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Quality Assurance Session

J.J.’s Technical Services

John J. Obrist   RQAP-GLP
Field/Lab Synergy: How the Field Affects the Lab
Field Facility: Protocol Requirements

• Test Substance Receipt and Storage
• Test System Requirements (RAC/Decline)
• Typical Application Techniques
• Calibration (Output)
• Calibration (Speed)
• Tank Mix Calculations
• Sample Collection
Field Facility: Protocol Requirements (continued)

- Sample Storage
- Sample Shipment
Test Substance Receipt and Storage

• How Received at Field Facility (Ambient/Refrigerated/Frozen)
• How to be Stored (Protocol, COA, MSDS, Special Instructions, etc.)
• Temperature Monitoring Devices (Manual/Automated) and Backup
• Transport of Test Substance to Field Site
  – How extremes in temperature were controlled
Test System Requirements (RAC/Decline)

• Bare Ground (Soil Dissipation)
  – # of sampling events (duration) / # of replicate plots

• Row Crops / Tree Fruit/Nuts
  – minimum # of rows
  – minimum # of fruit
  – minimum # of areas
  – minimum sample weight
  – minimum # of sampling events
Typical Application Techniques

• Bare Ground (Broadcast)
  – Backpack or tractor-mounted boom

• Row Crops (Foliar Broadcast or Foliar-Directed)
  – Backpack or tractor-mounted boom
  – Over-the-top / individual rows
  – Boom width (larger than planted rows)
Typical Application Techniques (continued)

• Tree Fruit / Nuts (Foliar-Directed)
  – Tractor-mounted boom (airblast)
  – Backpack (MistBlowers)
  – High Pressure Hand Guns

  – Typically, 1/2 row width for each pass
Typical Application Techniques (continued)

• Propellant
  – CO₂
  – Compressed Air
  – Forced Air
  – PTO / Diaphragm Pump
Calibration (Output)

- Straight Boom (Broadcast - Soil/Foliar)
  - Type of nozzles used
  - number of nozzles used
  - distance between nozzles
  - measurement of the output of individual nozzles (how collected/measured)
  - Total Output (mL/sec) per Run
Calibration (Output) (continued)

- MistBlowers and/or Handguns (Foliar-Directed)
  - Single nozzle / Orifice
  - Type of nozzle / or Orifice setting used
  - Measurement of the output of the nozzle or orifice (how collected/measured)
  - Total Output (mL/sec) per run
Calibration (Output) (continued)

• Airblast (Foliar-Directed)
  – Type of nozzles used
  – number of nozzles used
  – distance between nozzles (typically not used)
  – measurement of the output of individual nozzles (how collected/measured)
  – measurement of the total output (how measured)
  – Total Output (gal/min to mL/sec) per Run
Calibration (Speed)

- **Speed Calibration**
  - Determine m/sec or ft/sec
    - \( m/sec = \frac{mL/sec \ (output)}{1000 \ mL/L \times 10,000} \ \frac{m^2/ha}{m \ (swath \ width)} \div \frac{L/ha \ (target \ spray \ rate)}{m/sec} \)
  - Determine sec/pass
    - \( sec/pass = \frac{m \ (pass \ length)}{m/sec} \)
  - Speed trial runs are within protocol limits
Tank Mix Calculations

- Total volume needed for plot
- Check for calculated overage
- Check for calculated test substance needed
- QA should conduct an independent tank mix calculation to assure that all parameters agree with the protocol (separate from PFI)
- Assure that all components are in the mix
Sample Collection

- # of fruit or areas (locations) or minimum sample weight / Sample
- # of independent samples / event
- # of retain samples / event
- # of Events (Decline Phase)
- Type of fruit (small or large)
- Small Fruit - Need more to obtain weight
Sample Collection (continued)

- Large Fruit (Sample weight reduction)
  - Ex: Watermelon
    - Fruit maybe halved or quartered
    - If halved, cut longitudinally, retain one half
    - Alternatively, cut into quarters, retain opposite quarters, discard remainder

- Removal of dead wrapper leaves (cabbage)
- Removal excess soil (root crops)
Sample Storage

• Transport of Samples from Field to Storage
  – Separate containers for UTC and TRT
  – Coolant used to transport samples
  – Duration of sample transport from field to storage
Sample Storage (continued)

- How to be Stored (Refrigerated or Frozen)
- Separation of UTC and TRT Samples
- Temperature Monitoring Devices (Manual/Automated) and Backup
- Duration of storage before shipment
Sample Shipment

- How to be Shipped (Refrigerated or Frozen)
- Separation of UTC and TRT Samples
- Shipment Company
- Duration of shipment