

## **NEEM- A BOON TO BIODYNAMIC FARMING**

Botanical Name of Neem Tree: *Azadirachta indica*

Common Names: Neem, Nim, Indian Lilac, Nimmi, Limbo, and Limda

Neem is a native tree of India, a tropical tree especially suited to semi-arid conditions. Neem is a medium large tree having short, straight bole, furrowed, dark brown to grey bark, with dense rounded crown of pinnate leaves. It belongs to family Meliaceae and is becoming increasingly popular for its insect repellent traits and unique property of inhibiting the nitrification process in the soil.

In India Neem grows in the plains and in areas that reach an elevation of about 1850m. Neem is tolerant to most soil types including dry, stony, shallow soils, lateritic crusts, highly leached sands and clays. With an extensive and deep-rooted system, the hardy Neem can grow and flourish even in poor, marginal and leached soils. The Neem tree flowers between February and May. The honey-scented white flowers, found in clusters are a good source of nectar for bees. Neem fruits are green drupes that turn golden yellow on ripening in the month of June July and August in India.

### **Utilization of Neem And Its Products**

The termite resistant neem timber is used as building material and in making furniture and farm implements. The bark yields tannin and gum. The amber-hued gum is used as a dye in textiles and traditional medicines. Leaves are used as fodder and green manure. Neem derivatives such as Azadirachtin, nimbidin and a host of other compounds are now used in medicines and commercial pesticides. Neem leaf extracts have also been proven effective against one of the world's most dangerous substances-aflatoxin. A light coating of neem oil protects stored food crops for up to twenty months from all types of infestations with no deterioration or loss of palatability

### **Indigenous usage**

Mixing of Neem leaves (2-5%) with rice, wheat and other grains is even now practised in some parts of India and Pakistan. As early as 1930, neem cake was applied to rice and sugarcane fields against stem borers and white ants. Innovative farmers in Karnataka and Tamil Nadu states in India even today "puddle" green twigs and leaves of neem in rice nursery beds to produce robust seedlings and simultaneously ward off attack by early pest –leafhoppers, plant hoppers and whorl maggots.

### **Use of Neem in Agriculture**

Powdered neem seed kernel mixed with paddy (1-2%) significantly reduced infestation and damage to grain during a 3 month storage period, the effectiveness capacity of jute bag (100\*60 cm) controlled 80% of the population of major insects and checked the damage to wheat up to 6

months. In early tests of neem extracts, the desert locust, which is known for its voracious appetite, refused to eat any plants sprayed with neem and eventually starved to death surrounded by its favourite food. In several tests, spraying neem oil on plants prevented the outbreak of powdery mildew better than popular commercial pesticides. Studies discovered that neem cake was richer in plant nutrients than manure, killed damaging nematodes, promoted larger population of earthworms, helped to keep nitrogen in the soil, making available for plants, and provided significant protection from insects. This combination of effects provides an almost ideal growing condition for the plants.

Neem Seed Kernel Extract (NSKE) in laboratory studies against egg hatchability and development of Diamond Back Moth was established. The eggs were dipped in freshly prepared NSKE for 10 seconds and incubated at room temperature. NSKE at 1,2,3 and 4% concentration caused 71.72 to 82.46% egg mortality. Application of neem cake @ 500kg/ha, either alone or mixed with urea in paddy fields in southern India reduced the number of pupae of *Culex tritaeniorhynchus*, the vector of Japanese encephalitis, and also resulted in high grain yield.

#### **Effect of beneficial organisms**

Only insects that eat plants are affected by neem, leaving honeybees and other beneficial insects unharmed. In areas sprayed with neem, the average size and number of earthworms is greater than in unsprayed areas. Birds and beneficial insects, which are not affected by neem, then feed on the remaining weakened pests and small number of remaining off springs.

#### **NEEM SEED KERNEL EXTRACT PREPARATION**

The extract preparation is started one day before application. For 1 litre of water, take 25g of ground neem kernels (decorticated seeds) or 50g of ground neem seeds (not decorticated) and let the mixture stand overnight. Then filter the extract through fine gauze, a fine meshed sieve or tissue to remove the bigger particles. The extract can now be applied with a knapsack sprayer or a hand pump sprayer with mixing of proper quantity of water without any emulsion or wetting supporting substance.

Thus neem has great potential in organic farming due to its insecticidal properties, its manural value in addition to its medicinal usage and timber. Harnessing this potential wealth which can help to reduce the environment and safer to other living creatures. By judicious usage of neem with other organic based products will help to avoid build up of resistance in pest populations and more wholesome treatment to the land.

**Source: Dr. Vanathi and Dr. S. Rathika, Dept. of Agronomy, TNAU, Coimbatore -3, Agrobios  
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