



The Neem Tree Azadirachta Indica



By Bethany Albert

Introduction

The Neem tree is duly valued worldwide for its hardiness, medicinal properties, and nutritional value. It is native to Southeast Asian countries, but grows well in a variety of tropical environments. The tree, technically classified as a bush, is also known as “the Panacea” because of its healing properties. It also has value as a natural pesticide, contraceptive, and fertilizer. It is fast-growing and can tolerate harsh conditions. It has been utilized for its medicinal properties for centuries in India, but only in recent years has it come to the attention of the world. Like the Moringa tree, it is often used in developing countries and refugee camps to provide accessible food and medicine.





Growth

The Neem tree grows very quickly and tolerates harsh environments. Like a similarly multi-purpose plant, the Moringa Tree, the Neem tree is valuable for its extreme drought resistance. It can grow in just about any kind of soil and requires very little water or any quality. It can thrive in conditions of up to 50 degrees Celsius (120 degrees F) down to 5 degrees Celsius ((35 degrees F). Prolonged cold spells below freezing temperatures will kill it. Neem fruit can be harvested after three years, but it takes ten years before the tree reaches its full potential of 30-50 kg of fruit a year. It will live 150-200 years and usually reaches 20 meters in height. (Discover Neem 2010).

Parts of the Plant

Leaves: The leaves of the Neem tree contain high amounts of vitamin E, which has healing properties for the skin. In cold

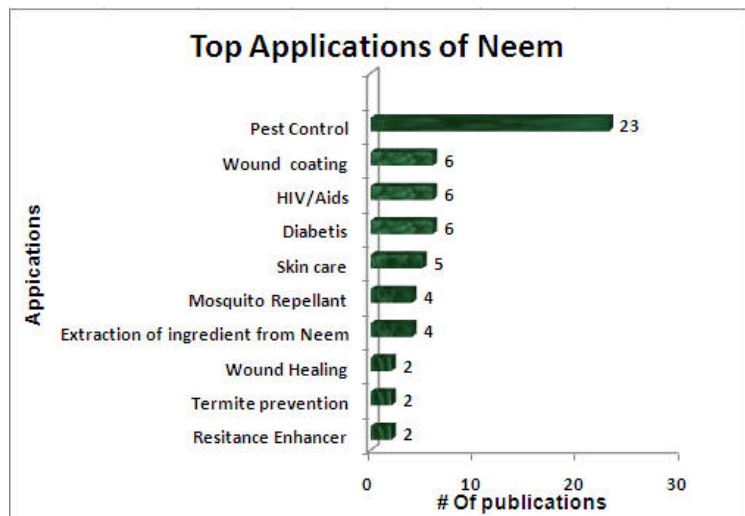
temperatures, the leaves will fall off. To make a leaf extract, soak leaves overnight at a ratio of one kilogram of leaves to five liters of water. The next day, grind the leaves in the water and strain them. To make a leaf paste, grind fresh leaves with a mortar and pestle; apply to affected area of skin for twenty minutes before rinsing off.

Trunk: The bark of a young Neem tree can be rubbed on a rough surface with a little water to yield a paste that is an effective skin lotion/acne treatment.

Fruit: The fruit is olive-like, oval and thin skinned. It is yellow when ripe and contains 2-3 seeds. It is edible, but not considered palatable.

Twigs: Chewing young, soft branches and using them as a toothbrush is useful for dental care. This method of dentistry has been used for centuries in India to prevent cavities and gum disease. It has antiseptic and anti-inflammatory properties.

Seeds: Neem oil is obtained by crushing the seeds of the fruit, which can yield up to fifty percent oil. Seed gathering season is from May to June and each tree can yield 7 kg of seeds. Seeds should be separated from fruit pulp, dried for 3-4 hours in the sun on mats then in the shade for a few days, then stored in a dry, airy place. Neem oil ought to be stored in a cool place where it will not be exposed to sunlight. If it solidifies due to low temperatures, put in water below 95 degrees F to re-liquefy it. (Water that is too hot reduces the quality of the oil). Neem oil spray (1 teaspoon neem oil in a quart of warm water shaken together well) can be used to kill ticks and fleas on animals. Neem cake is the substance that remains after the oil has been extracted from the seeds. It is sometimes used as animal feed, but is most frequently used as a fertilizer. Some farmers say that the seeds are more effective as fertilizer if the oil has not been removed first. <http://blogs.dolcera.com/blog/author/h-arit-mohan>



Purposes

Neem extracts are frequently used in shampoo, toothpaste, soap, cosmetics, insect repellent, lotions and creams, and pet shampoo. Its high vitamin E content makes it effective in treating skin conditions such as eczema, psoriasis, acne, and skin allergies. Neem extracts are effective in eliminating bacterial and fungal infections or parasites while the antiviral properties treat warts and cold sores. Applied in a paste, it soothes inflammation and reduces redness, moisturizes the skin and keeps it supple, and can lighten scars and pigmentation.

An extract called salannin from neem leaves is a safer and more effective insect repellent than DEET. It repels mosquitos, biting flies, sand fleas, and ticks. Adding neem oil to shampoo can also reduce scalp itching and dandruff. All parts of the neem plant are useful when ground into mulch and applied to soil. It can neutralize an acidic soil, improve the water holding capacity, and improve the nutrient quality of the soil because the deep tap roots draw nutrients from far below the ground. Its rapid growth rate means that the neem tree is also sustainable as a source of firewood.

