Ultra Bio-Logics Inc.

International Export Division

Ultra Neem - Natural Vegetable Neem Oil

MARGOUSIER VIERGE (Melia azadirach L.)
In India Is Known As The Tree "That Cures All"

MAIN CONSTITUENTS: Oleic acid, stearic acid, palmitic acid, linoleic acid, myristic acid azadirachtin with a natural organic surfactant.

Color: Green Emulsion.

Properties: Pro-Environmental

HISTORY and ORIGIN:

Neem oil is used in India to make all sorts of consumer products, such as soap, cosmetics, antiseptics, toothpastes, gargle, ointments, poultices, lubricants, fertilizers, fuel for oil lamps, glue, rope and tannin from bark fibre, as well as pesticides and insect repellants.

PRECAUTIONS : NONE KNOWN

Packaging: 500 ml, 1 litre, 4 litres, 20 litres et 210 litres
Parts Used: Grains and Seeds
Growth Method: Conventional without any pesticides
Extraction Method: First Press Mechanical -Without Heating
Formula: Pure Water Soluble Formula

Available as a manufacturers ingredient only - At this time!

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Frontline EXPRESS
Canadian Forest Service, Great Lakes Forestry Centre

Natural Products Entomology

INTRODUCTION

A Neem tree bearing fruit

This study addresses the need for finding sound and effective options for managing forest insect pests in Canada in the face of the declining availability and popularity of conventional chemical insecticides. Many plants produce a diverse array of chemicals with toxic, insect growth regulating or feeding deterrent properties, which provide protection against insect attack. This study is aimed at identifying suitable natural products from plant and fungi sources, determining their activity on important forest insect pests and elucidating the mechanisms of action of candidates.

Neem and spinosad are showing promise against most of the major defoliating insects. Neem is a botanical insecticide containing the active ingredient azadirachtin, derived from extracts of the seed kernels of the neem tree, Azadirachta indica A. Juss. It is highly active on sawflies such as the pine false webworm by both foliar and systemic applications. Spinosad is a mixture of a group of insect control molecules called spinosyns, which are produced by a new species of Actinomycetes, Saccharopolyspora spinosa. Spinosad is extremely active against many larval insect pests such as spruce budworm and gypsy moth. An abundant compound in red and silver maple with very active antifeedant effects on forest tent caterpillar has also been discovered and is being studied for use in pest management.

The research and development on neem, which has led to its registration for use in Canada, is highlighted in this bulletin.

LOCATION/SITE

Research has been conducted in both laboratory and field settings. Neem has been assessed in jack pine plantations north of Sault Ste. Marie, Ontario, on white pine near Owen Sound, Parry Sound, Paisley, Sault Ste. Marie and Markdale (all in Ontario), in red pine plantations near Craighurst and Sprucedale, Ontario, in black and white spruce seed orchards and plantations in Sioux Lookout, Dryden and Balsam Lake, in white cedar on St Joseph Island, Ontario and in balsam fir stands near Cornerbrook, Newfoundland.

RESULTS

Systemic injection of neem extract into red pine.
In the laboratory, neem seed extract containing azadirachtin was very active on 13 species of tree-defoliating lepidopteran and sawfly (Hymenoptera) larvae. Sawfly species were much more susceptible than lepidopteranspecies. In field trials, ground-based foliar applications of neem at 50 g azadirachtin/ha by motorized backpack mistblower or compressed air sprayer have proven effective against white pine weevil, pine false webworm and introduced pine sawfly on pines.

Systemic injection of Neem extract into red pine

Dosages of 100 g/ha gave acceptable protection from spruce budworm damage on spruce and fir. Ultra-low-volume aerial applications of EC formulations at 50 g/ha were effective against balsam fir sawfly on balsam fir and pine false webworm on red pine. Neem seed extracts also possess systemic properties against forest defoliators and leafminers when inoculated into the trunks of trees. In field trials against pine false webworm, trunk inoculations of small red pine trees with undiluted EC formulations at 0.05g azadirachtin per tree before egg hatch provided excellent protection of both old and new foliage. Trunk inoculations of large, 25-30 cm diameter at breast height (dbh), 20-m tall, red pine at 0.02 and 0.05 g azadirachtin per cm dbh also provide excellent protection. Dosages of 0.1-02 g/cm dbh in large white spruce were effective against spruce budworm larvae. A dosage of 0.01 g/cm dbh greatly reduced cedar leaf miner populations on white cedar. Systemic neem applications are also persistent. Treatment of 20-cm dbh white pine at 0.1 g/cm dbh resulted in high mortality of introduced pine sawfly larvae for at least 77 days. Injections for pine false webworm control can be made before winter, at least 7 months before egg hatch the following spring. A novel device, the Systemic Tree Injection Tube has been developed to inject neem formulations into trees under pressure, quickly, easily and inexpensively.

