good question. What constitutes a “new” pesticide? In general, a “new” pesticide should contain a new active ingredient with a novel or new mode of action. However, companies often claim a pesticide is new although it is just a re-formulation or is a pesticide mixture. The “new” pesticides that will be discussed in this article include: Altus, Pycana, Novato, Ventigra, Sarisa and Pradia.

Altus (Bayer Environmental Science) contains the active ingredient flupyradifurone. The insecticide is registered for use in greenhouses (ornamentals and vegetables) and outdoors (fruit and nut trees). The restricted entry interval (REI) is four hours; except for California where the REI is 12 hours. The targeted

insect pests in which the insecticide is labeled for include: aphids, leafhoppers, mealybugs, plant bugs, psyllids, certain scales and whiteflies. The mode of action of flupyradifurone is as a nicotinic acetylcholine receptor modulator [Insecticide Resistance Action Committee (IRAC) designation — 4D], which is very similar to the neonicotinoids (IRAC designation — 4A). The label states the following in regards to bee activity: toxic to adult bees in laboratory studies via oral exposure, however, not toxic to bees through contact exposure, and field studies conducted have shown no effects on honey bee colony development.

Pycana (OHP Inc.) contains two active ingredients: pyrethrins and canola oil. The pesticide is registered for use in greenhouses, shadehouses, nurseries, hoophouses and container-grown nursery crops (ornamentals and vegetables). The REI is 12 hours. The targeted insect and mite pests on the label include: aphids, mealybugs, spider mites, thrips and whiteflies. There are two modes of action: prolong opening of sodium channels (IRAC designation — 3A), and suffocation or membrane disruption. In regards to bee activity, the label states that the product is highly toxic to bees when exposed to direct treatment on blooming crops and weeds.

Novato (OHP Inc.) is not really a “new” pesticide, but has undergone several changes in the trade name (Ovation, then Applause, and now Novato). The active ingredient is clofentezine. The pesticide is registered for use in greenhouses, saran and shadehouses, outdoor containers and field-grown nursery stock. The REI is 12 hours. This pesticide is strictly a miticide with activity only on mites, including the twospotted spider mite (*Tetranychus urticae*). The mode of action of clofentezine is as a growth and

embryogenesis inhibitor (IRAC designation — 10A), which is the same mode of action as hexythiazox (Hexygon). It has demonstrated minimal direct negative effects on certain predatory mites.

Ventigra (BASF) is a “new” insecticide with the active ingredient afidopyropen. The insecticide is registered for use in greenhouses, shadehouses, and interiorscapes, and can be used on vegetable transplants. Activity against insect pests occurs primarily by means of ingestion (stomach poison) and the insecticide has translaminar properties. The insecticide is registered for use against aphids, mealybugs, scales and whiteflies. The REI is 12 hours. The mode of action of afidopyropen is as a selective feeding blocker/chordotonal organ TRPV channel modulator (IRAC designation — 9D), which is similar to pymetrozine (Endeavor — 9B), pyrifluquinazon (Rycar — 9B) and flonicamid (Aria — 29). Plants that are sensitive to the insecticide include: coleus, poinsettia (in bract), and impatiens and petunias (in flower). In regards to bee activity, the label states that although Ventigra is not acutely toxic to bees, the use of the maximum single application rate may have some short-term behavioral effects on adult bees; however, no long-term impacts on bees and colony health are expected.

Sarisa (OHP Inc.) contains the active ingredient cyclaniliprole. The insecticide is registered for use in greenhouses, shadehouses, and nurseries. Insect pests on the label include: caterpillars, mealybugs, thrips and whiteflies. The REI is four hours. The mode of action of cyclaniliprole involves selective activation of ryanodine receptors (IRAC designation — 28). This is the same mode of action as chlorantraniliprole (Acelepyrn) and cyantraniliprole (Mainspring). The insecticide is highly toxic to bees and other pollinating insects exposed to direct exposure or to residues in/on blooming crops and weeds.

Pradia (OHP Inc.) contains two active ingredients: cyclaniliprole and flonicamid. This insecticide is basically a combination of Sarisa (cyclaniliprole) and Aria (flonicamid). It is registered for use in greenhouses, shadehouses and nurseries. Insect pests on the label include: aphids, caterpillars, mealybugs, thrips and whiteflies. The REI is 12 hours. The mode of action involves selective activation of ryanodine receptors (IRAC designation — 28) and selective feeding blocker/chordotonal organ modulator (IRAC designation — 29). The insecticide is highly toxic to bees and other pollinating insects exposed to direct treatment or to residues in/on blooming crops or weeds. [gpn](https://www.gpn.com)