

AGRO 4070 Calibration Laboratory Hands on Calibration Exercise #1

To introduce this calibration exercise the entire class will review in the classroom various methods of calibration to include the common sense, “baby bottle”, and formula methods described in detail in the Sprayer Calibration Laboratory. After the general classroom session students will go outside and work as a group on Exercise #1. A calculator will be needed and students will be expected to be actively involved in all aspects of the hands on calibration exercises.

Useful formulas/information for calibration:

$$\text{GPM} = \frac{(\text{Gallons Per Acre}) (\text{Speed in mph}) (\text{Nozzle spacing in inches})}{5940}$$

$$\text{mL} / 15\text{seconds} = \frac{(\text{GPA})(\text{Speed in mph}) (\text{Nozzle spacing in inches}) (3785)}{(5940) (4)}$$

$$\text{Speed} = \frac{100 \text{ ft} \times 60 \text{ sec} \times 60 \text{ min} \times 1 \text{ mile}}{22.6 \text{ sec} \quad 1 \text{ min} \quad 1 \text{ hour} \quad 5280 \text{ ft}} = 3.02 \text{ MPH}$$

or

$$1 \text{ MPH} = 88 \text{ ft/min} \quad 60 \text{ sec} / 22.6 \text{ sec} = 2.65(100)$$

Traveled 100 ft in 22.6 sec = 265 ft in 60 sec (1 min)

$$\frac{265 \text{ ft}}{88 \text{ ft}} = 3.02 \text{ MPH}$$

Speed determination

<u>Nozzle Spacing or Row width in inches</u>	<u>Distance in feet</u>
40	102
38	107
36	113
34	120
32	127
30	136
28	146
26	157
24	170
22	185
20	204
18	227
16	255
14	291

***Baby bottle calibration method (1/128th
of an acre method: 1/128th A = 340ft²)***

Hands on Calibration Exercise #1

Calibrate the sprayer as it is currently setup using the common sense, “baby bottle”, and formula methods. The nozzles and spray pressure should not be changed. Your speed is 3.75 MPH. Use the formulas and information on page 1 of the handout. Review information provided in the Sprayer Calibration Laboratory.

Complete the following:

Sprayer type _____ Nozzle type/size _____

Nozzle spacing (inches) _____ Speed (seconds per 100 feet) _____

Spray volume (gallons per acre) _____

What would you do to increase or decrease spray volume?

Using this sprayer you want to apply Treflan 4EC preemergence at a rate of 0.75 lb ai/A.

What would be the rate in pts/A?

How much water and Treflan should be added to a 200 gallon tank if I want to treat 10 acres?

Using this sprayer you want to apply Classic 25DG at a rate of 0.008 lb ai/A.

What would be the rate in oz product /A?

Since this will be a postemergence application a surfactant should be added at 0.25% v/v.

How much water, Classic, and surfactant should be added to a 200 gallon tank if I want to treat 9 acres?