

THE WONDER OF NEEM

In the developed world today there is enormous interest in the humble neem plant. Western researchers are working around the clock to try and unlock the secrets of neem and harness its medicinal and agricultural potentialities. As an antiseptic, fertilizer and pesticides, neem is unique. These qualities of neem have been known by the Indian villagers for centuries, but they have only recently captured the attention of Western scientists.

Varieties of Neem

The Latin name for neem, sometimes called “margosa” in English, is Azadirachta A. Juss. In Bengal, the varieties of neem are:

1. Ordinary neem (*Azadirachta indica*), which has ordinary bitterness;
2. Maha-neem (*Melia composita* Willd.), which is more bitter;
3. Ghora neem (*Melia azedarach*), which is extremely bitter.

Other varieties of neem may grow in other places.

Ghora neem is fast growing --- it grows in 6 months to one year . Because it is fast

growing, it should be grown as a roadside plant. It can provide shade, leaves and fruit. ordinary neem is also fast growing, but not as fast as ghora neem. Maha neem is ordinary growing, and has greater medicinal value than ordinary neem. Ghora neem leaves are not usually taken raw as a medicine because they are very bitter and can cause dysentery.

These three varieties look alike. The profile of the leaves is similar, but their size and colour varies. The plants also vary in size---ordinary and maha-neem grow to a similar size, but ghora is taller. These varieties are also distinguished by their fruit bearing capacity. Neem bears small, white and sweet scented flowers. All neem trees are deciduous.

Neem trees take up to 10 years to reach maturity. Maha-neem reaches maturity in two years. Neem can be grown from sea level to 6,000 feet.

On the model multi-purpose rural development centres created by P.R. Sarkar – called Master Units (M.U.'s) – at least one neem tree should be grown beside all compounds because neem is a very good air purifier and provides shade.

An American variety of neem (called ‘American neem’ by P. R.Sarkar) can grow in colder climates. Of the three Bengali varieties, which are tropical plants, Ghora neem may adapt best to cooler conditions.

Neem Fertilizer

P. R. Sarkar has instructed that on all master units only bio-fertilizers such as bacteriological fertilizers and organic fertilizers such as compost, cow dung, neem paste, etc. , should be used. Chemical fertilizers must be avoided. That is, farming on MU's must be done organically.

However, P. R. Sarkar has also observed that for commercial farming

animal fertilizers are insufficient. Farmers need chemical fertilizers. Hence it is necessary to adopt a system whereby either chemical fertilizers which do not decrease soil fertility are used, or high yields are achieved without using chemical fertilizers at all.

Recently, intensive research into bio-fertilizers was started at the Anandanagar Master Unit in the Purulia District of West Bengal. Neem is one of the bio-fertilizers being studied. Neem oil cakes (i.e. the rest after preparing neem oil) make excellent fertilizers.

Neem Medicine

In preparing neem medicine, the young and old leaves can be used, as well as the seeds and bark. However, the young leaves are best. The seeds take 2-3 months to mature.

If honey bees are kept near neem trees in the flowering season (once a year in March in India), neem honey can be collected. Neem honey has excellent medicinal qualities and is very good with two young tender leaves in the morning, diabetes will be cured. Neem bees wax also has medicinal value, and is an ideal base for preparing different types of medicines.

Neem oil is good for all skin problems, and is a powerful antiseptic which can be safely used all over the body. Neem oil can even cure eczema. Neem oil should be prepared from the leaves rather than the seeds, as this is cheaper.

Recently the Indian researchers claimed that neem oil is providing to be a **powerful contraceptive** when applied to the vagina. It has also been claimed by an Indian scientist that preliminary research into the medicinal properties of neem has demonstrated positive results in **inhibiting the onset of AIDS**.

The main component of neem oil is nimbidin, which is very bitter. Nimbidin can be used for manufacturing several pharmaceutical preparations, including emulsions, liquors, ointments, and medicinal cosmetics such as lotions, shampoos, creams, hair tonics and conditioners and gargles.

Neem oil can be used to make excellent antiseptic soap and toothpaste because it is extremely good for both the gums and the teeth.

Ayurvedic texts list numerous diseases which can be relieved by or cured by the medicinal properties of neem. Indian researchers have confirmed that neem has no side effects for humans.

Neem Pesticide

Azadirachtin, a substance isolated from the neem tree, has been found to have insect repellent and insecticidal properties. What is the potentiality of a natural alternative to the chemical pesticides?

For orcharding in particular, and horticulture generally, there are at least three techniques to get the benefit of neem as a pesticide.

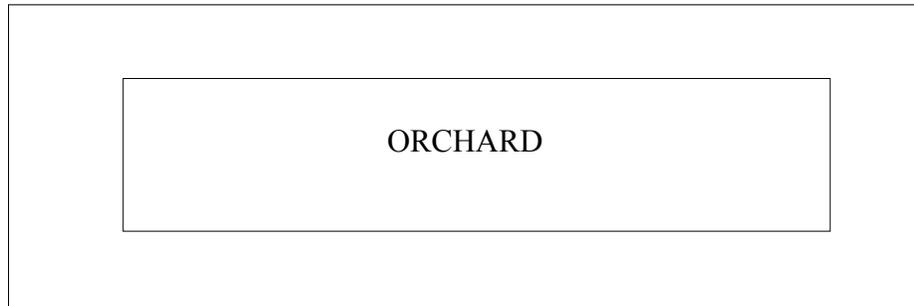
1.) Boundary plantations.

