

B.Sc. III Year (Theory)
Semester –VI
Paper XX (C)
Microbiology and Disease Management

Unit-2

Disease management:

2. Control methods

d. Pesticides: Nicotin, Neem and pyrethrum

Dr. S. S. Patale

Associate Professor

Department of Botany

Smt. S. K. Gandhi Arts, Amolak Science and P.H. Gandhi

Commerce College, Kada Dist. Beed

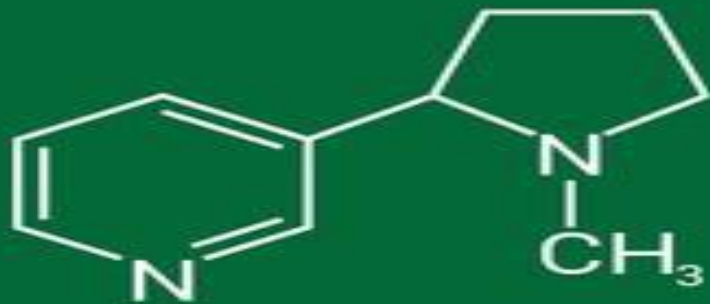
Email- sspatale@rediffmail.com Ph. 9823937501

PESTICIDES

Nicotine:

Nicotine is used against pierce sucking insects such as aphids, whiteflies, leaf hoppers and thrips. If it affects humans and other warm blooded mammals, then logically it affects small insects. Nicotine comes from a plant and as found mainly in tobacco, tomato, potato, eggplant and green peppers. Nicotine can also be found on the leaves of coca plants. Like other natural insecticides, nicotine is diluted and used as a spray against insect pests.

Nicotine



shutterstock.com • 1982545313



With today's technology, nicotine as a natural insecticide is also combined with other chemicals to become a stronger pesticide against insects. Nicotine may infect the environment and ecosystems. Nicotine as a natural insecticide is regulated by the government. As of now, the insecticide is usually sold in less than a 50% liquid concentrate, it is diluted in water and used as a spray. On the home front gardeners can create their own spray. All they need to do, it is steep a cup of tobacco in some water, after about 12 hours, strain it and then compare it as a spray. The idea is to spray the plants you want protected from those pesky insects that want to feed on it. Nicotine works very well with caterpillars and aphids.

There are sometimes some side effects when working with pesticides – natural insecticides is no different. In one study, some worms that became resistant to nicotine as a natural insecticide actually became bigger and faster than those worms that fed on plants with normal nicotine levels. But the natural insecticide is still effective with other insect pests. The green peach aphid is an example of an insect that repels against nicotine.

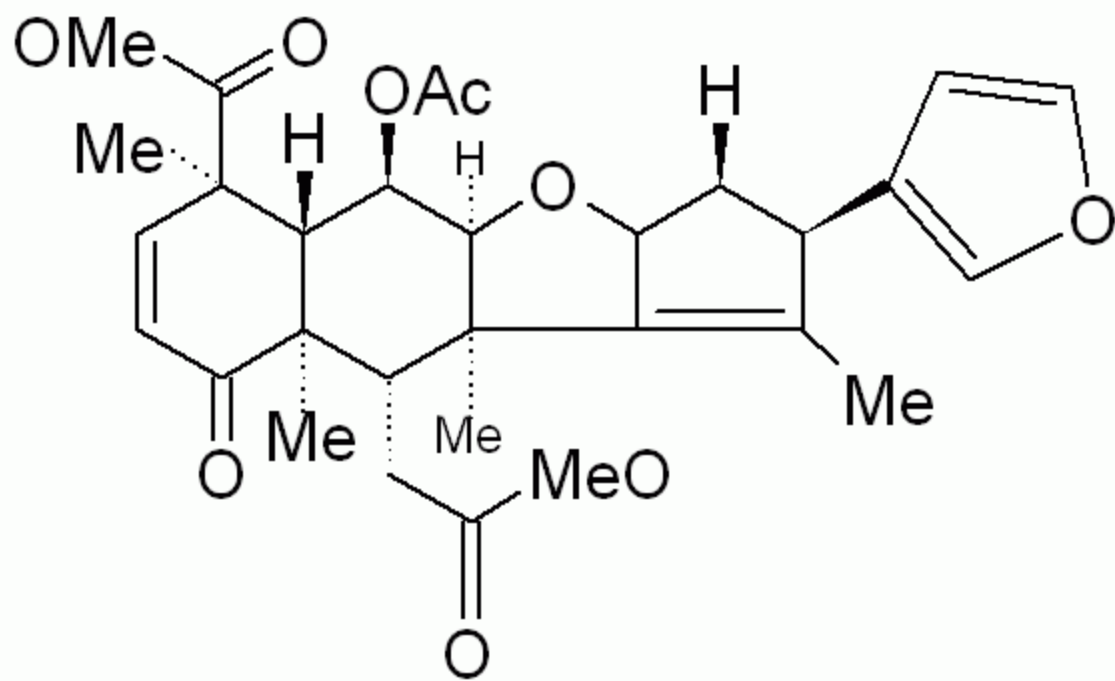
It is important to point out that nicotine as a natural insecticide is very toxic to humans. Nicotine can actually be absorbed through the skin. It is best to use gloves when handling nicotine. The good thing about nicotine when used as a natural insecticide is that it is highly biodegradable, and can be used on crops. Because of this, when using nicotine as a natural insecticide, it is also good to know that it can harm other plants such as roses.

When it comes to humans we should remember that many people have died because of nicotine in cigarette smoking. Nicotine in pesticides has also been used as a suicidal means. Young children have been rushed to the ER due to ingesting nicotine pesticides by accident. Nicotine is a great natural insecticide to use against insects, but we should handle it with great respect.

