

Plant production through indigenous traditional knowledge

Nitish Kumar, Shivi Gupta and Anjali Chandra

University of Agricultural Sciences, Chandigarh University, Gharuan, Mohali, Punjab

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Indigenous traditional knowledge:

Neighborhood and native information alludes to the understandings, aptitudes and ways of thinking created by social orders with long narratives of association with their common environmental factors. For provincial and native people groups, neighborhood information illuminates dynamic about central parts of everyday life. Native Technical Knowledge (ITK) alludes to the interesting customary neighborhood information existing inside and created around the particular conditions by ladies and men native to a specific geographic zone. This native specialized information that individuals in a given network have created after some time and keep on creating it, depends on human encounters on mass scale, dynamic and changing, tried as a rule over hundreds of years of utilization, invested with most elevated conceivable flexibility to nearby culture and climate and put more prominent weightage on limiting dangers as opposed to expanding benefit. The native specialized information (ITK) covers a wide scope of subjects, viz. crop creation, animals raising, common asset the executives, food planning, medical care, creepy crawly bother the board and numerous other.

ITK and plant infectious prevention

- Customary arrangement of harvest assurance that ranchers have gained from their long relationship with the land, its verdure depended on eco-accommodating frameworks of reasonable social practices, prudent revolution of yields and information on nuisances and their life-cycle.
- In case of bunchy top disease in chillies, dusting of ash, spray of liquid waste of tanned leather in tribal areas.

- Some farmers used to apply fresh cow dung near the collar region of chilli plant to control fungal disease, viz. damping off and dieback.
- In case of soil-born disease, root rot and collar rot were used castor cake, karanj cake and neem cake as control measures.
- 20 kg of *Casuarina equisetifolia* leaves are boiled in water for 20 min. After cooling, the solution should be filtered. Then the extract is diluted with water and can be given to control some bacterial and fungal disease.
- Prepare solution from 2 kg fresh leaves of papaya in 3-4 litres of water and keep in overnight. After filtration, this is diluted with 50-60 litres of water and 250ml soap solution added to it, is effective to control brown spot disease of rice.
- Cultivation of marigold followed by solanaceous vegetable crops is effective to control bacterial diseases.
- Leaves of khair (*Acacia catechu*) can be put into water channel to control brown spot disease of rice.

ITK and insect-pest control

The application of chemicals for pest control leads to food poisoning, soil, water and environmental pollution. These chemicals create ecological imbalance and allow insect-pest to develop resistance. At these moments, an indigenous knowledge related to plant protection in agriculture would play vital role.

Management of insect pests through ash

- Sprinkling of ash over and around the vegetable crops like onion, okra, brinjal, tomato and cucumber and in fields is effective against insect pests viz., beetles (pumpkin beetle, hadda beetle etc.), leaf defoliating insects, leaf miners, thrips and aphids. It is the cheapest practice for small farmers. Ash acts as a detergent. Chewing and sucking type of insects, find it difficult to chew plant parts due to deposition of ash.

Management of insect pests of mustard crops through *Aloe barbadensis* (Gwarpatha) + *Nicotiana tabacum* (tobacco) + *Azadirachta indica* (neem) + *Sapindus trifoliatus* Linn. (Aritha)

- The mixture is effectively used against the insect pests of mustard crops. Leaf decoction (1 kg) of Gwarpatha and tobacco powder extract (200 gm) is prepared in 5 litres of water for 3-4 hrs to make a 2 litres solution. Neem leaf extract (200 ml) is added after evaporation process and decoction of 50 gm aritha powder is added to the above solution and mixed thoroughly. This is sprayed on the mustard crop at interval of 2-3 weeks. It is practiced throughout the hilly areas of Mandi district of Himachal Pradesh.

Management of insect pests through cow urine + *Vitex negundo* (Nirgundi) + *Ferula asafoetida* (Hing)

- These mixtures are very effective, eco-friendly insecticidal treatment against insect pests of wheat crop. It repels the insect pests. Leaf decoction of nirgundi (about 30-40 leaves in 10 litres of water) is prepared till it is left 1 litre. This mixture is filtered properly. About 10 gm hing is mixed in 1 litre water and then above ingredients are mixed in about 5 litres of cow urine and sprayed over affected crops. It is effective for all sowing seasons (early; normal or late sowing seasons) of wheat and paddy crops. It is practiced most in hilly mountain villages of Shimla, Himachal Pradesh

Management of pod borers in gram crop through whey (lassi) + *Aloe barbadensis* (Gwarpatha) + *Nicotiana tabacum* (tobacco)

- This method is very effective against the pod borers infesting the gram crop. Tobacco powder (200 gm), lassi (2 litres) and Gwarpatha (2 leaves) are dissolved in 15 litre of water. This solution is left undisturbed for 15 days. It is then filtered with a muslin cloth and the filtrate is sprayed over the infested crop at an interval of 2-3 weeks. Management of paddy insect pests through *Vitex negundo* (Nirgundi) Farmers sweep the paddy field with brooms made up of branches of *Vitex negundo*, which are known to act as an insecticide and enhance growth of paddy. It is practiced throughout the hilly areas of Himachal Pradesh.

Management of paddy insect pests through *Vitex negundo* (Nirgundi)

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- 4 kg tobacco leaves and twigs are boiled in 40 litres of water for 40 min. After cooling, 1 kg soap power is mixed and solution is diluted 7-8 times and sprayed to control aphids and white flies in citrus plants.
- Rice seedlings raised from seed treated with extract of neem kernel are resistant to leaf hopper.
- For prevention of infestation of shoot borer in mango tree, common salt is mixed with soil near the collar region of tree.
- In case of insect holes made by shoot borer and bark eaters in mango, jiggery is placed in the holes to attract other predators to feed on the insect present in the holes.
- Similarly, the practices of pouring kerosene or petrol in holes and blocking holes with mud or cow dung are also common in citrus plant.
- 1 litre extract of equal quantity of crushed green chillies and garlic mixed with 200 litres of water is effective to control aphids and jassids.
- Filtrate prepared from a solution of 1 kg *Calotropis* leaves and 5 litres of water is effective to control leaf sucking pests.
- An extract of tobacco waste with 250 g of soap solution in 200 litres of water as spray control stem borer.
- A solution prepared from neem leaf paste in water (10 kg: 2 litres) is effective to control leaf folder in rice.
- A solution prepared from 100 g tulsi (*Ocimum* sp.) leaves in 1 litre of water with 1 ml soap solution can be used for effective control of aphid, army worm, red cotton bug, mosquito etc. is used to control cotton semilooper, mites, green leaf hopper, aphid etc.

Control of stored grain pests

- Garlic leaves are used for safe storage of food grains.
- Leaves of *Vitex negundo* (Nirgundi) are incorporated in any pulse seeds for long time preservation.
- There is a common practice of storing food grains like wheat and rice use of neem leaves to prevent storage pest damage.
- Milled chickpea, green gram and other pulses are stored after thoroughly treated with mustard oil.

- Green gram can be kept free from any pest infestation by treating with 1% neem leaf powder.
- Seed mixed with *Acorus calamus* (baje) powder in the ratio of 10 kg: 1 kg would help in preserving the seed free from stored pests for long time.

