

AGRO 4070 Calibration Laboratory Hands on Calibration Exercise #2

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 #2. 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 #2

Calibrate the sprayer provided to deliver 25 gallons per acre. The sprayer must be fitted with the appropriate nozzles and screens. You must also select the pressure and speed. Review information provided in the Sprayer Calibration Laboratory.

Complete the following:

Sprayer type _____ Nozzle type/size _____

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

Spray pressure (psi) _____ Spray volume (gallons per acre) _____

Is the information that you provided practical? i.e. is the speed, pressure, etc. realistic?

Equip the sprayer with nozzles and choose a spray pressure and speed e.g. 3.75 MPH and 30 psi to provide a starting place. Look in the Spraying System catalog to choose a nozzle.

Using this sprayer you want to apply Prowl 3.3EC preemergence at a rate of 2.0 lb ai/A.

What would be the rate in pts/A?

How much water and Prowl should be added to a 200 gallon tank if I want to treat 8 acres?

Using this sprayer you want to apply Asulox 3.34L at a rate of 1 gallon/A.

What would be the rate in lb ai/A?

Since this will be a postemergence application a surfactant (crop oil concentrate) should be added at 1% v/v.

How much water, Asulox, and surfactant should be added to a 500 gallon tank if I want to treat 15 acres?