CONCLUSIONS

Azadirachtin has proven to be an effective, versatile bioinsecticide in ground, aerial and systemic applications for the management of several forest pests, particularly sawfly species in high value plantations. One commercial product, Neemix 4.5, is now registered for use on three sawfly species in Canada. Azadirachtin also provides a new control alternative for white pine weevil with a wider, later application window than conventional insecticides that may be preferable to pest managers. Azadirachtin is also the first botanical insecticide with demonstrated excellent systemic properties in trees.

MANAGEMENT INTERPRETATIONS

Neem tree seeds

Azadirachtin is the only alternative to conventional insecticides currently available for managing most sawfly pests and white pine weevil. This bioinsecticide is safe to mammals and birds. It does not pose a significant risk to most other non-target organisms including bees, fish and aquatic insects at effective dosages, and it degrades readily in the environment. The short

Neem tree seeds residual life of azadirachtin-based insecticides when applied as a foliar application, although attractive from an environmental perspective, can be a significant limitation for forest management. This limitation may be overcome by applying neem formulations that can persist for a year or more, systemically into trees. For example, systemic applications into large pines for pine false webworm control is a promising approach for selective treatments, including seed orchards, small pockets of infestation, and ornamental trees in urban environments. The cost of neem insecticide formulations is higher than most conventional insecticides, but their low impact to non-target organisms makes them an attractive alternative. This is even more so with systemic applications, which further reduce any impacts to non-targets, or hazards to handlers.

SOURCES OF RELEVANT INFORMATION

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Repellant effect – Neem has demonstrated its repellancy in trials against many insects, including buffalo fly and ticks in cattle, ticks and lice in sheep, mosquitos and sand-flies, human head lice, fleas and ticks on dogs, cats and all domestic pets, insects parasitic against fruit, vegtable and broad acre crops such as cotton and sugar and for the first time ever against the North Q'land Fruit Sucking Moth. (DPI has tested it against this moth at Mareeba in North Q'land, & described it as a "cumulative repellant")

Insecticidal effect – Neem kills insects by many different methods, the best known of which is it's anti-feedant action. Once dosed, insects can't feed and thus starve to death. However, Neem has many other activities against insects disrupting or inhibiting development of eggs, larvae or pupae, preventing the molting of larvae or nymphs, disrupting mating and sexual communication, repelling larvae and adults, deterring females from laying eggs, sterilising adults, poisoning larvae and adults, feeding deterrent, blocking the ability to swallow by reducing the motility of the gut preventing metamorphosis, thus preventing for example mosquito wrigglers maturing into adults, inhibiting the formation of chitin, the substance essential for the insect to form an exoskeleton (Ref. Australia DPI)

All leaf-eating insects are wiped out as are all insects actually coming into contact with Neem. This huge array of insecticidal properties of Neem is thought to be due to it's adversely effecting the insects hormone system. If that is so then no insect will be able to become immune, because it's hormone system is essential for every bodily function. Most significant, insects develop resistance in each subsequent generation, and as insects dosed with Neem cannot breed, thus there are no subsequent generations in which resistance can develop. (Ref. Australia DPI)

Is Neem Safe ? – Neem is safe for humans, animals, birds and fish, yet deadly to most insects. (Ref. Australia DPI)

Exceptions are spiders, butterflies, bees, ladybirds etc, ie non-leaf eating insects. Indians have been using Neem for hundreds of years – Mahatma Ghandi is said to have regularly prepared and eaten Neem chutney – as oral hygiene and dental care, fungicide, bactericide, small doses taken internally to treat malaria, to control blood sugar in diabetes, consumed as Neem leaf tea; and the leaves and seeds are eaten by sheep and cattle without any ill effects. (Ref. Australia DPI)

For More Detailed Information

<**www.neemfoundation.org**>

Ultra DE - Pure Natural Diatomaceous Earth

Natural Diatomaceous Earth Powder

Ingredients: From natural geological deposits made up of the fossilized skeletons and tests of siliceous marine and fresh water organisms, particularly diatoms and other algae. These skeletons are made of hydrated amorphous silica or opal. Crushed mechanically to the consistency of fine talcum powder, which appear like tiny pieces of glass under high magnification.

Uses: As filter media, cosmetics, toothpastes, additives for numerous industrial products, in animal feeds and grain storage as well as pro-environmental pesticide formulations.

Available Packaging: Lined 25 kg Bags

EXTRACTION METHOD: Mechanical

Properties: Food Codex Grade

Pro-Environmental

Available in Canada as a manufacturers ingredient only - At this time!

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Educational Information / Research Ref. Diatomaceous Earth

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EAP Publication - 4

DIATOMACEOUS EARTH: A Non Toxic Pesticide

MACDONALD J. 47(2): 14, 42 (May, 1986) by Professor Stuart B. Hill

Department of Entomology and Ecological Agriculture Projects

For centuries stored grain has been protected from insect attack in much of the less developed world by adding some form of powder or dust to it. Common materials include plant ash. lime. dolomite. certain types of soil, and diatomaceous earth (DE) or Kieselguhr.