Extracting Neem Seed Oil

From Discover Neem at <http://www.discoverneem.com/neem-seed-oil-extract.html>

“Unfortunately making pure neem seed oil requires considerable knowledge, skills and equipment. Most of the active ingredients in neem seed kernels are not very water soluble, but because they are so concentrated in the seeds even a watery extract will be very powerful.

1. Low Tech Method Of Extracting Neem Seed Oil

There is a way to make your own neem seed oil. It will not give you high yields, and it will not be of the best quality. But it will give you some oil. Crush, grind, pound or otherwise smash up the seed kernels. Put them in a bowl or bucket and cover with water. The oil floats on top and can be skimmed off.

2. Making A Watery Neem Seed Extract

To make a strong enough extract with water you need about 500 g of seed kernels to 10 l of water. (Of course you can adjust the overall amount as required.) Crush, grind, pound or otherwise smash up the seed kernels. Put them in a cloth bag and suspend it over a big enough bucket. Add the water through the cloth bag and catch the extract in the bucket.

Alternatively you could put the bag inside a bucket or tub and steep it over night, but the above method will give a more powerful extract. The extract can be used as is. However if you want to use it for spraying you will need to filter it first or it will clog up your sprayer. This by the way is the most common method of using neem in agriculture in third world countries. 20 - 30 kg of kernels usually treat about one hectare. That means you need about 50 liters to treat 1000 m²”

Pesticide Use

“Many researches have shown that the spray solution of neem oil helps to control common pests like white flies, aphids, scales, mealy bugs, spider mites, locusts, thrips, and Japanese beetles, etc. Neem oil also works as a fungicide and helps control powdery mildew. Some people have also experienced good results with neem oil spray on black spot. Orchid owners use pure neem oil spray to control pests like mealybugs, spidermites, etc. One of the main ingredients in neem seed oil is Azadirachtin that works as an insect growth regulator, thus preventing the larval stage to molt into an adult. As neem is very bitter in taste, it also works as an antifeedant thus making the leaves sprayed with it very distasteful for the bugs to eat, and the bugs choose to starve themselves than eat the leaves treated with neem. Neem oil is bio-

degradable and has proven to be non-toxic to mammals, birds, bees or earthworms. It is biodegradable and breaks down easily and quickly. Neem has also proven to be not harmful to adult beneficial insects, since it primarily affects only plant sap-sucking insects, which feed upon the treated plants. However it is recommended that care should be taken not to spray neem oil solution when honey bees and the larvae of beneficials like ladybugs, etc. are present. Neem oil spray like any other oil spray can also burn leaves if sprayed in sun.”

-Mili Tandon
www.organeem.com

Method For Preparing Neem Insect Spray

<http://www.discoverneem.com/neem-insect-spray.html>

A concentration of .5-1% is a good solution for a garden spray. Too much can harm plants. For one liter of 0.5% solution of neem spray, you'll need 5 mL of neem oil, 1-2 mL of insecticidal soap or detergent, and 1 liter of warm water. Proportionately, for 20 liters of a 1% solution you will need 200 mL of neem oil, 20 mL of insecticidal soap, and 20 liters of water.



- Use warm water if possible. If making a large batch make a premix in a small amount of warm water, then add that into the big container.
- Mix the warm water with the soap first! Then slowly add the oil while stirring vigorously. If you have trouble dissolving the oil, add more detergent.
- Fill the mix into your sprayer. (Or fill the premix into your sprayer, which should already contain the rest of the water. Mix well.)
- Keep shaking or otherwise agitating the mix while spraying.
- Use the mixture within eight hours.
- Spray the neem insecticide solution on all the leaves, especially the undersides where insects like to hide. If you have plenty drench the soil around the roots as well. Once your batch neem garden spray is mixed the neem oil starts breaking down. Always make a fresh neem insecticide batch for spraying, and only prepare the amount you need.
- Neem plant spray as a preventative measure: Spray once a fortnight using a 0.5 % solution. This should prevent any insect problems in the first place.
- Neem insect spray to fight an infestation: When spraying the first time thoroughly drench all leaves and the soil around the plant. Then spray once a week until the problem disappears. If it rains you may need to respray sooner. If you are dealing with a less sensitive insect species you may need to increase the concentration of the neem spray.
- Wait a week before judging the effects.

Additional Tips:

- Unlike chemical pesticides that kill everything immediately, neem oil works as a pesticide in other ways. It works by disrupting the molting phases and hormones of insects and by repelling them. Therefore, do not be discouraged if insects are not dropping dead instantly.

- Neem oil should only be sprayed when insects are not active (very early or late afternoon) or else it can suffocate beneficial insects. When dried, it only harms sucking and chewing insects.
- Neem oil is entirely safe and no protective clothing is necessary when handling it or spraying it. It can even be used on the body as an insect repellent.

Notes:

- Due to its abortive properties, neem products should not be consumed by women who are pregnant or may become pregnant
- The Neem tree is considered an invasive species in many countries where it has taken root.
- Neem oil should not be ingested. Seed oil can be toxic.
- Additionally, neem products are chemically akin to aspirin and those with aspirin allergies should not consume neem products.
- Neem products are potent. A little goes a long way. It should be used sparingly and tested in small amounts first.

Resources

Cultivation

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Nepal

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