Popular Article

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Eradicate Loranthus and Save Neem Trees

Neem is a traditional tree that grows well in all tropical areas. It is a deciduous tree with wide spreading branches. Spreading branches of the trees form crowns which spreads 20 m across. The leaves fall only during summer and in other seasons the tree remains evergreen. The roots of the tree penetrate deeply into the soil and remain live for more than twenty five years. Loranthus is the only parasitic weed that grows on the branches of the trees. It mainly spreads through birds. The colorful flower of the parasite attracts birds which eats the berries of the loranthus and spreads it through its fecal matter. It produces haustoria which penetrate deeply into the tree branches which sucks nutrients and moisture from the host tree. As days passes it will lead to death of the tree. Cutting the infected branch and applying copper-oxychloride to prevent secondary fungal infection is one of the best ways to control the spread of the parasitic weed.

INTRODUCTION

Neem tree is known as *Azadirachta indica* and is the native of Indian subcontinent. It is grown in tropical and semi-tropical regions. Its fruits and seeds are the source of neem oil. Neem is a fast-growing tree that can reach a height of 15 - 20 meters and rarely 35 - 40 meters. It is a evergreen tree. All the leaves are shed during severe drought. It has wide spreading branches. In India, as a traditional method of preventing insects in cupboards dried neem leaves are used. Dried neem leaves are burnt to keep away mosquitoes. Neem is a key ingredient in integrated pest management practices, providing a natural alternative to synthetic pesticides. Neem seeds are ground into a powder that is soaked overnight in water and sprayed onto the crop to prevent insects. This extract is applied at a frequency of fifteen days to repel insects at a higher rate. It acts as an anti-feedant, repellent and it protect the crop from insect damage. This nature of neem makes the larva of the insects to starve and it dies in few days. Neem cake is used as a fertilizer which repels soil born insect stages. Neem oil is

used as an insect repellent spray which prevents termite attack and proves eco-friendly.

LORANTHUS

Loranthus **(**Family *Loranthaceae*) is a partial stem parasitic weed which grows on the branches of woody trees. It mainly affects neem, mango and various other tree species. There are different species of loranthus among which *Dendrophthoe falcata* is most commonly found one in all the trees. It attacks the aerial part of the tree. It develops haustoria (sucking roots) and steals it nutrients from the vascular system of the tree. It is devoid of root system. It has thick green leaves which synthesis its own food by photosynthesis. It depends on the host tree for water and nutrients. It sucks water and nutrients continuously from the host tree by using the sucking roots which results in death of the host tree in three to four years. The place at which haustoria penetrates into the host tree swells and forms as a tumour which vary in size depending on the age of the host trees.

Development of tumor in the host tree

Flowers of Loranthus

PARTIAL STEM PARASITE

Loranthus grows strongly on the branch of the trees. After establishment it starts stealing nutrients and water from the host tree. It blocks sunlight by covering the area where it grows. It has small flowers which usually have four to six floral parts. The flowers may be either unisexual or bisexual. The flowers are showy, which blooms in lively colours. The fruits are generally single seeded berries. The seeds are dispersed mainly by birds.

BIRD POLLINATION AND SEED DISPERSAL

Loranthus is typically Ornithophilous which means pollination by birds. Flower peckers disperse the seeds. Dissemination of the parasite occurs due to dispersal of its seeds mostly through birds. The fruits are succulent, bright coloured and it attracts birds. The seeds are non-digestive in nature due to the presence of gummy mucilage around the seed and are carried easily by birds. By wiping or striking their beaks, the birds make the seeds to get rid of it. The swallowed seed passes through the fecal matter of the bird which when fall on the tree branch starts germinating in the bark. The seeds cannot grow in the soil. It prefers to grow only on top of the canopy of host.

MECHANISM

Presence of chlorophyll in the green leaves of the loranthus synthesis food materials by photosynthesis. Sucking roots that grows into to the host tree surface at intervals it forms haustoria. It sucks water and nutrients at a high rate from the host tree. It has high transpiration rate which reduces the xylem potential of the host branches which in turn reduces net photosynthetic rates of the host. It also has higher leaf transpiration and stomatal conductance than host trees. It has lower xylem water potential compared to host due to the accumulation of osmotically active solutes. This nature of the parasite decreases xylem hydraulic conductivity of host branches despite of point of infection which causes the branch to devoid of nutrients and water. This can cause the end of the branch to die, but the mistletoe remains living, drawing water and nutrients from the infected branch.

CONTROL MEASURES

MECHANICAL METHOD

- Cutting the infected branches affected by the parasite.

- Copperoxychloride is applied to the cut ends of the branches to prevent secondary fungal infection.
- Long handle pruning knife, aluminium ladder for climbing and power operated tree cutter are used for physical removal.

CHEMICAL METHOD

- Non-regenerative parasitic mortality is achieved by base banding with 1% 2,4-D sodium slat.
- The outer skin of the host is removed to about 0.5 cm length. Cotton cloth which is soaked in herbicide is banded around the trunk of the tree which prevents parasite growth.
- Ethephon at 1 percent concentration is foliar sprayed two times consecutively to prevent leaf growth of the parasite. It is a ripening hormone which releases ethylene that causes abscission of leaves, flowers and fruits which results in complete defoliation of the plant.

BIOLOGICAL METHOD

- Only larva that feeds on the neem is butterfly (*Delias eucharis pieridae)* which is one of the natural weed control method.
- The larva feeds on the leaves of neem trees quickly and grows in scores.
- Beautiful common Jezebel butterfly comes out of the larva after metamorphosis. It is a good pollinator and highly useful for trees.

CONCLUSION

Neem trees are highly medicinal value one from ancient times. Mostly there will be less pest and disease attack in neem trees. Loranthus is the only parasitic weed that causes high risk to tree growth. It steals nutrients and moisture from the xylem of the tree through sucking roots. It is mainly disseminated by birds. The only way to control loranthus is by mechanical method. By effectively utilizing this method need trees can be saved and ecosystem can be maintained.