Calibrating Boom Sprayers

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How to determine the amount of spray mix for an area

- Amount
  - Gallons per acre (gpa)
  - Gallons per 1000 ft^2
- Area
  - Acre = 43,560 ft^2

Determine the area sprayed by the sprayer

- Boom width
  - Number of nozzles multiplied by spacing
    - Typically 20 inch spacing depends on spray tip angle
- Distance travelled
- Width x distance = area

Determine the speed of the sprayer

- Measure a straight line distance
- Select gear and RPM
- Measure the time in seconds to travel the straight line distance
- Distance per time = feet / second

$$\frac{X \text{ ft}}{Y \text{ sec}} \times \frac{\text{miles}}{5280 \text{ ft}} \times \frac{60 \text{ sec}}{\text{min}} \times \frac{60 \text{ min}}{\text{hr}} = \frac{\text{miles}}{\text{hr}}$$

Determine the nozzle delivery flow rate

- Set a constant delivery pressure
- Use catch cans for each nozzle
- Volume per time = gallons / minute (GPM)
  - ✓ Time = sprayer time per travelled distance
- Add total amount of water collected from all nozzles per time

Calculate the delivery rate

■ Amount of spray per area

 – Gallons per acre

$$\frac{X \text{ gal collected in } Y \text{ sec}}{\text{Area =boom width' x distance'}} = \frac{? \text{ Gallon}}{43{,}560 \text{ ft}^2}$$

Example field demonstration

Boom width = ___ nozzles x ___ inch spacing

<u>Boom width</u> x distance travelled (ft) = Area sprayed

  12"/ft

Time for distance travelled (seconds)

_____   _____   avg = _____

Volume water per time

_____   _____   avg = _____

Useful Conversions

1 gal = 4 qt = 8 pt = 128 oz = 3.78 L

1 pt = 473 mL

1 oz = 29.6 mL

1 lb = 16 oz = 454 gm

1 oz = 28.4 gm

1 acre = 43,560 ft^2

1 mile = 5,280 ft