

Best Practices for Safe and Effective Use of Agricultural Drones



Agricultural drones are revolutionizing farming practices by providing efficient and precise solutions for pest and crop management. To ensure their safe and effective use, follow these best management practices (BMPs):

Before Application:

Read the Label: Always read and understand the pesticide label before use. Follow instructions carefully and comply with relevant laws and regulations.

Calibrate Sprayer: High-quality UAVs come with automatic internal-pump calibration systems. Follow the manufacturer's instructions to add test

water, enter nozzle details, and run the calibration system on the ground. Check for irregularities that might indicate nozzle wear or system imbalance.

UAV Fit for Flight: Thoroughly inspect the UAV using the manufacturer's preflight checklist. Ensure batteries are charged, reserves are ready, and there's sufficient fuel for hybrid or gas-powered UAVs.

Firmware: Update the UAV firmware as per the manufacturer's instructions. Calibrate connectivity, navigation, and behavior settings. Verify preflight settings like GPS, compass, LED status, and flight controls.

Documentation: Ensure you have the necessary documentation, including UAV registration, licenses for pest control and chemical handling. Verify if hired service providers possess appropriate documentation.

During Application:

Spray Equipment: Flush the system with water before spraying to remove air bubbles. Check for leaks and ensure proper cleaning of equipment after previous uses.

Flying Conditions: Check weather, temperature, and understand the treatment area, including nearby water bodies, residential areas, and beehives.

Crop and Pest Targets: Confirm crop identity, growth stage, canopy height, and pest locations. Ensure proper nozzle, pressure, and formulation selection for effective droplet delivery. Use registered pesticides suitable for UAV application.

Location: Avoid mixing pesticides within 120 m of water supplies or 50 m of surface water. Prevent spills and back-siphoning into wells or water bodies.

Personal Protective Equipment (PPE): Wear appropriate PPE during

pesticide handling and equipment decontamination. PPE isn't required during UAV flight but must be used after use and when handling pesticide concentrates.

Environmental Variables: Operate UAVs in wind speeds below 3 m/s. Adjust flying height based on wind speed. Avoid foggy conditions, and perform applications during daylight hours.

After Use:

Loss of Control: Activate Return to Home setting if control is lost. Follow the drone's flight path, and warn people nearby. In the event of a crash, follow emergency procedures.

Use of PPE: Wear required PPE while handling pesticides or UAV after use.

Disposal of Containers: Triple rinse, puncture, and safely dispose of pesticide containers.

Mechanical Inspections: Inspect the UAV for damage after drying. Record any issues.

Documentation: Maintain records of all operations for at least three years.

Cleaning: Decontaminate the UAV with water, ensuring wash-water doesn't enter drains or water bodies. Triple rinse the tank and dispose of waste properly.

Bystanders: Prevent people and animals from entering the application area.

Transport and Storage:

Transport UAVs separately and securely. Store UAVs in a locked, secure location away from living areas.

Identify Hazards, Evaluate Risks, and Plan Emergency Actions:

Identify potential hazards like loss of control or battery fire. Assess risks and develop strategies to mitigate them. Plan emergency actions for spills, crashes, or human contamination.

By following these BMPs, farmers can maximize the benefits of agricultural drones while ensuring safety and environmental responsibility.