Ultra Bio-Logics Inc.

International Export Division

Neem Oil - Natural Cold Pressed Virgin Neem Oil

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

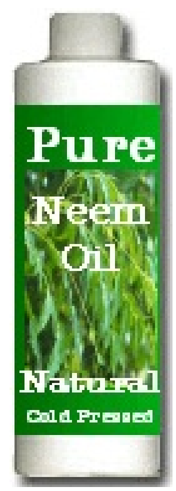
Neem tree seeds

MAIN CONSTITUENTS: **Limonoids and triterpenes, azadirachtin, mellantriol, nimbin, deacetylazadirachtinol, salannin, nimbidin etc.**

Color: Green Emulsion
Properties: Pro-Environmental

HISTORY and ORIGIN:

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



PRECAUTIONS : Slight Eye Irritant

Packaging: 500 ml, 1 litre, 4 litres, 20 litres et 210 litres

Parts Used: Grains and Seeds

Growth Method: Conventional without any chemicals

Extraction Method: First Press Mechanical -Without Heating

Formula: Pure Cold Pressed

Typical Azadirachtin: Min. 1800 ppm Max. 2400 ppm (Batch Specific)

Available as Pure Natural Neem Oil !

On Line: http://www.ublcorp.com/

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Educational Information / Research Ref. Neem

(CANADIAN CHARTER OF RIGHTS AND FREEDOMS)

Traditional Neem Oil Uses and Mixing Methods

Neem Oil is a cost effective means of pest control. Just 1.25 litres of Virgin Neem Oil is required per spraying for the protection of 1 hectare of crop (16 fl.oz. per acre). Add 10 milliliters of any suitable emulsifier (such as an ecologically friendly detergent) to 50 milliliters of Virgin Neem Oil and mix. (Ref. India NDC)

Shampoo for mange, fleas, or head lice: Mix ½ ounce neem oil with 8 ounces mild shampoo. Shampoo twice per week. (Ref. India NDC)

Animal Rinse for mange and fleas : Mix 1 ounce neem oil with 1 gallon water and few drops of mild soap or shampoo (to emulsify oil). Rinse animal twice per week.(Ref. India NDC)

Warts and moles: Apply 1 drop of undiluted neem oil directly on wart or mole, once per day. Watch carefully for possible irritation. Continue for 2-3 weeks. (Ref. India NDC)

Psoriasis, eczema, cold sores, skin ulcers, athletes foot, fungal conditions etc:
Mix 1 tablespoon neem oil with 4 ounces carrier oil such as almond oil or olive oil. Apply to affected skin twice per day. Watch carefully for possible irritation.
Increase dilution if skin is sensitive. (Ref. Neem Foundation NDC)

Spray for pets and livestock for mange mites, ticks, fleas and other pests:
Mix 1 ounce neem oil with 1 gallon water and few drops of mild soap or dish soap (to emulsify oil). Put into spray bottle or other type of sprayer and spray animals once every 2 weeks, or as needed. (Ref. India NDC)

Spray for indoor and outdoor plants, flowers and vegetables: Mix 1 ounce neem oil with 1 gallon water and few drops of mild dish detergent (to emulsify oil). Spray foliage including undersides of leaves. Repeat every 2 weeks. Neem oil is a safe organic biodegradable insecticide and fungicide. (Ref. India NDC)

Insect repellent spray for people and pets: Mix 1/2 tablespoon neem oil with 1 quart water and few drops of mild dish detergent (to emulsify oil). Dispense from a spray bottle. (Ref. India NDC)

Ressources naturelles Canada Natural Resources Canada Canada

Frontline EXPRESS
Canadian Forest Service, Great Lakes Forestry Centre

Natural Products Entomology

INTRODUCTION

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.

A Neem tree bearing fruit

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

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

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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 ISSN 1496-7855

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Neem Oil Properties

Neem protects itself from the multitude of pests with a multitude of pesticidal ingredients. Its main chemical broadside is a mixture of 3 or 4 related compounds, and it backs these up with 20 or so others that are minor but nonetheless active in one way or another. In the main, these compounds belong to a general class of natural products called "triterpenes"; more specifically, "limonoids."

LIMONOIDS: So far, at least nine neem limonoids have demonstrated an ability to block insect growth, affecting a range of species that includes some of the most deadly pests of agriculture and human health. New limonoids are still being discovered in neem, but azadirachtin, salannin, meliantriol, and nimbin are the best known and, for now at least, seem to be the most significant.

Azadirachtin: One of the first active ingredients isolated from neem, azadirachtin has proved to be the tree's main agent for battling insects. It appears to cause some 90 percent of the effect on most pests. It does not kill insects-at least not immediately. Instead it both repels and disrupts their growth and reproduction. Research over the past 20 years has shown that it is one of the most potent growth regulators and feeding deterrents ever assayed. It will repel or reduce the feeding of many species of pest insects as well as some nematodes. In fact, it is so potent that a mere trace of its presence prevents some insects from even touching plants.

