

Integrated Pest Management (IPM)

- Is an ecosystem-based strategy.
- Focuses on long-term prevention of pests or their damage.
- Uses a combination of techniques: cultural, biological, physical, and chemical.

What Is a Pest?

- Any organism — plant, insect, disease pathogen, or vertebrate animal — that causes damage or loss of crop value.
- Many organisms occur on farms; only a small proportion are pests.
- Many organisms are beneficial: e.g., decomposing organic matter, pollinating crops, killing pests, etc.

Five Basic Principles of IPM:

1. Prevent Pest Problems:

- Appropriate site selection for crop
- Resistant cultivars
- Proper soil preparation before planting
- Use weed- and disease-free amendments
- Time cultural activities to discourage pest development
- Keep plants healthy with best management practices
 - Nitrogen use
 - Organic matter: cover crops, compost, or mulch
 - Irrigation management
 - Pruning, trellising

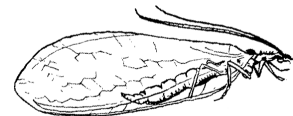


2. Pest identification: Know Who Your Enemies Are

- Distinguish between pests, beneficial organisms, and incidental or innocuous organisms
- Identify damage and possible culprits
- Know when (season, plant life cycle) damage is likely to occur

3. Monitoring

- Pest monitoring: e.g., sampling, trapping
- Assess damage levels and potential for control by natural enemies
- Natural enemy monitoring: signs of natural enemy presence, monitor parasitism
- Weather monitoring: influence on pest population dynamics
- Maturity of crop and vulnerable stages
- Written records



4. Economic Threshold/Action Guidelines

- Help you decide whether action is needed
- For insects and mites, often a numerical threshold
- Decide how much damage you can tolerate
- A treatment threshold specifies pest density at which control measures need to be applied

to prevent loss of crop value — requires careful monitoring

5. *Integrate Management Methods and Use All the Tools Available*

a. Biological Controls

- i. Encourage natural enemies by planting insectary plants
- ii. Release natural enemies: wasps, predatory nematodes, etc.
- iii. Use biological pesticides, diseases of pests: e.g., Bt

b. Cultural Controls: Modify normal practices to reduce pest establishment, reproduction, dispersal, and survival.

- i. Remove cover or habitat: e.g., squash bugs
- ii. Planting timing
- iii. Trap crops
- iv. Rotation
- v. Sanitation
- vi. Irrigation management
- vii. Pruning to reduce hospitable environment
- viii. Altering soil conditions: e.g., control potato scab by reducing Ca:P ratio, keep pH as close to 5.5 as possible, and maintain soil moisture

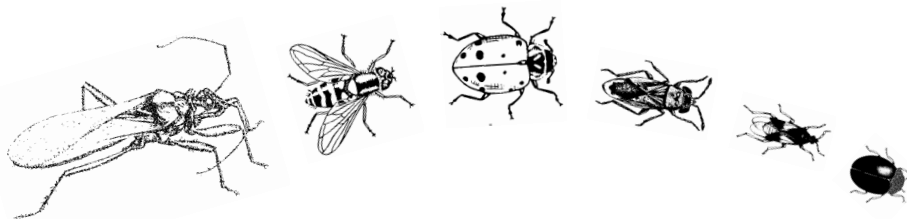
c. Mechanical/Physical Controls

- i. Barriers such as Tanglefoot for ants; trunk banding for codling moth
- ii. Soil solarization for diseases & weed seed
- iii. Cultivation to bring weed seeds or beetle grubs to surface
- iv. Traps: insects and rodents
- v. Vacuums for true bugs

d. Chemical Controls: Pesticides

- i. Base use on field monitoring and/or trapping
- ii. Target sprays to specific pest, vulnerable crops, hot spots
- iii. Time sprays and use effectively — use weather data (e.g., Degree Days)
- iv. Choose Reduced Risk materials

More tools and information at <http://www.ipm.ucdavis.edu/>



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