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*Shaping Lives...*  
*Empowering Communities...*

# Session 6.2



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- **Preventive and Curative Care**

1. Undertake pruning of plant if affected by diseases (if need arises)

2. Select resistant varieties

Choose varieties which are well adapted to the local environmental conditions (temperature, nutrient supply, pests and disease pressure), as it allows them to grow healthy and makes them stronger against infections of pests and diseases.



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### 3. Perform crop rotation with suitable and recommended crops

- Crop rotation: reduces the chances of soil borne diseases and increases soil fertility.

### 4. Select suitable crop combinations as intercrops, border crops and trap crops :

- Mixed cropping systems: can limit pest and disease pressure as the pest has less host plants to feed on and more beneficial insect life in a diverse system.
- Green manuring and cover crops: increases the biological activity in the soil and can enhance the presence of beneficial organisms (but also of pests; therefore a careful selection of the proper species is needed).



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## Trap crops:

- 1) Castor for Tobacco protects from budworm *Heliothis*.
- 2) Alpha Alpha for Cotton to attract lygus bug.
- 3) Sesbania for Soyabean to attract corn seedling maggots and stink bugs.
- 4) Mustard or Strawberry to attract lygus bug.

Border Crop: Maize and Sorghum to reduce the population of Aphids.



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5. Undertake deep ploughing in summer, keep field clean and destroy infested plant debris and field sanitation
6. Remove alternate hosts such as weeds
7. Perform mulching such as paddy straw mulch, saw dust mulch, plastic mulch etc.,
8. Perform mechanical/manual weeding as and when required
9. Use various types of traps (mechanical and manual)



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- Fruit flies can be captured using bait traps. For example, PE-bottles with small holes can be half-filled with water, some cattle urine, fruit flesh or a small dead fish and a drop of detergent or soapy water. These bottles are then hung in trees and checked every three days.
- Yellow plastic cards coated with adhesive are also good for trapping aphids and leafhopper. Yellow-orange plastic boards are appropriate for white flies, while blue cards are appropriate for thrips monitoring.
- Light traps are especially needed where noctuids (e.g. moths, cutworms, African armyworm, and cotton bollworm) are a problem. Within crops attacked by cutworms, visual checks of caterpillars have to be done by dawn.



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10. Understand natural enemies of the pest such as lady bird, ground beetles etc

- Conservation and promotion of natural enemies
- Provide an ideal habitat for natural enemies to grow and reproduce.
- Avoid using products which harm natural enemies.



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- Biological control is the use of natural enemies to manage populations of pests (such as ladybird beetles, predatory gallmidges, hoverfly larvae against aphids and psyllids) and diseases. This implies that we are dealing with living systems, which are complex and vary from place to place and from time to time.





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- If populations of natural enemies present in the field are too small to sufficiently control pests, they can be reared in a laboratory or rearing unit. The reared natural enemies are released in the crop to boost field populations and keep pest populations down. There are two approaches to biological control through the release of natural enemies:
- Preventive release of the natural enemies at the beginning of each season. This is used when the natural enemies could not persist from one cropping season to another due to unfavourable climate or the absence of the pest. Populations of the natural enemy then establish and grow during the season.



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- Releasing natural enemies when pest populations start to cause damage to crops . Pathogens are usually used in that way, because they cannot persist and spread in the crop environment without the presence of a host (“pest”). They are also often inexpensive to produce



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- Natural enemies that kill or suppress pests or diseases are often fungi or bacteria. They are called antagonists or referred to as microbial insecticides or bio-pesticides. Some commonly used antagonistic microbes are:
- Bacteria such as *Bacillus thuringiensis* (Bt). Bt has been available as a commercial microbial insecticide since the 1960s. Different types of Bt are available for the control of caterpillars and beetles in vegetables and other agricultural crops, and for mosquito and black fly control.



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- The best known biocontrol agent used in field crops is the bacteria *Bacillus thuringiensis* var. *kurstaki* and *Bacillus thuringiensis* var. *aizawai* against diverse lepidopteran pests, and the *Bacillus thuringiensis* var. *israeliensis* against mosquitoes..
- It can be used against different pests (African armyworm, African bollworm, bean armyworm, beet armyworm, cabbage webworm, cabbage moth, cabbage looper, cotton leafworm, diamondback moth, giant looper, green looper, spiny bollworm, spotted bollworm, pod borers, tomato looper).



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11. Release beneficial insects such as Lady bug, Bees, Spiders, Damsel bugs, Aphid midges, Ground Beetles
12. Use hoverfly and adopt them for pest control
13. Identify various types of bio-pesticides and their vendors.

Plant Origin: Chrysanthemic Acid ,Neembicide,  
Neemazal,Citronellol



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14. Prepare different bio-pesticides at farm such as Agniastra, Brahmastra, Neemastra, Panchagavya, Vermiwash.
15. Use various botanical extracts for different types such as Pyrethrum, neem oil, Plant oil etc.
16. Apply recommended dose of bio-inputs at appropriate time & interval