

Role of Agro-Ecological Approaches in Pest Management

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Introduction

Agro-ecological approaches in pest management refer to the practices involved in controlling pests for a higher rate of crop production, without using any chemical pesticides or other methods that are proving harmful for our environment. Most of the farmers are using techniques that seem to be very helpful in controlling pests, but after a long period, they start showing their negative effects as they disturb the whole ecology and thereby decreasing crop production.

Pests management in the present scenario and its impact :

Since the advent green revolution in our country, farmers started using chemical fertilizers and pesticides, as they were made widely available at a highly subsidized price. But, these things started showing their negative effect on our environment as the chemicals fertilizers made the land barren after using for a long term while the chemical pesticides did not only killed the pests but also their natural predators and other friendly creatures such as earthworms. In fact, due to prolonged use of chemical pesticides, many of the pest's species have mutated and became resistant to their effects. The chemicals used also have harmed human health, and as a result, we saw a rise in the number of lethal diseases like cancer. Also, several species of birds; many of which were predators of crop pests also; saw a decline in their population due to feeding on these chemical bounded crops. Not only this, the chemicals especially after rain or artificial irrigation, got washed up and infects the nearby water streams and even groundwater, possessing hazard to whosoever uses that water, whether it is a plant, an animal or human. Still, due to lack of awareness and easy availability of these chemicals, farmers are using these things blatantly.



Pest management in ecological farming- Methods :

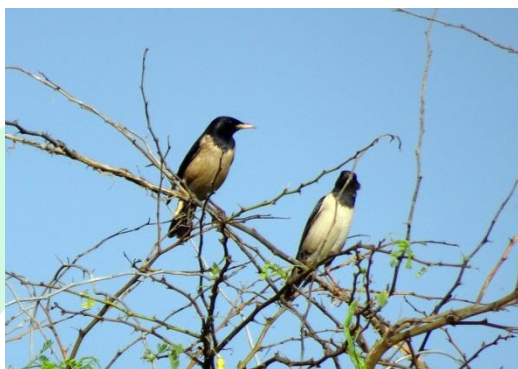
There are many methods of pest control that doesn't harm the environment. Some of them are:-

- (1) Release of natural predators of pests in the field, like releasing ladybird beetles to control aphids.
- (2) Nematodes rely on a specific host to complete their life cycle. Use of some nematodes species for targeting a particular pest is an amusing way to control their population.
- (3) Cats can be bred for controlling mice and other notorious rodents which causes harm to crops.
- (4) By giving protection to natural predators of pests like snakes and owls (for rodents); and insect eater birds and bats species(for insect pests).
- (5) Use of transgenic/genetically modified crops which are resistant to a specific pest, like Bt- cotton which is resistant to cotton bollworms.
- (6) Use of large sticky white sheets with lights focused on it; for controlling pest insects which are nocturnal. The insects get attracted towards it, where due to sticky substances, they adhere onto the sheet.
- (7) Installing scarecrows to frighten away seed-eating birds.

Locusts control in Xinjiang (China): a case study

Farmers of Xinjiang province of China used chemical insecticides to control locusts swarm, which was costly and polluting the environment. In the 1980s, researchers found that a bird, called *Rosy starling (Pastor roseus), which migrates during winter,

can be used to control locusts. So, with the help of farmers, experts installed artificial nests to attract these birds and this effort proved to be such successful that many juvenile birds died because the number of locusts became insufficient to feed them all. And in the present time, Most of the farmers have reduced insecticidal use and instead, rely on these winged friends for protection of their crops from locusts.



How'll be the agro-ecological approach helpful?

Control of pests with an agro-ecological approach does not do only increases crop production, but also saves a farmer's money by preventing them from relying on chemical pesticides. Besides, it does maintain the number of prey and predator species in nature and reduces polluting agents in the environment. Crops produced with these control methods are much safer for consumption as they do not contain any harmful chemical. It reduces the labour, as the farmer does little or no work in eliminating pests, thereby saving more time which can be utilized elsewhere.

Conclusion :

Contemplating the above-mentioned methods and benefits, the agro-ecological approach does play an extraordinary role in pest management, maintaining the ecological balance at the same time. It may not seem lucrative at first because of the complexities involved, but once a farmer is trained properly, it will prove to be much better than the other methods as it is less time consuming, more eco-friendly, less laborious and improves crop production by eliminating even those pests which are resistant to chemical pesticides. So, it is better to lean towards ecological control of pests than relying on the chemical ones.