

NEEM AS AN ORGANIC PLANT PROTECTANT IN AGRICULTURE

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INTRODUCTION

Neem (*Azadirachta indica*) regularly called 'Indian Lilac' and has a place with the family Meliaceae, Subfamily: Meloideae and tribe Melieae. Neem is an evergreen, tall, quickly developing tree, which a stature of 25m and 2.5m in size which has an alluring crown of dark green foliage and nectar scented blossoms. Neem is the most adaptable, diverse trees of jungles, with massive potential. It has most extreme valuable non-wood items (leaves, bark, blossoms, natural products, seed, gum, oil and neem cake) than some other tree species. These non-wood items are known to have antiallergenic, antidermatic, antifeedent, antifungal, calming, antipyorrhoeic, antiscabic, cardiovascular, diuretic, insecticidal, larvicidal, nematocidal, spermicidal and other organic exercises. Due to these exercises neem has discovered huge applications making it a green fortune.

SCIENCE OF NEEM :

Neem plants contain a few large number of substance constituents Of uncommon interest are the terpenoids from various pieces of the neem plant. Of its organic constituents,

the most dynamic and all around examined compound is **Azadirachtin**. Notwithstanding, in most conventional arrangements of neem as pesticide or medication a combination of neem synthetics are available furthermore, give the dynamic standards. A few sorts of *azadirachtins* (A to K) have been disconnected, the most bountiful of which is **Azadirachtin**. The neem terpenoids are available in all pieces of the plant, in the living tissues. As of late, the site of union and collection of the neem synthetic substances have been distinguished as secretory cells. Secretary cells are the most plentiful in the seed pieces. The secretary cells can be seen with iodine arrangement. Other than the terpenoids, neem too contains in excess of 20 sulfurous mixtures liable for the trademark smell of squashed seeds and neem oil.

Neem has demonstrated use as a compost, with the natural and inorganic mixtures present in the plant material acting to improve soil quality and upgrade the quality and amount of yields. The waste excess after extraction of the oil from neem seeds (neem seed cake) can be utilized as a bio fertilizer, giving the macronutrients fundamental for plant development Nitrogen is one of the principle supplements needed by plants for their turn of events, and urea is the fundamental wellspring of nitrogen compost utilized worldwide to supply the nitrogen

interest of harvests. The control of urea hydrolysis and nitrification is one of the essential procedures utilized to stay away from nitrogen misfortunes in agribusiness. Neem has shown action as a nitrification inhibitor, assisting with easing back the bacterial movement that is answerable for denitrification, subsequently diminishing the deficiency of urea from the dirt Because of their compositional intricacy, neem-based items can go about as antifeedants, development controllers, sterilants, hostile to oviposition specialists, and anti-agents.

Natural agribusiness can be a suitable elective creation technique for ranchers, however there are various difficulties to be survived. A key to progress is to be available to new methodologies, and in this regard neem items can adequately add to natural horticulture, being utilized as natural pesticides and as soil manures. Moreover, developing worries about ordinary agribusiness and the interest for items that don't produce squander legitimize expanded reception of the utilization of biopesticides by ranchers, which adds to the development of natural horticulture.

ADVANTAGES OF NEEM

- **Neem as Fertilizer:** Neem has demonstrated use as a manure, with the natural and inorganic mixtures present in the plant material acting to improve soil quality and upgrade the quality and amount of crops. The waste excess after extraction of the oil from neem seeds (neem seed cake) can be utilized as a biofertilizer, giving the macronutrients crucial for plant development. Nitrogen is one of the principle supplements needed by plants for their turn of events, and urea is the principle wellspring of nitrogen compost utilized worldwide to supply the nitrogen interest of crops. The control of urea hydrolysis and nitrification is one of the essential techniques utilized to stay away from nitrogen misfortunes in farming. Neem has illustrated action as a nitrification inhibitor, assisting with easing back the bacterial movement that is answerable for denitrification, thus diminishing the deficiency of urea from the dirt. Neem seed cake plays out the double capacity of both manure also, pesticide, goes about as a dirt enricher, diminishes the development of soil vermin and microbes, gives large scale supplements fundamental to all plant development, assists with expanding the yield of plants in the since quite a while ago run, bio degradable and Eco cordial and astounding soil conditioner.