Azadirachtin is structurally similar to insect hormones called "ecdysones," which control the process of metamorphosis as the insects pass from larva to pupa to adult. It affects the corpus cardiacum, an organ similar to the human pituitary, which controls the secretion of hormones. Metamorphosis requires the careful synchrony of many hormones and other physiological changes to be successful, and azadirachtin seems to be an "ecdysone blocker." It blocks the insect's production and release of these vital hormones. Insects then will not molt. This of course breaks their life cycle.

On average, neem kernels contain between 2 and 4 mg of azadirachtin per gram of kernel. The highest figure so far reported- 9 mg per gram measured in samples from Senegal.

Mellantriol: Another feeding inhibitor, meliantriol, is able, in extremely low concentrations, to cause insects to cease eating. The demonstration of its ability to prevent locusts chewing on crops was the first scientific proof for neem's traditional use for insect control on India's crops.

Salannin: Yet a third triterpenoid isolated from neem is salannin. Studies indicate that this compound also powerfully inhibits feeding, but does not influence insect molts. The migratory locust, California red scale, striped cucumber beetle, houseflies, and the Japanese beetle have been strongly deterred in both laboratory and field tests.

Nimbin and Nimbidin: Two more neem components, nimbin and nimbidin, have been found to have antiviral activity. They affect potato virus X, vaccinia virus, and fowl pox virus. They could perhaps open a way to control these and other liral diseases of crops and livestock**.**

Nimbidin is the primary component of the bitter principles obtained when neem seeds are extracted with alcohol. It occurs in sizable quantities-about 2 percent of the kernel.

Others: Certain minor ingredients also work as antihormones. Research has shown that some of these minor neem chemicals even paralyze the "swallowing mechanism" and so prevent insects from eating. Examples of these newly found limonoids from neem include deacetylazadirachtinol. This ingredient, isolated from fresh fruits, appears to be as effective as azadirachtin in assays against the tobacco budworm, but it has not yet been widely tested in field practice.

Two compounds related to salannin, 3-deacetylsalannin and salannol, recently isolated from neem, also act as antifeedants.

FORMULATIONS

As noted, the simplest neem pesticide is a crude extract. However, for more sophisticated use, various modifications can be made. These advanced formulations may convert neem extracts into the form of granules, dust, wettable powders, or emulsifiable concentrates. Aqueous extracts can also be formulated with soap for ease of application against skin diseases.

Other formulations may involve the addition of chemicals or even the chemical modification of the neem ingredients themselves. These changes may be made to increase shelf stability and reproducibility, and for ease of handling or of scaling up the process. They may also reduce phytotoxicity, the damage to sensitive plants.

One particularly valuable class of additives are those that inhibit ultraviolet degradation. These include sesame oil, lecithin, and paraaminobenzoic acid (PABA).

Additives

Mixing neem extracts with other materials can boost their power 10- to 20-fold. Among these so-called "promoters" are sesame oil, pyrethrins (a type of insecticide mostly extracted from chrysanthemum flowers) and piperonyl butoxide. They are used to produce a quicker kill**.**

Combinations with synthetic pesticides also can work well-they add rapid "knockdown" to neem's ability to suppress the subsequent rebound in the pest population. The effectiveness of neem extracts can even be boosted with the insect-killing Bacillus thuringensis (Bt) to provide a multifaceted pesticide.

METHODS OF APPLICATION

Neem extracts can be applied in many ways, including some of the most sophisticated. For example, they may be employed as sprays, powders, drenches, or diluents in irrigation water-even through trickle- or subsurface-irrigation systems. In addition, they can be applied to plants through injection or topical application, either as dusts or sprays. Moreover, they can be added to baits that attract insects (a process used, for instance, with cockroaches). They are even burned. For example, neem leaves and seeds and dry neem cake are ingredients in some mosquito coils.

SYSTEMIC EFFECT

The fact that the extracts can be taken up by plants (and thereby confer protection from within) is one of neem's most interesting and potentially useful features. As has been noted, however, the level of this systemic activity differs from plant to plant and formulation to formulation. Extracts without oil, with a little oil, and with much oil exhibit different levels of systemic action.

The systemic activity differs with the insect as well. It is not effective on some aphids, for instance. They feed in phloem tissues, where (for reasons yet unknown) the concentration of azadirachtin is very low. Phloem is the plant's outermost layer of conductive tissues and insects such as these, whose mouthparts cannot penetrate past it, are little affected by neem treatments. On the other hand, leafhoppers and planthoppers, that feed at least half the time on the deeper layer of conductive tissues (called the xylem), get knocked down.

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, vegetable 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, sterilizing 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 as Pure Natural Diatomaceous Earth Powder!

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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.I.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