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Making Agriculture Smart by using Different Botanical Pesticides

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Botanical Pesticides are organic and natural pesticides that are extracted from plants that have naturally occurring defensive properties. These types of pesticides have become more popular because they are highly biodegradable, have varied modes of action, are less toxic to humans, are non-pollutant and are readily available in the environment. Also, they have proven to be more useful than conventional insecticides as insects become more resistant to synthetic pesticides.

Here are some different types of Botanical pesticides given below:

(A) Dashparni Extract

The word 'Dashparni' contains two different words: 'Dasha' means 'ten' and 'Parana' means the plant or tree leaf. 'Extracts' means to remove the juice. It is a natural pesticide, which can be used on any crop and vegetable plants or fruit trees. Due to the high amount of urea in Dashparni Ark, worms and insects do not attack crops, plants and buds. Due to nectar and aroma, Worm and insects are attracted to plants, they are away from plants due to the scorching and bad odour of Dashparni Ark, by which plants can be protected.

Dashparni extract is very effective in controlling all kinds of insect pests and diseases prepared using all-natural ingredients. It strengthens the plant's overall immunity; it is antiviral and antifungal. The farmers can prepare the solution in-house.

Ingredients: Crush the following plant parts in a 500-litre drum.

- Neem leaves– 5 kg
- Jatropha leaves
- Papaya-2 kg
- Heart-leaved moonseed leaves- 2kg
- Custard apple leaves-2 kg
- Karanja leaves-2 kg
- Castor leaves- 2 kg
- Nerium leaves-2 kg
- Aak leaves-2 kg
- Green chilli paste-2 kg
- Garlic paste-250 g
- Cow dung-3 kg
- Cow urine-5 litre
- Water-200 litre

Method of Preparation:

- Take a 200-litre vessel (either a plastic drum or similar ones)
- Pour the Water first
- Submerge all the 10 different leaves in the water
- Pour the Cow Urine and Cow Dung on top of the submerged leaves
- Mix them well and leave it for 5 days
- On the Sixth Day, add 5-7 litre of water and again mix all the contents in the vessel

Figure 1: Dashparni preparation

- Leave the same as it is for a month
- The Dashparni Ark is ready to use after filtering its Method of Storage
- The pesticide should be kept in the shade and covered with a wire mesh or plastic mosquito net to prevent houseflies from laying eggs and the formation of maggots (worms) in the solution.
- This is applicable during the preparation as well as during the shelf life of the pesticide.
- The extract can be stored for up to six months and is sufficient for one acre.
- The pesticide can be stored for four months in good condition.

How to use pesticides?

Spray System - The pesticide can be applied as a foliar spray.

Recommended dose: Dilute 125 ml of the pesticide with 10 litres of water or Dilute 2.5 litres of the pesticide with 200 litres of water for one acre.

(B) Neemastra

Neemastra is a **Natural Insecticide / Pesticide mixture to control the dangers** of nymph-sucking insects and mealybugs.

Method of Preparation:

- Crush 5 kg neem leaves in water
- Add 5 lit cow urine and 2 kg cow dung
- Ferment for 24 hours with intermittent stirring
- Filter and squeeze the extract and dilute to 100 lit
- Use as a foliar spray over one acre

Figure 2: Neemastra preparation

Beneficial against:

Useful against sucking pests and mealy bugs.

(C) Brahmastra Preparation and Storage Method

Brahmastra is a natural pesticide against large and small insects. such as borer, pod borer, and fruit borer. This Brahmastra liquid natural pesticide mixture can be made by farmers easily at home.

Brahmastra Preparation Method:

- Crush 3 kg neem leaves in 10 lit cow urine.
- Crush 2 kg custard apple leaf, 2 kg papaya leaf, 2 kg pomegranate leaves, and 2 kg guava leaves in water.
- Mix the two and boil 5 times at some interval till it becomes half
- Keep for 24 hrs., then filter squeeze the extract.
- Dilute 2-2.5 lit of this extract to 100 lit for 1 acre.

Figure 3: Bramhastra Preparation

Stored in: This can be stored in bottles for 6 months.
Useful against: Useful against sucking pests, and pod/fruit borers.

Dis-advantages

- High specificity: this may require an exact identification of the pest/pathogen and the use of multiple products to be used.
- Slow speed of action (thus making them unsuitable if a pest outbreak is an immediate threat to a crop).
- Variable efficacy due to the influences of various biotic and abiotic factors (since some biopesticides are living organisms, which bring about pest/pathogen control by multiplying within or nearby the target pest/pathogen)
- If the target population is not exterminated or rendered incapable of reproduction, the surviving population can acquire a tolerance of whatever pressures are brought to bear, resulting in an evolutionary arms race.

Conclusion

The widespread use of insecticides is ineffective and economically wasteful in the long run. Many insecticides do accomplish the intended task of controlling pest populations. However, their detrimental health and environmental effects make them an inadequate long-term solution. In addition, most synthetic and natural pesticides are susceptible to ineffectiveness due to resistance buildup in insects. Thus, the only viable solution for the future is integrated pest management. The economic benefits and reduced social costs of these systems present a logical answer to the pest control problem.