

Understanding Pesticides: Safe and Effective Use in Farming

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Florida's Workforce Education Initiative

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Introduction



Pesticides are vital for managing pests that can harm crops and reduce yields. However, they must be used correctly to avoid health risks and environmental damage.

Pesticides are powerful tools that help control pests, protect crops and increase yields. However, improper use can pose risks to human health, the environment and the longevity of effective pest control.

This presentation will serve as a guide to farm workers on how to use pesticides responsibly while maintaining and promoting safety.

This presentation will cover safe pesticide handling, application and tips for protecting your health and the environment.

Objectives:

- Provide a brief overview of pesticides and definitions
- Explain how pesticides interact with pests
- Detail pest management in farming and effective use of pesticides
- Identify safety protocols that farm workers need to know

What are Pesticides?

Pesticides are chemical or biological substances used to control or eliminate pests **Types of Pesticides:**

- *Insecticides*: Target insects
- *Herbicides*: Control weeds
- *Fungicides*: Control fungal diseases
- *Rodenticides*: Control rodents
- Other Specialty Products including nematicides and bactericides

Pesticides play a crucial role in controlling a variety of pests that can damage crops. Different types of pesticides serve different purposes depending on the type of pest being managed.

Health Tip:

Always be aware of the toxicity levels of pesticides. Some may be harmful if inhaled, absorbed through the skin or ingested. Read labels for detailed health information and usage instructions.



How do Pesticides Work?

Pesticides either kill pests directly or disrupt their biological processes (e.g., inhibiting growth or reproduction functions).

Chemical vs. Biological Pesticides:

Chemical: Synthetic substances

Biological: Derived from natural sources (e.g., bacteria or fungi)

Systemic vs. Contact Pesticides:

Systemic: Absorbed by plants and distributed internally to protect against pests.

Contact: Affect pests only upon direct contact.

Understanding how pesticides work helps farmers select the appropriate products for their needs. Knowing whether a pesticide works systemically or through contact is essential for proper application and for preventive health. The label provides essential information about how to safely handle, apply and store the pesticide. It includes the pesticide's toxicity, proper application rates, safety precautions and environmental hazards. Repeated use of the same pesticide can lead to resistance, making pests harder to manage.

Pesticide Application Methods:

Spraying:

Common method, done via ground equipment, aerial sprayers or drones.

Soil Treatments:

Pesticides applied directly to soil, at the root level.

Seed Treatment:

Pesticides applied to seeds before planting protects against soil-borne pests.

Application Timing:

Timing of pesticide application is critical for effectiveness (e.g., apply before pest infestation peaks).

Equipment:

Proper calibration and maintenance of application equipment to ensure even distribution is essential. Effective application methods ensure that pesticides are distributed correctly and efficiently, reducing waste and minimizing human or environmental impacts.

Application Guidelines

When to apply pesticides?

- Apply pesticides when pests are present or before an infestation occurs.
- Apply during calm weather to avoid drift and avoid applying during high winds.
- Avoid applying pesticides during pollination or when bees are active.

Proper Application Methods:

- **Spraying:** Use calibrated sprayers to ensure accurate application.
- **Soil Treatment:** Follow the instructions carefully when applying pesticides to the soil.
- **Seed Treatment:** Apply according to specific crop and pest needs.

Health Safety Tip:

Always use proper application procedures and equipment that is in good working order, properly calibrated to prevent over-application and always use protective personal equipment.

Health Risks of Pesticides & Safety Precautions

Acute Exposure: Immediate effects from short-term exposure, such as headaches, dizziness, skin irritation or nausea.

Chronic Exposure: Long-term exposure can lead to more severe health issues, like respiratory problems, cancer or reproductive effects.

Toxicity: Varies by pesticide type. Always check the "signal words" on labels such as “**Caution,**” “**Warning**” or “**Danger**” to determine toxicity.

Health Safety Tips:

- Avoid exposure by wearing proper personal protective equipment.
- Wash your hands and exposed skin thoroughly after handling pesticides.
- Do not cook, eat, drink or smoke when handling pesticides.
- Store pesticides away from food, feed, water sources and family members or children.

Health Risks of Pesticides & Safety Precautions

Safety Precautions

- **Personal Protective Equipment:** Gloves, goggles, respirators, long sleeves and boots to protect against exposure.
- **Handling & Storage:** Store pesticides in a safe, cool, dry place and away from food or water sources.
- **First-Aid:** Know the steps to take in case of exposure (e.g., skin wash, eye irrigation, seek medical attention).
- **Label Compliance:** Always read and follow pesticide labels for safety guidelines.

Safety is paramount when handling pesticides. Protective equipment and proper handling reduce risks of exposure which can be harmful to human health.