In P. R. Sarkar's integrated farming system, neem trees should be grown

around orchards, crops and vegetable gardens. Such boundary plantations provide a pesticidal shield which protect fruits, vegetables and grains from marauding insects.

The system for growing a boundary plantation around an orchard is as follows. Ordinary Maha Neem (preferably maha-neem because it has more medicinal properties than ordinary neem) should be grown as an alternative plant, with each neem tree 25 feet apart. At the mid-point between each neem tree – that is, at a distance of 12 and half feet – caladium (for example, American arum), custard apples, mangosteen, or Indian gooseberries (amloki in Bengali; embica officinalalis in Latin), should be grown. In 12 and half feet space between these plants and the neem, varieties of basil and other herbs should be grown 6 inches apart. The line of neem trees should be 25 feet from the orchard. Beside safe guarding the orchard from insects, when the neem trees grow large they will also protect the orchard from strong winds.

e.g Boundary plantation which contains alternated neem trees 25 feet apart, and 25 feet from the orchard.



*** THE SQUARE INSIDE IS THE ORCHARD AND THE SQUARE OUTSIDE IS THE LINE OF NEEM TREES 25 FEET APART AND 25 FEET APART FROM THE ORCHARD

In between the boundary plantation and the orchard, rows of turmeric can be grown. Turmeric also has powerful medicinal properties, but is poisonous for humans and should be taken in small quantities. Between the rows of fruit trees in an orchard, lichii, custard apple, rambutan (*Nephelium lappacium* and cherry --- i.e. small fruit plants ---should be grown.

In P. R. Sarkar's integrated farming system, neem is only used as a boundary plant. He did not say that neem trees should be growing among the trees in the orchard. At Anandanagar, boundary plantations have been recommended for orchards ranging in size and form one acre up to 40 acres.

The effects of neem in a extremely large orchard could be a possible avenue of research, although a neem tree in a fruit orchard may make the fruit bitter. Another avenue of research is to determine the precise insect -free radius around a neem tree.

Neem boundary plantations are just as effective for repelling insects in vegetable

gardens and grain crops as they are for fruit orchards.

P. R. Sarkar advised that neem trees should be also grown beside rivers and streams to repel the harmful insects (such as mosquitoes, etc. that might breed there, and to purify the water. Neem can also be used in pisciculture. Neem trees in riverside plantations should be grown alternately with other plants.

U. S. researchers claim that neem trees repel two hundred and fifty types of insects, including cockroaches.

2.) The young leaves, seeds and fruit.

Neem pesticides can be made from young neem leaves, neem seeds and neem fruit. These parts of the plant can be crushed and made into a pesticide to spray on fruit trees. However, it is better to use the young neem leaves in preparing medicines rather than in pesticide. Fruit makes the best pesticide, although the seeds are also very effective.

Two or three dried neem leaves can be placed in a cupboard to protect clothing from insects. Dried neem leaves are better insect repellents than naphthalene or moth balls.

3.) The smoke from burning fallen neem leaves

When the neem leaves fall to the ground in autumn, they can be collected and burnt in a fruit orchard so that the smoke moves among all the fruit trees. The smoke functions as a pesticide.

How To Make Neem Pesticide

Indian researchers have discovered that neem pesticides can be prepared in the following two ways. In the first method, take ripe neem fruit and remove the skin. Dry the pulp in the sun, then keep the sun-dried pulp in the shade to cool it. Next, powder it. This is how to make neem kernel powder, which is then mixed with water to make a solution. Filter this mixture to remove any solids. Use the neem kernel solution as a pesticide by spraying it on fruit trees.

A second type of pesticide can be prepared from neem oil, water and emulsifier.

To

prepare neem oil for pesticide, crush neem seeds to collect the oil, as is usually done when making cold pressed oil from the seeds. The fragrance from the crushed seeds is very strong. Neem oil makes an excellent pesticide.

Neem pesticides destroys insect larva by somehow changing their chemical or hormonal balance. They also kill fungus. To eliminate white ant, add neem oil cake to the soil while preparing the land for cultivation.

It has been found that 0,6% neem to water (i.e. 6 parts neem to 1000 parts of

water) is enough to stop the growth of larva. Generally, 2 % neem water will not only kill larva, but also repel insects. If more than 3% neem is used, there is the possibility of psycho-toxicity (i.e. plant poisoning). In extreme cases (i.e. to counter heavy insect attacks) 4% neem spray has been successfully used.

How can these percentages for neem pesticides be prepared simply and accurately? If 200 gms. of neem kernel powder is mixed in 10 litres of water, a solution containing 2% neem will be made. Alternately, 200 gms. of neem oil, 10 litres of water, and 10 ml. of emulsifier, or 10g. of any detergent powder which will act as an emulsifier, can be mixed together. This process will also give 2% neem pesticide.

200 litres of neem pesticides should be sprayed per acre. In winter, the effect of the spray lasts for 15 to 16 days. In the rainy season the effect lasts 1-2 days. (Perhaps this period can be extended if the spray is mixed with neem wax so that it will stay longer on the plants. This could be studied.) The fruit trees should be sprayed regularly until they begin to flower.

1-5-92, Calcutta
Jayanta Kumar