CASE

Curriculum for Agricultural Science Education

Principles of Agricultural Science – Plant

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Integrated Pest Management

Unit 8 – Surviving a Harsh Environment
Lesson 8.1 Pesky Bugs and Plants

IPM

Integrated

Pest

Management

The control of one or more pests by a broad spectrum of techniques ranging from biological methods to pesticides.

IPM Goals

Control pests with the least impact on the environment using the most economic methods:

- Use the most environmentally friendly methods first
- Use the most cost effective methods
- Use the least toxic chemicals first
- Time appropriate application of treatments by using frequent monitoring practices

Steps 1-3 of an IPM Plan

1. Monitoring and detection
   - Know when the pests are at the best stage to effectively eliminate the greatest quantity
2. Non-chemical control methods
   - Cultural practices, pulling weeds by hand, etc.
3. Biological control methods
   - If possible what beneficial insects or plants can be established to control pests

Steps 4-5 of an IPM Plan

4. Determination of cost effectiveness
   - How much can be spent on chemical treatments for the expected return
5. Chemical application
   - Spot spray infestations if possible
   - Use the least toxic chemicals first
   - Coordinate the proper time for treatment
   - Use pest-specific chemical before broad spectrum
   - Always use correct amounts of chemicals

How about just using cultural practices?

Cultural practices have limitations:

- Very labor intensive – thus expensive
- Difficult to eradicate all pests
- Not practical for large acreage

So what is wrong with just bugs?

Biological control, such as using insects have problems, too:

- Usually predator insects are life cycle specific
- Hard to keep a large enough concentration in natural settings
- Expensive to keep reintroducing
- Not practical for large acreage

Why should you worry – just spray!

Chemical trade-offs:

- Expensive to buy and apply
- Non-selective chemicals kill beneficial organisms
- Chemicals can leave residue for later consumption by livestock or humans
- Pollution of waterways and soil

Economic Threshold

- When insect pressure and damage can cause loss of profit to the producer if left unresolved
- Integrated Pest Management allows the producer to “accept” a level of pest population to lower the use of pesticides
- Poor pesticide management can lead to increase costs and damage the environment

References

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Reiley, H. E., & Shry, C. L. (2007). *Introduction to horticulture* (7th ed.). Clifton Park, NY: Delmar.