



Role of Neem Based Botanical Pesticide in Organic Agriculture

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Botanical pesticides have important role in organic farming as there is major problem of controlling insects and pests in organic mode of cultivation. Neem and its allelochemicals have variety of effect on pests. This article shortly describe about preparations of foliar sprays from neem parts for pest control.

Introduction

Agriculture had to face the destructive activities of numerous pests like fungi, weeds and insects from time immemorial, leading to radical decrease in yields. With the advent of chemical pesticides, this crisis was resolved to a great extent. But, reliance on synthetic chemicals to control pests has also given rise to a number of problems such as pest resurgences, pest resistance to pesticides, pesticide residue, lethal effect to non target organisms, disturbances of the environment and to direct toxicity to users. Therefore, it has now become necessary to search for the alternative means of pest control, which can minimize the use of synthetic pesticides. Botanical pesticides are the important alternatives to minimize or replace the use of synthetic pesticides as they possess an array of properties including toxicity to the pest, repellency, antifeedance and insect growth regulatory activities against pests of agricultural importance. Botanical pesticides are biodegradable and their use in crop protection is a practical sustainable alternative. Botanical pesticides are unique because they can be produced easily by farmers and small industries. As consumer demand for organically produced foods increase, use of botanicals pesticides in Integrated Pest Management is now gaining momentum

Neem (*Azadiracta indica*), the versatile tree having many good and useful qualities is indigenous to India from where it has spread too many Asian & African countries. Neem and its allelochemicals have variety of effect on pests. Although all parts of the tree repel insects, extracts of the seeds are outstanding repellents and feeding deterrents for a broad spectrum of economically agricultural and household insects-pest. Seed extracts deter at least 25 species of crop pests from feeding, inhibit the growth and development of others and render others sterile, 140 active components have been identified to date that occur in different parts of tree. The most important component identified has been the tetranortriterpenoids (limonoids) the

azadiractin. Unlike most of the present insecticides available on the market, the seed extracts appear to be non toxic to man and animals and are essentially non-phytotoxic.

Preparation of Neem Seed Kernel Extract (NSKE 5%): Take 50 g of powdered neem seed kernels and soak it in one litre of water for 8 hours and stir the contents often. Squeeze the soaked material repeatedly for better extraction of the azadirachtin in the aqueous suspension. Filter the contents through muslin cloth. Make the filtrate to one litre. Add 1 ml teepol or triton or sandovit or soap water (2%) and spray. The seeds that are used for the preparation of neem kernel extract should be between three and eight months old. Otherwise, the quantity of azadirachtin in the seeds is quite low and hence they cannot be efficiently used for pest control.

Note

- Collect the Neem fruits during bearing season and air-dry them under shade.
- Do not use the seeds over eight months of age. The seeds stored over and above this age lose their activity and hence not fit for NSKE preparation.
- Always use freshly prepared neem seed kernel extract (NSKE).
- Spray the extract after 4.00 P.M. to get effective results

Preparation of Neem Leaf Extract: Neem leaves are used against agricultural important and stored grain insect-pests. For 5 litres of water, one kg of green neem leaf is required. The leaves are soaked overnight in water. The next day, they are ground and the extract is filtered. To the extract, emulsifier is also added. The leaf extracts showed insecticidal property against, Diamondback moth, Tobacco caterpillar, Groundnut leaf minor, grubs, locusts and grasshoppers *etc.*

Note

- There is no need to boil the extract since boiling reduces the azadirachtin content.
- Some farmers prefer to soak the leaves for about one week, but this creates a foul smell.

Preparation of Neem Cake Suspension: Soak one kilogram of neem cake in 5 litres of water for 2 days and filter through muslin cloth. Dissolve 200 g of soft soap in the filtrate and make upto 10 L of water before spraying. This controls tobacco cutworm, leaf miners of citrus, groundnut, tomato and beans *etc.*

Preparation of Neem Oil Spray: Thirty millilitres of neem oil are added to the emulsifier and stirred well to ensure that the oil and water can mix well. After this, 1 litre of water is added and stirred well. It is very essential to add the emulsifier with the oil before adding water. It should be used immediately otherwise oil droplets will start floating. A knapsack sprayer is better for neem oil spraying than a hand sprayer.

Conclusion

Neem is the versatile tree and there are lot many preparations can be made using its parts. The above discussed preparations have important role in pest management particularly in organic farming.