

Insect Control Using Biology

Protecting plants from damaging insects has never been easy. Many chemical based insecticides are available for killing most insects, but repeated and accurate applications must be made. This means using the right product in the right way at the right time but also taking the weather into account. Freshly applied pesticide will not kill insects if it rains right after application and washes it off the plant.

Each year, more pest management options become available as well as ones that are not chemically based. Many of these are based on naturally occurring biological ingredients. They are called biorational products or perhaps living organisms or other insects that eat the bad insects. The latter are called biological controls.

Aphids are a common little soft bodied insect that sucks out plant juices and are often abundant on many kinds of flowers and vegetables. Besides direct damage, aphids can also transmit viruses to plants.

Biorational products that can be used for aphids are Neem (Azatin, Ornazin), BotaniGard, insecticidal soap, horticultural oil and pyrethrums. Soap and oil kill on contact and have no residual activity, so complete coverage is critical. BotaniGard is a pesticide that contains spores of the insect pathogen, *Beauveria b.* The spores germinate after being ingested by the aphid and the fungus grows inside the aphid and kills it.

Neem is an extract of a tropical tree called Neem and it is very effective against many other insects besides aphids. It will kill caterpillars, leafminers, mites and whiteflies.

Two-spotted spider mites attack many kinds of plants. They travel by spinning fine filaments of thread and then drift in the wind until they reach another suitable plant. Besides Neem products, horticultural oil is effective by smothering the mites, so coverage of the entire plant is critical.

My roses are sometimes attacked by thrips. Thrips are almost microscopic in size but you can see damage on rose buds which usually appears as scarred, stunted or distorted foliage or buds or flowers. Thrips can also be carriers of certain viruses that damage plants as well.

Neem and BotaniGard can be used in a pesticide rotation with conventional chemicals for control of thrips. Because BotaniGard takes a while to infect the thrips through the spore process, it is best used in the spring and fall when thrips numbers are typically lower. A product called Garlic Barrier does not kill thrips but acts as an effective repellent so it should be used as a preventative and will need to be reapplied before the plants become infected.

According to a recent news release, the Agricultural Research Service has developed a new class of insecticidal compounds to offer safe and effective alternatives to conventional chemical insecticides.

The active ingredients are based on sugar esters that are natural chemicals secreted by wild tobacco plants to protect themselves against insect predators. When certain insects rub up against and chew on the plants' leaf hairs, the insects become

contaminated with the compound and die. The sugars break down the insect pests' outer waxy coating. Then the insects lose water and die from dehydration.

The new class of compounds is unique among insecticides because their active ingredients do not leave a detrimental residue on surfaces to which they are applied.

Grandma always said a craving for sugar could be harmful.