Sunshine Coast BeeKeepers Inc.
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Chemicals and Bees

If the bee disappeared off the surface of the globe then man would have only four years of life left. No more bees, no more pollination, no more plants, no more animals, no more man.

Albert Einstein

Chemicals approved for use IN THE HIVE for the control of small hive beetle and wax moth

1. Diamacetous Earth

Diamaceous Earth is thought to cause water loss from the insects thereby dessicating them and this is enhanced by DE absorption of lipids from the insect cuticle.

DE works better at low ambient relative humidity because it is drier and has enhanced capacity to absorb fluids. The effect of DE is reduced at high relative humidity.

2. Vegetable Oils

Can be used in silver bullets and drowns the beetles. Take care not to spill any oil on the bees as it will kill them. Do not use peanut oil - this is an allergen and would need to be declared in respect of any honey sold. Remove the beetle traps when moving the hives to prevent spillage.

3. Apithor traps

These traps use Fipronil and are registered for use in a beehive colony.

The beekeeper can buy Fipronil in a tube and make their own beetle traps or buy Apithor traps ready to go which are placed on the baseboard of the hive to control small hive beetle.

Remember Fipronil is a broad based insecticide that is banned in the United States and in Europe.

Chemicals approved for use OUTSIDE THE HIVE for management of small hive beetle and wax moth

1. Phosphene gas

Use well away from the hive as this gas is toxic to bees and humans. It is used for gassing frames to kill all stages of the small hive beetle and the wax moth.

Place the frames in a polystyrone box, place the phosphene gas tablet on a plastic lid or in a plastic bag with a hole, tape the box closed and leave for a few days. Air the frames well before placing back in the hive.

An alternative and much safer method of treating frames is placing them in a freezer for 9 hours or in a cold room for 4 days.

Once treated place frames in a black plastic sealed bag.

2. Permethrin

The National Registration Authority has approved the off-label use of Permethrin to treat the ground surrounding beehives or ground intended for hive placement. The permit applies to products containing 500g/L Permethrin as their only active ingredient.

Applications are only to be used when beetles or larvae have been observed in or around hive.

Apply in late evening when bees are less active.

Apply the solution (prepared as per instructions on the container) to thoroughly wet ground in an area 45–60cm wide in front of each hive.

Repeat applications at 30-day intervals.

Effects on hives of other chemicals used in agriculture or the home garden

We need to be well informed when using any chemical around the house and garden.

Chemical herbicides and insecticides, by their nature, change the environment into which they are introduced: they kill plants or pests. Some chemicals are dangerous, and can kill or seriously injure non-targeted species. Often, herbicides and insecticides are used too easily; they should only be used under controlled conditions and as a last resort.

1. Glyphosate

Monsanto's popular glyphosate-based herbicide, Roundup, for instance, has been proven to suffocate human cells, and can be potentially linked to an array of health problems like cancer, autism, heart disease, and depression.

Not only does glyphosate affect human health, but it has also been proven to be a major cause of Colony Collapse Disorder, the phenomenon that occurs when honeybees die off at record rates.

2. Neonicotinoids

Neonicotinoids (neonics) are a class of insecticides that share a common mode of action that affects the central nervous system of insects, resulting in paralysis and death.

Registered in Australia for a wide range of crops including cotton, canola, cereals, potato and many vegetable crops and fruits. These chemicals were banned by the EU in April 2018.

Studies show that neonicotinoid residues accumulate in pollen and nectar of treated plants and represent a potential risk to pollinators.

3. Sulfoxaflor

Registered first in 2013 with great controversy, sulfoxaflor is a new insecticide of the sulfoximine class and has a chemical profile similar to neonicotinoids. After a court decision, EPA reregistered sulfoxaflor in Australia in 2016 restricting applications in attempts to reduce exposure to bees. But even with reduced use of sites, and restricted application timing, the systemic toxicity of sulfoxaflor ensures that these measures will not be adequately eliminating the use of this chemical.

4. Pyrethroids

This class of chemicals has also been shown to impair bee learning and foraging behavior. Pyrethroids are frequently associated with bee kills and have been found to significantly reduce bee fecundity, decrease the rate at which bees develop to adulthood, and increase their immature periods. Pyrethroids are widely detected in pollen.

5. Fipronil

As mentioned above, this broard-use insecticide is banned in the United States and Europe, but is legal in Australia and is mainly used in cotton in Queensland. Fipronil is used to control ants, beetles, fleas, ticks termites, mole crickets, thrips, rootworms and weevils.

Fipronil is also used in the apithor which is placed on the baseboard of hives to control hive beetle.

Fipronil is widely used for indoor and turf pest control

Evidently, fipronil is an insecticide and is highly toxic to insects. It has been shown to reduce behavioral function and learning performances of honeybees.

6. Organophosphates

Organophosphates, like malathion and naled, are used in mosquito control programs, which can also put bees at risk. Both are highly toxic to bees and other non-target species, and bee kills associated with ULV spraying have been reported. Residues on plants and other surfaces left behind from mosquito spraying indirectly expose bees to these pesticides. Pollen, wax, and honey have all been found to contain residues.

Commonly used organophosphates include Malathion, parathion, diazinon, fenthion, dichlorvos, chlorpyrifos and ethion.

References

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