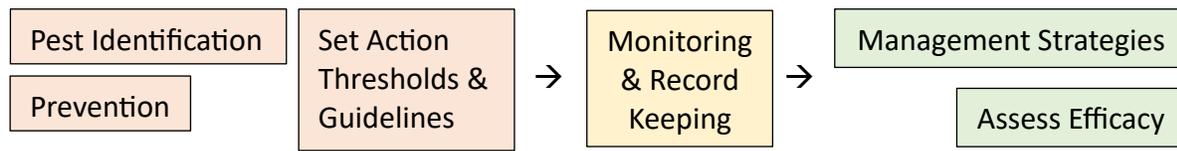


## General Integrated Pest Management (IPM) Outline

Ellie Andrews, August 2023

Integrated Pest Management is a problem-solving approach used to address pest issues while minimizing risks to people and the environment. It is an ecosystem-based framework that focuses on combining multiple strategies that are appropriate for a given context, sometimes referred to as a toolbox approach (rather than relying on just one strategy alone). For more info, see the [UC IPM website](#).

IPM programs are created to help establish clear protocols for IPM of specific pest at a given location. These programs include several key components:



### 1. Pest identification & understanding its life cycle

- Ensure the pest is correctly identified
- Can consult [UC IPM Extension resources](#) to help with identification, can contact local Extension advisor to verify, can work with Pest Control Advisors (PCAs)
- Learn about the pest's biology, life cycle, and how it is influenced by environmental factors: what can you expect? Are there environmental conditions that promote or inhibit this pest? Timing considerations?

### 2. Preventing pest problems

- Maintaining good plant health: weak plants (due to water stress, nutrient deficiency, etc.) are more susceptible to pests
- Resistance: some crops and varieties are resistant to certain pests, can explore these options
- Unfavorable habitat: promote unfavorable habitat for the pest, minimize environmental factors that help the pest thrive

### 3. Setting action thresholds and guidelines for when management action is needed

- Establish an action threshold or limit for pest damage: how much is too much?
- This can be fairly context-dependent: assess the acceptability of the finished crop for your specific markets
- Thresholds can be numerical: for example, average number of pests per trap each week, percent of damaged leaves, etc.
- There are many established thresholds for specific pests, see UC IPM resources for examples
- Experiment over time to develop thresholds that are appropriate for your situation
- Create guidelines based on threshold: if the threshold is reached, what action is taken?

4. Monitoring & record keeping to assess pest populations and damage
    - Create routine monitoring plan to check field on a regular basis
    - This could mean checking sticky traps, for example
    - Record where and when pest is found and degree of damage
    - It can be helpful to have a designated person for this role if possible, for consistency
    - Keep good records that you can refer back to
  
  5. Using a combination of management strategies to control the pest
    - Biological control: natural enemies (such as predators, pathogens, competitors, etc.)
    - Cultural control: practices that reduce pest establishment, reproduction, dispersal, or survival
    - Mechanical and physical control: practices that kill a pest directly, exclude pest, or make environment unfavorable
    - Chemical control: pesticides are used only when needed and always in combination with other approaches, always selected and applied following label directions to minimize potential harm to people, nontarget organisms, and the environment (generally, it's a good idea to try using other strategies first before using pesticides)
- Assessing the effects of pest management actions afterward
- Continue routine monitoring and record-keeping
  - Were chosen the strategies effective? Need to adjust?
  - Thresholds can be re-evaluated and adjusted as needed, considering records, observations, changing conditions

For examples of IPM guidelines for specific pests, see the [UC IPM Agricultural Pests website](#).

#### More Resources

<https://ipm.ucanr.edu/what-is-ipm/>

<https://content.ces.ncsu.edu/extension-gardener-handbook/8-integrated-pest-management-ipm>

<https://extension.psu.edu/steps-of-integrated-pest-management-ipm>

<https://www.epa.gov/ipm/introduction-integrated-pest-management>