• **Neem in Pest Management:** In contrast to synthetic insect sprays, neem intensifies work on the bug's hormonal framework, not on the stomach related or sensory system and in this manner doesn't prompt advancement of opposition in people in the future. These mixtures have a place with an overall class of characteristic items called liminoids'. The liminoids present in neem make it an innocuous and powerful insect sprays, pesticide, nematicide, fungicide and so on. The most critical liminoids found in neem with demonstrated capacity to hinder bug development are: azadirachtin, salanin, meliantriol and nimbin. Azadirachtin is presently considered as neem's fundamental specialist for controlling creepy crawlies. 'It seems to cause 90% of the impact on most vermin. It doesn't execute bugs - in any event not quickly - rather it both repulses and disturbs their development and multiplication. Examination over the previous years has shown that it is the most intense development controller and taking care of obstacle at any point tested. It will repulse or diminish the taking care of numerous types of irritation bugs just as certain nematodes. Indeed, it is powerful to the point that a simple hint of its quality keeps a few creepy crawlies from contacting the plants.

APPLICATION OF NEEM EXTRACTS :

Neem Kernel Aqueous Extract: The basic technique for Neem Kernel Aqueous Extract readiness comprise of following advances –

Take dried neem seed. Decorticate (Removal of seed coat) it with the assistance of mortar and pestle or any mechanical decorticate. Clean the neem part and seed coat combination by winnowing seed coat. Gauge 1 kg of clean neem portion and make powder of grain size like fine tea powder. It ought to be beat so that no oil comes out. Absorb it an around 10 lits of clean water. Add 10 ml of pH nonpartisan aide (combination of emulsifier, spreader and so forth) and mix the blend. Keep the combination short-term and channel it on the following day with clean muslin fabric. Put water in the buildup and rehash the extraction 2-3 times. Use buildup as compost for plants.

• **Neem Leaf Extract :**

For 5 liters of water, 1 kg of green neem leaf is required. Since the amount of leaves needed for planning of this concentrate is very high (almost 80 kg are needed for 1 hectare) this can be utilized for nursery and kitchen gardens. The leaves are drenched for the time being in water. The following day the leaves are grounded and the concentrate is sifted. The concentrate is useful against leaf eating caterpillars, grubs, beetles and grasshoppers. To the concentrate, emulsifier is added as referenced in piece separate.

• **Neem Cake Extract :** 100 gms of Neem cake is needed for 1 liter of water. The Neem cake is placed in a muslin pocket and absorbed water. It is splashed for the time being before use toward the beginning of the day. It is then sifted and emulsifier is added - 1-ml for 1-liter of water. It would then be able to be utilized for splashing.

Neem Oil Spray: 15-30 ml Neem oil is added to 1 liter of water and blended well. To this emulsifier is added (1ml/1litre). It is fundamental for add the emulsifier and blend appropriately. This ought to be utilized preceding the oil drops begin drifting. A backpack sprayer is better for Neem oil

For ensuring Stored Grains: One of the customary employments of neem in Asia has been for controlling bugs of put away items. Ranchers for the most part blend neem leaves with grain prior to saving it away for a while. Neem leaves, oil or concentrates goes about as repellent against a few creepy crawlies like weevils, flour scarabs, bean-seed bugs and potato moths. Treatment of jute sack by neem oil is counter-gainful and forestalls the entrance of nuisance like weevils and flour scarabs. Neem oil annihilates bean-seed bugs (bruchids) - an assortment of bugs for the most part assaulting vegetables - at the egg-stage itself.

A combination of neem leaves with mud and cow-manure creates bug safe property so it tends to be utilized to make receptacles for capacity of grain. Post gather misfortunes are famously high in agricultural nations. Overall yearly misfortunes in store reach up to 10% of all put away grain, for example 13 million tons of grain lost because of bugs or 100 million tons because of inability to store appropriately.

NEEM FOR SOIL FERTILITY AND FERTILIZER MANAGEMENT:

Indian ranchers have customarily utilized de-oiled Neem cake as a manure in their fields. The double movement of Neem cake as compost and irritation repellent, has made it a supported information. Neem leaves have additionally been utilized to advance the dirt. Together, they are broadly utilized in India to treat cash crops. At the point when Neem cake is blasted through the dirt it likewise shields plant roots from nematodes and white subterranean insects. Ranchers in southern pieces of India puddle neem leaves into overwhelmed rice fields before the rice seedlings are relocated.

Use of the Neem seed cake to crops furnishes them with different supplements. Furthermore, the Neem seed cake additionally lessens the quantity of soil bug bugs, growths, microbes and nematodes and shields the yield from harm brought about by these life forms.

