

TEACHING CALIBRATION OF SPRAYERS. Robert N. Klein, Professor, University of Nebraska, North Platte, NE 69101.

Applying the correct rate of a product is an important part of obtaining good results with pesticide sprayers. With a pesticide application, too little product can mean poor control, while too much can mean crop injury, extra costs, and possible residue on the crop and/or carryover.

Many methods can be used to calibrate sprayers, including the ounce calibration and formula-based methods. With the ounce calibration method, 1/128 of an acre is sprayed and the spray is collected. When measured in ounces the amount collected would be equal to the number of gallons applied per acre since there are 128 ounces in a gallon. Other methods involve using formulas which need to be remembered or recorded for easy use. These methods also may require converting some of the information you have.

The methods discussed in this presentation are simple relationships and do not require remembering formulas. However, you do need a general understanding of cross multiplication. The important thing is to be consistent: if you put an item on the top of an equation on one side, the same item also goes on the top of the other side.

The three factors that determine sprayer application rate are: 1) Speed, 2) Nozzle spacing, 3) Nozzle output (determined by orifice size, pressure, and density of spray solution).

A NebGuide which illustrates this method, G03-1511A “Calibration of Sprayers (Also Seeders)” is available on the University of Nebraska Web Site at <http://ianrpubs.unl.edu/farmpower/>.

Following in Figure 1 is how these relationships are used in determining speed in mph.

Figure 1. How to determine speed in mph using relationships.

If we travel 297 feet in 27 seconds, what is our speed?

$$\frac{27 \text{ sec}}{297 \text{ ft}} = \frac{60 \text{ sec}}{D}$$

$$27 D = 60 \times 297$$

$$27 D = 17,820$$

$$D = \frac{17,820}{27}$$

$$D = 660 \text{ ft}/60 \text{ sec}$$

Divide by 88 since 1 mph = 88 ft/60 sec (1 min)

$$\frac{660}{88} = 7.5 \text{ mph}$$