

Ecofriendly Biocontrol over Diseases, Pests and Insects for Crop Management

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Abstract: *Ethnobiological explorations can potentially bring out many different clues for the development of safe, effective and inexpensive indigenous remedies against different crop plants. Present study has been focused on tribals of Nandurbar district of Maharashtra, India. Field visits in this area were carried out during 2013–2014. The aim of the present study was primarily to evaluate and discover the biocontrol of neem plant known to tribals and to encourage preservation and documentation of their culture, conservation and sustainable utilization of such plant wealth.*

Key words: Tribals, traditional, biocontrol, Neem, Crop Management, Nandurbar district.

INTRODUCTION:

Nandurbar district lies between 21° 0' and 22° 3' north latitude and 73° 47' and 74° 47' east longitude. It is situated in the North West side of the state of Maharashtra. It is separated from Dhule District in 1998. The Nandurbar is bounded in the west by Surat, Dang and Baroda districts of Gujarat state, in the North by Jhabua and West Nimad districts of Madhya Pradesh. It comprises six tahsils viz. Akrani, Akalkuwa, Nandurbar, Navapur, Shahada and Taloda. Satpura ranges formed a broad belt of mountain land stretching in a wall like manner in Northern part of the district. It is one of the tribal dominated districts of Maharashtra. The tribal communities like Bhil, Pawara, Mawchi, Konkana, Dhankatec are deriving for major resources from the plant wealth of the region. Their major occupation is agriculture followed by collection of forest resources and rearing of domestic animals. There are reports on ethno medicine from the study areas (1,2.) This is the first report on the biocidal activity of plants on crops by tribals. Mostly Neem based enterprises are eco-friendly and are preferred in organic farming and hence gained importance due to safety concerns in food manufacturing industry owing to presence of unprecedented/ toxic levels of pesticides/chemical residues in the food products in addition to enhancing the soil health and fertility. Neem (*Azadirachta indica*) is not only known for its herbal medicines and environmental friendly organic pesticides.

MATERIALS AND METHODS:

Periodic field tours were arranged during the 2013-14 in the Nandurbar district. Several villages called "Padas" were visited and the local informants were interviewed. Elderly knowledgeable and experienced persons practicing

the traditional biocontrol methods were taken into confidence and the information was gathered along with the plant specimens used. The plant specimens were identified with the help of established flora (3-5) while insects and pests were identified with the personal communications with agriculture college, Shahada. Herbarium specimens were deposited at Department of Botany, M J P V a c and science College, Shahada. Dist. Nandurbar, M.S.

RESULTS AND DISCUSSION

Tribals of Nandurbar district traditionally grow some crops for their household needs. So they prefer some less expensive methods for controlling disease and management. They often grow such crops on limited area so the chemicals are not affordable to them and the remoteness of the area also matters. Ground nut is often attacked by leaf minor and white grub, and red caterpillar, tobacco caterpillar. *Helicoverpa* application of neem seed kernel extract 4-5% is found effective against the above disease and pests.

In *Sesame pedalicum*, the neem seed oil is often used against the pests like aphids and jussids. While in Sunflower plant some farmers used neem seed kernel extract 4-5% for management of tobacco caterpillar.

Cotton is the cash crop of some marginal farmers in the study area. It is more often attacked by diseases and pests. Most of the farmers used chemical as control measure. But some of them followed traditional method by using neem seed oil to control over White fly, Aphids, American boll worm, and Tobacco caterpillars. 4-5 % -of oil is found effective against these insects and pests. Similar results were experienced by the bhindi and brinjal crops growers.

Tomato and cauliflower crops were infected by diamond backmoth, and head borer are controlled by neem seed extract after two days interval of time till controlled.

Mango is one of the economically important plant of the tribal in Nandurbar district sometimes it was infested with mango hopper and castor is sprayed for red hairy caterpillars by neem seed oil.

In the agricultural sector, the applications of neem occupied major role for all crops as an important component of organic farming. Neem based pesticides and insecticides help to control the pests by altering their life cycle and feeding habits. The active ingredient of neem extract contains azadirachtin. Pest control using extracts from the Neem. Currently, Neem oil has proved its importance in treating of hair fall, dandruff, lice and early graying of hairs in many countries throughout the world. However for better effect and feasibility, first apply leaf extract (neem, seethaphal, karanja, vitex leaves) or Neem Seed solution (VepaKashaya). Subsequently, when eggs of pest start appearing, apply neem oil, ensure the spray reaches both sides of the leaves and stem of the plant (6).

There is need of encouraging farmers to collect and store neem seed during May-June to meet their requirement during the Kharif season. When the pest incidence is severe, Neem products have to be supplemented with chemical pesticides. Use Neem products preferably in the morning or evening. Use of emulsifier is must when neem oil is used. Use only cold expelled neem oil. Use neem formulations from approved manufacturers only.

Neem Cake has multiple effects in the soil in controlling soil borne fun. Neem Cake has multiple effects on the soil in controlling soil borne fungi, nematodes besides providing nutrition. The effects also last for the subsequent year. Hence, farmers may be encouraged to use Neem cake as much as possible.

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