Module 4: Plant Growth, Management & Pest Control

Think Pair Share Activity B: Building an IPM Plan

Red Notes

Lesson B
Grouping: Pairs or small groups (3–4)
Time: 25-30 minutes

Materials:

- Printed IPM worksheet
- UC IPM crop list
  - Agriculture: Pest Management Guidelines / UC Statewide IPM Program (UC IPM)
- Laptop
- Colored pens or markers

Objective:

Design a complete IPM strategy for a selected crop by choosing **at least one** tactic from each of the four IPM tiers.

Instructions:

1. Choose a crop from the UC IPM crop list
2. Use prior knowledge, class materials, or a quick web search to identify 1–2 major pests that typically affect your chosen crop.
   a. *Example: Tomatoes are often affected by whiteflies and hornworms.*
3. Fill in the pyramid with one tactic per tier (research)
   a. Cultural
   b. Mechanical/physical
   c. Biological
   d. Chemical
4. Include one monitoring method (for example sticky traps, scouting, threshold evaluation
5. Use colors or labels to highlight how your chosen actions support **sustainability** (e.g., reduce chemical use, protect pollinators, save money).
   Then, write a **1–2 sentence explanation** for each tier answering:
   - Why did we choose this tactic?
   - How does it reduce harm or waste?

Your Task:

Create a sustainable pest management plan that uses a systems approach to reduce environmental impact while protecting the crop.

Step 1: Choose a Crop UCR IPM Crop List Crop: Tomato	Step 2: Identify a Pest or Disease Problem (e.g., aphids, HLB, mildew) Pest/Disease: Whiteflies & Tomato Hornworms

Step 3: Draw an IPM Pyramid – Fill in One Tactic Per Tier

Cultural: Plant resistant tomato varieties + rotate crops

Mechanical/Physical: Use yellow sticky traps to capture adult whiteflies

Biological: Release beneficial parasitoid wasps (*Encarsia formosa*) to control whiteflies

Chemical: Apply insecticidal soap or Bacillus thuringiensis (Bt) if pest levels exceed threshold

Step 4: Monitoring Method (e.g., sticky traps, scouting)

Method:

Weekly scouting and sticky trap counts to monitor pest population levels

Step 5: Visual Sustainability Highlight

Use colored pens/markers to show how each tactic:

- Reduces pesticide use
- Improves timing
- Closes feedback loops

Cultural = prevention without chemical input

Mechanical & Biological = non-invasive/selective methods

Chemical = targeted, only if thresholds are exceeded

Skills You'll Use:

- Systems thinking
- Strategic planning
- Research and synthesis
- Collaboration
- Communication

Example:

Crop: Tomato

Key:

🟢 **Prevention with no chemical input**

🟡 **Non-invasive or selective method**

🔵 **Judicious/limited chemical use**

- Cultural: Plant a resistant tomato cultivar
- Biological: Release *Encarsia formosa* wasps
- Physical / Mechanical: Use yellow sticky traps
- Chemical: Apply insecticidal soap if needed

(Optional) Essential Question:
How does integrating all four IPM tiers create a more sustainable and resilient farming system?

IPM Tier	Environmental Benefit	Economic Benefit	Health/Social Benefit	Synergy Notes
Cultural	Reduces need for chemicals; prevents pest buildup	Saves money on sprays & losses from pests	Safer environment for workers and consumers	Strengthens biological & mechanical tactics by lowering initial pest populations
Mechanical / Physical	Avoids pesticide residues; selective control	Low-cost traps; prevents crop loss	Easy for farmers/workers to implement	Supports monitoring, helps trigger timely biological or chemical actions
Biological	Enhances biodiversity; protects pollinators	Reduces cost of repeated pesticide use	Promotes safer food supply	Works well with cultural control; reduces need for chemical interventions
Chemical (targeted)	Minimizes overuse; protects soil & water quality	Reduces crop loss if pests exceed threshold	Safer for workers & consumers if used wisely	Serves as backup only; enhances resilience when combined with other lower-impact tiers