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 ft²

- **Area**
  - Acre = 43,560 ft²
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

\[
\frac{X \text{ ft}}{Y \text{ sec}} \times \frac{\text{miles}}{5280 \text{ ft}} \times \frac{60 \text{ sec}}{1 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ hr}} = \text{miles}
\]
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

\[ X \text{ gal collected in } Y \text{ sec} = ? \text{ Gallon} \]

Area = boom width’ x distance’ \( 43,560 \text{ ft}^2 \)
Example field demonstration

Boom width = ___ nozzles x ___ inch spacing

Boom width 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