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Quality Assurance Session

J.J.'s Technical Services

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# 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
  - CO<sub>2</sub>
  - 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
    - $\text{m/sec} = \frac{\text{mL/sec (output)}}{1000 \text{ mL/L} \times 10,000 \text{ m}^2/\text{ha}} \div \frac{\text{m (swath width)}}{\text{L/ha (target spray rate)}}$
  - Determine sec/pass
    - $\text{sec/pass} = \frac{\text{m (pass length)}}{\text{m/sec}}$
  - 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