



FACULTY OF AGRICULTURAL SCIENCES & ALLIED INDUSTRIES

TECHNIQUES IN PLANT PROTECTION MSH-304

LECTURE 08

The natural enemies like parasitism, predation and other mechanisms for controlling the plant pests are referred as a biocontrol agent. They play an important role in controlling the plant pests like nematodes weeds, insects, and mites. The biological control agent helps in maintaining and balancing the plant species along with their natural enemies.

Types of Biocontrol Agents

Biological control can be categorized into 2 types, namely inundated and classical.

- **Inundative Bio-Control:** This approach uses pathogens, where they are used to apply on a target weed at a very high rate in an aspect that is similar to herbicide application. The most common pathogens used in inundative biological control include nematodes and nuts. This approach does not prevent the invasive plant from implementing at a later date.
- **Classical biocontrol:** It uses agent populations that would waver in a natural prey and predator relationship. This method adopts natural [predators](#) of the invasive plant to create an eternal relationship between a plant and biological control animals.

List of Biological Control Agents

- **Predators:** They are mainly free-living species that consume preys in large number during their lifespan. Since the majority of insects constitute crop pests. Some of the predators include Lacewings, Spiders, Flies, Beetles, and dragonflies.
- **Pathogens:** Virus, Bacteria, and fungi are relatively pathogenic micro-organisms that are host specific or kill their host. Some of the microbial diseases occur naturally but they are used as biological pesticides.

- Bacteria: Bacteria's belonging to coccobacillus group are more pathogenic to insects. They are used for biological control. They infect digestive tract of insects thus limiting the options, for controlling insects with sucking mouthparts namely scale insects and aphids.
- Viruses: The use of insect [virus](#) as a controlling agent is still in inception. Since they are host specific, they turn out to have good potential as biocontrol agents.
- Fungi: The fungi Entomophaga is effective against pests namely green peach aphid.
- Parasitoids: They lay eggs in the body of the host (insect), eventually killing the host. It is later used as a source of food for the developing larva. It is one of the most widely used biological control agents.

Merits and Demerits of Biocontrol Agents:

Merits

- The biological control agents are environmentally friendly and cause no side effects.
- Less cost compared to other Agrochemicals – pesticides and insecticides.
- Easily available, easy to use and is effective throughout the season.
- Helps in reducing the use of chemicals and other pesticides.

Demerits

- It affects the product quality.
- Pest is not completely destroyed by these biological control agents.
- It is effective only for large scale