

In-Hive Pest Management

Beekeepers deal with all types of pests in their managed hives on a daily basis. These pests range from bacterial, viral, fungal, insects and vertebrate pests. As in all agriculture, there are EPA registered pesticides to control these pests that must be used correctly to protect the bees and keep honey unadulterated. Using pesticides in a colony of managed insects is challenging. Applying the correct amount to be lethal to the pest, yet non-lethal to bees is tedious. Some of the newer pesticides and devices that are EPA registered are non-traditional chemistry and devices. Pesticide regulatory agencies are seeing new products and internet remedies come into the marketplace that have not been registered by the EPA, creating confusion for beekeepers as to which products can be legally used in hive treatments.

With concerns of pesticide use in cropping systems at the forefront of the controversy of the decline of pollinators, we must also consider the pesticides used in the management of honeybees that can have adverse effects within the hive on queens, larvae, and young bees. The past several years have seen a spike in the interest in beekeeping among the public. With this increased interest, it has created an educational dilemma to train these new beekeepers and being able to disseminate accurate information on bee hive pest management. The professional beekeepers are seeing a changing industry also. Being able to adjust to new pest pressures and pest control products is a challenge. It is best, to seek out pest control advice from NC State Cooperative Extension Publications. Always remember to look for the EPA Registration Number on pesticides products. If the number is missing then it has not been registered by EPA.

Major changes since the 70's to the bee industry have included the introduction of new pests such as tracheal mites, varroa mites, and small hive beetles. Not only do these pests cause issues for bees, they can also introduce viruses into the hives. With the fast-reproductive cycles of these pests, resistance is inevitable to any miticide or insecticide, especially if the products are not used in accordance with their labels.

Several changes have occurred in the past several years in the beekeeping industry. Colonies of bees are now transported to several points of need throughout the United States for pollination services. It is not uncommon for pollinators to be transported from California to Maine to Florida. With the current rental rate paid per colony to a commercial pollinator, it is now economical to move beehives great distances. With these geographical moves, the chances of disease and pest pressure has increased. State Departments of Agriculture and Apiary Services routinely make inspections of interstate movement of bees.

Many pest control options exist when treating for mites and insects. Some of the traditional insecticides and miticides fall into the organophosphate and synthetic pyrethroids classes. These are the same as used in general agriculture. It is critical to treat the hives so the compound will not have detrimental effects. The most important way this can be accomplished is by **Reading and Following All Label Directions**. Pesticide labels give strict instructions about the timing and rates of an application. These directions address timing of applications during honey flow, brood rearing in the hive, and ambient temperatures. If these precautions are not followed, bee hive health can be compromised.

New products have been registered in the past several years that are non-traditional pesticides. Two widely used products are Formic acid and Oxalic acid compounds. There is a wide variety of delivery

techniques for these products, so following all label directions is critical for effective control and safety to the applicator. Other compounds that contain the active ingredients of essential oils, amitraz, and menthol are also used in hive pest management.

Using pesticides that are registered and labeled for bee hives is critical for bee hive health and for reducing the potential for honey contamination. There have been many documented incidences of misuse of labeled pesticides, such as cattle insecticides or over the counter use of insecticide baits in hives. These pest control practices are illegal and can result in regulatory action.

Outreach presentations by NCDA&CS Pesticide Section and Apiary Services instruct beekeepers on the importance of using properly labeled pesticides when treating for bee hive and bee pests.

Dwight Seal, Western District Supervisor
NCDA & CS Structural Pest Control & Pesticides Division

Don Hopkins, Apiary Inspector Supervisor
NCDA & CS Plant Industry Division