Health Safety Tip

Always stay informed, stay protected and never compromise on safety when working with pesticides.

Safety Precautions

Personal Protective Equipment (PPE)

PPE is critical in protecting yourself from pesticide exposure. Recommended PPE will depend on the pesticide label and farmer. PPE can include:

- **Gloves:** Chemical-resistant gloves to protect the hands.
- **Goggles/Face Shield:** To protect eyes from splashing.
- **Respirator:** When working with highly toxic chemicals or in poorly ventilated spaces.
- **Coveralls/Long Sleeves:** To protect skin from contact.
- **Boots:** Chemical-resistant boots to protect your feet from pesticide exposure.

Health Safety Tip:

Always inspect and clean your PPE after use. If your gloves or respirator are damaged, replace them immediately. Wash, clean and store your PPE separately from other family laundry items.



Safety Precautions

Safe Handling and Storage Handling

- **Handling and Use Directions:** Always read the pesticide label before handling. Avoid spills by using careful, controlled measures during mixing and application. Use only the recommended amount; overuse increases risks of health issues to you and the environment.
- **Storage:** Store pesticides in a cool, dry, locked location, away from children, pets, food and water sources. Keep pesticides in their original containers with labels intact. Ensure that storage areas are well ventilated and secure to prevent accidental exposure.

Health Safety Tip:

Never store pesticides near household items like food or cleaning supplies. Maintain all products clearly labeled to keep others safe and out of the storage areas.

First-Aid and Emergency Procedures

Accidental exposure can happen. Knowing first-aid procedures and having emergency contacts at hand is essential for quick action. In the event of pesticide exposure, follow these procedures:

- **Skin Contact:** Immediately wash the affected area with soap and water. Remove contaminated clothing.
- **Eye Contact:** Rinse eyes with clean water for at least 15 minutes. Seek medical help immediately.
- **Inhalation:** Move the person to fresh air immediately. If symptoms persist, seek medical help.
- **Ingestion:** Call poison control or seek medical attention immediately. Do not induce vomiting unless instructed by a medical professional.

Health Safety Tip:

Keep a charged phone and emergency numbers (poison control, local health services) near your work area for quick access.

Regulations and Legal Considerations

Farmers must follow all local, state and federal pesticide regulations:

- **Registration:** Only use registered pesticides and ensure that you are using them according to label instructions.
- **Certification:** Some regions require pesticide applicators to be certified. Make sure to complete any necessary training or certification courses.
- **Record Keeping:** Keep detailed records of pesticide applications, including product names, amounts used and application dates.

Pesticide use can affect the surrounding environment, including water sources, wildlife and pollinators. Pesticides are regulated by laws to ensure safe use. Non-compliance may result in health risks and legal consequences.

Health Safety Tip:

Keeping records of pesticide use helps ensure that safety guidelines are being followed and can be a legal protection.

Final Tips & Safety Takeaways

Final Tips:

Never apply pesticides without first thoroughly reading the label and following all instructions.

Store pesticides in their original labeled containers and keep them locked away in a cool, dry and secure location.

Only apply pesticides when weather conditions are appropriate and use the correct application technique to minimize risks to humans, animals and the environment.

Use buffer zones around water and non-target areas, apply pesticides during times when pollinators are not active and minimize runoff to protect the environment.

Safety Takeaways:

Wash your hands after handling pesticides and prior to initiating a new task like using the restroom, eating, cooking or engaging with others.

Always wear the recommended PPE when handling, mixing or applying pesticides to avoid direct contact and inhalation.

Keep emergency numbers, like poison control and local medical contacts, readily available.

Know the first-aid steps for skin, eye and inhalation exposure.

Final Tips & Safety Takeaways

Final Tips:

Rotate pesticides, use Integrated Pest Management (IPM) techniques and monitor pest populations to avoid over-reliance on pesticides.

Stay informed about local, state and federal pesticide regulations and ensure compliance with safety standards.

Record every pesticide application, including the type of pesticide, amount, date and specific locations to stay organized and compliant with regulations.

Safety Takeaways:

Keep all types of pesticides in secure locations away from children, family members and pets to avoid exposure.

Incorporate Integrated Pest Management (IPM) strategies to minimize pesticide use and reduce exposure risks for both humans and the environment.

Familiarize yourself with the symptoms of pesticide poisoning and seek medical help immediately if you or someone else experiences any of them.

Resources and Contacts

National Pesticide Information Center (NPIC): www.npic.orst.edu

Local Agricultural Extension Office: For local pesticide safety training and information.

Poison Control Center: [1-800-222-1222] (in the U.S.)

EPA (Environmental Protection Agency): www.epa.gov/pesticides

Health Safety Tip:

Keep these resources and emergency numbers in a visible location on the farm or work area for quick reference.

Contacts

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