With me introduction of synthetic pesticides in the 1940s, and modern fumigants some time later, it was felt that a scientific solution to pest problems had been found. Although tnese materials provided enormous local benefits. a number of problems are beginning to be recognized. These include the development of resistance by insects. pollution of the environment. contamination of foodstuffs with residues, and exposure of users to toxic chemicals. This has led a small group of researchers and developers .to look again at the different powders to see which are most effective and how they can be improved.

Probably the most effective naturally occurring protective powder is diatomaceous earth. This is a geological deposit made up of the fossilized skeletons and tests of siliceous marine and fresh water organisms, particularly diatoms and other algae. These skeletons are made of hydrated amorphous silica or opal. When crushed, they break up into tiny pieces of glass'' (so tiny that the material feels like talcum powder). This is easily picked up by the hairy bodies of most Insects. whereupon it scratches through their protective wax layers; and they also absorb some of this material. the result being that the insects lose water rapidly . dry up and die Further protection is provided by the powder's property of repelling many insects. A similar principle probably accounts for the fact that birds frequently take dust baths, presumably to rid themselves of parasites.

Although patents for diatomaceous earth formulations were issued in the United States in the late 1800s it was not until the 1950s that the first commercial formulations of it became widely available, and between 1963 and 1970 a series of studies on DE were conducted by the U.S. Department of Agriculture.

In several tests, DE gave better protection of grain than malathion, particularly over the long term, without exposing anyone to the dangers of toxic chemicals. At that time relatively large amounts of DE were added to grain to provide protection, e.g., 3-1/2 kg/tonne. The main problem with using this amount was that it tended to make the grain very dusty and it reduced its flow rate and test weight.

Today this problem has been greatly reduced through the use of improved DE formulations that contain baits and attractants. Such formulations have been developed and tested in Quebec through the collaborative work of Mr. Arthur Carle (P.l.P. Products Inc., 2721 Plamondon, Longueuil, Que., J4L lSl) and myself. Using NCr, one of these formulations, as little as 0.5 kg/tonne may provide full protection. Despite this, very little grain in Canada is treated with these DE formulations. One of the main reasons for this is that present regulations prevent the adding of any powder to grain destined for export. Until such rules are changed the full potential of DE will not be realized. This is especially frustrating in the case of grain going to developing countries as aid. While this grain may be pest-free when it leaves Canada, it is often rapidly invaded by insects when it reaches its Third World destination. It is not uncommon for 20 per cent of this grain to be subsequently lost to pests. If DE had been added prior to export, however, it would have been protected indefinitely. Fortunately, DE can be added to domestic grain as long as it doesn't pass through licensed elevators. It can also be used in grain and food handling and storage areas such as flour mills, empty grain bins, box cars, ships' holds, warehouses, food processing plants, etc.

In houses it can be used effectively to prevent the entry of certain insects such as earwigs, ants, and cockroaches, and to control these and others that are present in cupboards containing food, carpets, basements, attics, window ledges, pet areas (for fleas), etc. In all of these examples it is important to place a small amount of the powder in corners, cracks, crevices. and other areas where insects might hide.

Whereas with a contact pesticide the insect dies quite quickly, with DE control may take several days. The more important difference is that the effect of the protection provided by the chemical is short-lived. whereas DE will control the pests as long as the powder remains. In this respect DE is an ideal pesticide; it is residual but nontoxic. The only health precautions that need to be taken are that if large areas are being treated with a power duster, the applicator should wear a mask to prevent inhalation. Because DE is made of silica, people sometimes mistakenly think that DE causes silicosis. As indicated above, however, pesticide quality DE is usually over 97 per cent amorphous silica, which does not cause silicosis, which is associated only with crystalline silica. Indeed, inhalation of road dust and grain dust is likely to be more harmful than DE.

In the field DE has potential in certain restricted uses such as treating the bark of fruit trees in spring using an electrostatic duster, or the roots of plants when transplanting: but because it is non-selective and also kills beneficial insects, its use here should be carefully controlled.

Another use is in animal production units for the control of external parasites and flies. This is achieved by dusting the animals and the litter or bedding area. It has also been included in the diet (two per cent in the grain ration) to control certain internal parasites, and this practice is said to result in lower fly populations in the resulting manure.

In the future, improvements in the formulation of DE to reduce dustiness and more effectively lure insects to it to ensure their rapid exposure will no doubt extend its use. In the meantime, it is perhaps the safest effective pesticide for use in the home and has a valuable place in the protection of stored food and control of insects in animal production units.

http://eap.mcgill.ca/Publications/eap_foot.htm