

Botanical Pest Control Products

One of the major concerns of the environmentally concerned farmer is how to go about controlling insect attacks.

As Dr. Philip Callahan discovered, agricultural insects can be compared to a sort of sanitary service designed to get rid of sick plants. Alas, in chemical agriculture the insect “pests” must think that just about all of the plants are “sick”, which is why they do not discriminate in their destructive mission. However, as the soil heals and recovers Nature’s full and balanced microbial vitality, following the advice given in these pages, the plants grown on such soils will be much less susceptible to insect attack. Advanced organic farmers often say “there are no insect pests in organic agriculture”. While this is basically true, nothing in agriculture is absolute.

Yes, there will be cases when pests attack the crops. Particularly during the transition stage away from chemical agriculture. So, the question is valid: what to do then?

Apart from using all kinds of devices, like sticky traps, pheromone systems, etc., employing biological control, or even picking the offending larvae by hand, there are a few solutions available. In fact, Mother Nature gave them to us.

One of the best known botanical insecticides is **natural pyrethrum**, derived from Chrysanthemum cinerariaefolium, containing six different “pyrethrins”. We can provide natural pyrethrum products under our **PyrOikos** trademark, but are not listing such products here because of the currently high cost of such materials.

Another solution is Neem, stemming from the tree Azadirachta indica. Few of our readers need a particular introduction to Neem. Suffice it to say that the neem tree has been a sort of village pharmacy since Vedic times. Also, it has been known for a long time that insects do not attack this tree. Eventually it was shown that the tree produces a whole arsenal of compounds to protect itself.

Then there are such substances like garlic and some kinds of pepper that repel agricultural pests, and even have a certain direct toxic effect on some of them.

This does not complete the list. There are many more natural substances that have great promise. One is d-limonene, a powerful terpene contained in the rinds of oranges and other citrus fruits. It is basically a superb “natural solvent” that is better than any chemical solvents. But it also has insecticidal properties, which will be briefly mentioned under “d-Limonene Products”.

OikoNeem

OikoNeem is a botanical insecticide containing **azadirachtin** and all other constituents of the seeds and other parts of the neem tree (*Azadirachta indica*). In some countries this product is sold under the **SuKriNa** trademark.

Our new OikoNeem formula contains 90% of a very select and special neem oil obtained from an exclusive source in India. The remaining 10% consists of a blend of

emulsifiers especially formulated for Neem oil. Our exclusive Neem oil contains all of the constituents of neem (and not only azadirachtin), including the compounds that have a fungicidal or fungistatic action.

The effects of the various constituents of neem on a given insect species are often difficult to determine. Neem's complexity of ingredients and its mixed modes of action vastly complicate clarification. However, for all the uncertainty over details, various neem constituents are known to act on a variety of insects in the following ways:

- Disrupting or inhibiting the development of eggs, larvae, or pupae;
- Blocking the molting of larvae or nymphs;
- Disrupting mating and sexual communication;
- Sterilizing adults;
- Deterring females from laying eggs;
- Inhibiting the formation of chitin;
- Repelling larvae and adults;
- Deterring feeding;
- Producing a direct toxic effect on larvae and adults.

Of the above modes of action, by far the most important ones are the first two, in particular that of blocking the molting of larvae or nymphs, caused by azadirachtin.

It should therefore be clear that **OikoNeem** is particularly effective when applied before, or shortly after, eclosion so that the product will act during the early juvenile stages of the insect, preventing its development into the stages where it causes harm to the crop. When thus applied, **OikoNeem** is particularly effective against homoptera, coleoptera, lepidoptera and some diptera. **OikoNeem** is highly effective against certain insects (for instance, whiteflies) that are resistant to chemical insecticides.

The normal application rate, especially during the juvenile stages, is 1.0 to 2.0 liters of OikoNeem per hectare, diluted in an appropriate volume of water.