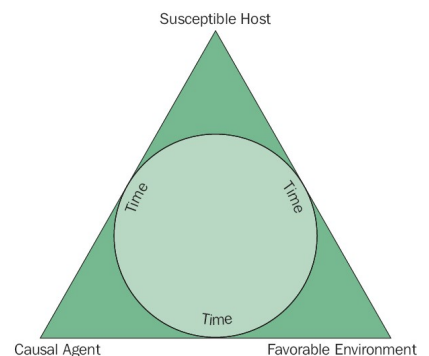


4.4 – Integrated Pest Management Con't

- A _____ is defined as a disturbance to the normal growth and development of a plant.
 - Diseases are generally classified as being infectious or noninfectious.
- _____ are caused by living organisms such as bacteria, fungi, or virus, which are often referred to as disease _____.
 - An infectious disease can be spread to other plants.
- _____ are caused by environmental imbalances and cannot be spread to other plants.
 - Noninfectious disease examples include _____

 - Plants are most susceptible to disease when they are under some type of _____.
 - The stress is usually associated with _____.
- The occurrence and severity of infectious plant diseases is based on _____.
 - A _____ or host must be present.
 - The _____ or organism that produces a disease must be present.
 - _____ conducive to the causal agent must occur.
 - The relationship of these three factors is known as the _____.
 - Disease control programs are designed to affect each or all of these factors.
- _____ are a principal cause of plant disease.
- **Fungi** are organisms that lack _____.
 - They _____ from living or dead organisms.



- Their bodies consist of _____ vegetative structures known as hyphae.
- When hyphae are grouped together, they are called mycelium.
- Fungi can reproduce and cause disease by producing _____ or mycelia.
- The fungus can produce spores asexually or sexually.
- _____ are one-celled or unicellular microscopic organisms.
 - Bacteria can enter a plant only through _____.
- _____ are composed of nucleic acids surrounded by protein sheaths.
 - They are capable of altering a plant's _____ by affecting protein synthesis.
 - Plant viruses are transmitted by seeds, insects, nematodes, fungi, and mechanical means.
 - Viral diseases produce several symptoms including ring spots, stunting, malformations, and mosaics.
 - A _____ symptom is a leaf pattern of light and dark green color.
- For successful management of pests, the IPM program must be a _____ program.
- The strength of IPM is the combination of control measures used.
- Four broad areas of control include sanitation, cultural/physical control, biological control, and chemical control.
- Many pest problems can be greatly reduced, if not eliminated, with sanitation.
- _____ is simply the effort made to keep a greenhouse or garden clean.



- Many insects and diseases can be found in _____.
- _____ methods are those methods that physically prevent activities of pests.
 - Used alone they probably will not provide complete control of pests and reduce certain problems.

- Cultural/physical controls are also safe to humans and relatively easy to implement.
- Stop the _____ of pests to the greenhouse when possible.
- _____ heavily infested and diseased plants.
- Maintain optimal cultural requirements for each crop (_____) to promote healthy growth.
- Fungal diseases can be reduced by providing good _____ around the plants. (re-fluffing soil)
- The _____ used as monitoring tools also serve as a means of physical control.
- _____ involve the use of living organisms to control pests.
 - They may be microbial organisms, parasitic organisms, or predators.
 - Biological control organisms for greenhouse use are found in nature and are considered environmentally safe.
- A _____, *Bacillus thurengiensis*, effectively controls caterpillars.
 - Aphids and whitefly can be controlled to an extent by species of bacteria and fungi.
 - The bacteria and fungi are natural diseases of those insects.
- _____ organisms help to control some pests.
 - The parasites are natural enemies of the pest and live off the pest organism.
 - An example is a tiny parasitic wasp that lays its eggs on the whitefly larva that feeds on plant leaves.
 - The eggs hatch with the wasp larva inside the white fly larva.
 - The wasp larva proceeds to eat the whitefly larva.
 - The wasp matures, emerges from what is left of the whitefly, mates, and looks for whitefly larva on which to lie the next generation of eggs.
- _____ organisms can be released to devour certain plant pests.
 - A beetle attacks whitefly larva and adults.
 - A mite is used to control thrips.
 - Ladybugs eat aphids.
 - As with parasitic organisms, chemical pesticides should not be used with predatory organisms.



- Also, predatory and parasitic organisms should be released when pest populations are small.
- The use of chemicals to control pests and diseases is _____.
 - The chemicals used are called _____.
 - Although once used almost exclusively, control of pests with the use of pesticides is now viewed as only one component of an IPM program.
 - In fact, use of chemical pesticides is now often done only when absolutely necessary.
 - Application of pesticides must be done safely to reduce potential injury to people and the environment.