Instead of homemade nicotine insecticide, it is probably better to purchase products with nicotine as a natural insecticide. For example, Black Leaf is a popular brand of pesticide that includes nicotine in its 40% concentrated.

Neem:

Neem pesticides plays a vital rope in pest management and hence widely been used in agriculture. There has been as evident shift all over the world from synthetic pesticide to non synthetic ones, this is because of the wide spread awareness of the side effects on the plants as well as on other living organisms. This is a great opportunity for neem pesticide manufacturers to cash on the growing popularity of herbal pesticides. Azadirictin is the main ingredient used to manufacture bio pesticides.





Parts of neem used: Neem oil and extract are known to possess germicidal and anti-bacterial properties which are useful to protect the plants from different kinds of pests. One of the most advantages of neem pesticide is that they do not leave any residue on the plants. Neem pest control is very beneficial for proper crop and pest management.

Benefits of neem pesticides:

Benefits of neem pesticides:

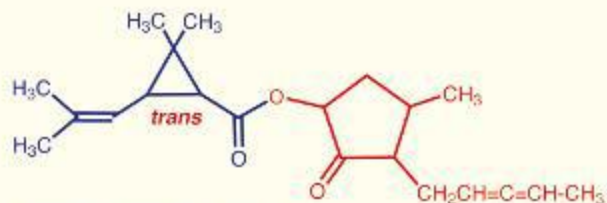
- It also helps to nourish and condition the soil.
- It is environmental friendly.
- It is non-toxic.
- It can be used in combination with other pesticide and oil for more efficacy.
- Instead killing of pests, it affect the life cycle of the pests.
- Anti feed out properties found in neem compounds help to protect the plants.
- Pests generally do not develop a resistance to neem pesticide.
- These are water soluble and help in the growth of the plants.
- Acts as pest repellent.
- Acts as pest reproduction controller.

Pyrethrum:

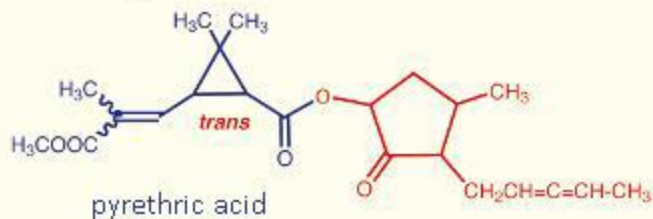
Pyrethrum (*Crysanthemum cinerariaefolium*) of family Asteraceae is a perennial African plant. The plant is economically important as a natural source of insecticide. The flowers are pulverized and the active components, a group of esters called pyrethrins ($C_{21}H_{28}O_3$ or $C_{22}H_{28}O_5$) contained in the seed cases are extracted and sold in the form of an oleoresin. This is applied as a suspension in water or oil, or as a powder.

Staudinger & Ruzicka 1924

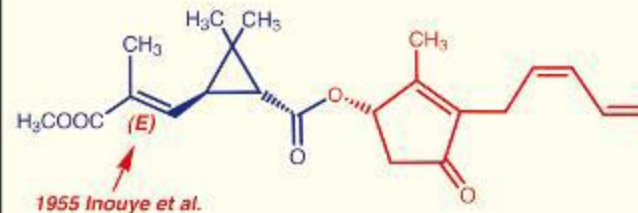
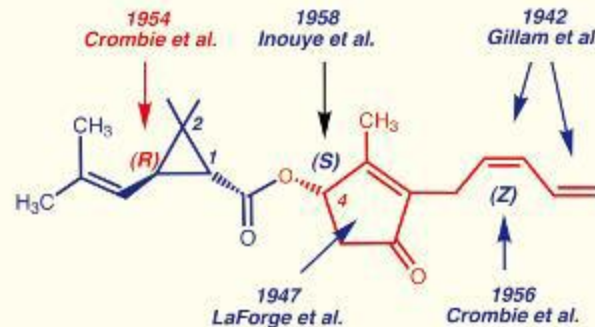
pyrethrin I (1)



pyrethrin II (2)



pyrethrolone



Pyrethrum 5EC

Natural Organic Insecticide

An emulsifiable concentrate formulation containing 5% (w/v) pyrethrins

Pyrethrum 5 EC is a contact insecticide for use on all outdoor and protected crops against chewing and sucking pests including aphids (blackfly and greenfly), caterpillars, whitefly and red spider mite. For use on all edible and non-edible plants including ornamental plant production throughout the season.

DIRECTIONS FOR USE: Pyrethrum 5 EC is an emulsifiable concentrate for dilution with water prior to use.

Mixing: Shake well and dilute with water before use. Mix thoroughly and use immediately.

Water Volume: It is essential to achieve good spray coverage of the target crop foliage for optimum pest control. Apply in a high volume spray to ensure thorough coverage of foliage to the point of run-off. Ensure that both upper and lower surfaces of the leaves are treated.



Pyrethrin attacks the nervous system of all insects and inhibits female mosquitoes from biting. When not present in amounts fatal to insects, they still appear to have a repellent effect. They are harmful to fish, but are far less toxic to mammals and birds than many synthetic insecticides and are non persistent, being biodegradable and also breaking down easily on exposure to light. They are considered to be amongst the safest insecticides for use around food.

Kenya produced 90% (over 6000 tons) of world pyrethrin in 1998, in Tasmania production is increasing. Pyrethroids are synthetic insecticide based on natural pyrethrum: an example of one is permethrin. A common formulation of pyrethrin in preparations containing the synthetic chemical Piperonyl Butoxide: this has the effect of enhancing the toxicity to insects and speeding the effects when compared with pyrethrins used alone. These formulations are known as synergized pyrethrins.

Thank You