



COLORADO ENVIRONMENTAL PESTICIDE EDUCATION PROGRAM

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HAND SPRAYER CALIBRATION

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This fact sheet covers all aspects of hand sprayer calibration including a calibration example.

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Hand Sprayer Calibration

You can use a hand sprayer to apply pesticides on your lawn, garden, trees, or shrubs. Before each use, calibration is necessary. Calibrating your equipment ensures that you are applying the correct amount of pesticide uniformly over the area. It involves adjusting your equipment as well as calculating the delivery rate.

How do I determine how much pesticide to buy?

1. Divide the recommended rate by the area for that rate.
2. Multiple by your area. This tells you how much pesticide to buy.

How do I determine the sprayer output?

1. Measure out a test area.*
2. Fill the sprayer with water. (This is a good time to determine its capacity.)
3. Spray the pre-measured area at the same speed you will use when applying pesticide.
4. Determine how much water it takes to refill the sprayer. This is the output for this sprayer for that area.



*Many home and garden pesticides are labeled for the amount of pesticide in a given amount of water per 1000 square feet. If so, a test area of 250 square feet should be used. Multiply this by 4 to get the sprayer output per 1000 square feet.

What if the label says to use 3-5 gallons water per 1000 square feet and I used only 2 gallons?

1. This reduced volume will cause the mixture to be more concentrated. This can burn the plants.
2. Repeat the above steps and decrease your walking speed.

How do I determine the amount of pesticide to put in the tank?

1. Divide the recommended rate on the label by the output of your sprayer.
2. Multiply by the capacity of your sprayer.

How do I determine the number of full tanks I will need?

1. Determine how many square feet are covered by a gallon of spray.
2. Multiply by the capacity of your sprayer to determine the area a full tank will cover.
3. Divide total area by number from Step 2 to get number of full tanks you will need.

MEASURE ACCURATELY! CALIBRATE OFTEN!

Example:

The label recommends 4 fluid ounces of product to be mixed in 2 to 4 gallons of water per 1000 square feet. Your sprayer capacity is 1½ gallons and the spray area is 5000 square feet.

- Step 1:** Total pesticide needed is
 $4 \text{ oz} \div 1000 \text{ sq ft} \times 5000 \text{ sq ft} = \mathbf{20 \text{ oz}}$ (1¼ pints)
- Step 2:** You sprayed out ¾ gallon over 250 square feet. Therefore, the sprayer output is
 $\frac{3}{4} \text{ gallon} \div 250 \text{ sq ft} \times 4 = \mathbf{3 \text{ gallons per 1000 sq ft}}$
- Step 3:** The amount of pesticide needed per tank is
 $4 \text{ oz} \div 3 \text{ gallons} = 1.33 \text{ oz/gallon}$
 $1.33 \text{ oz/gallon} \times 1\frac{1}{2} \text{ gallons} = \mathbf{2 \text{ oz/tank}}$
- Step 4:** The number of tanks you will use is
 $1000 \text{ sq ft} \div 3 \text{ gallons} = 333 \text{ sq ft/gallon}$
 $333 \text{ sq ft/gallon} \times 1\frac{1}{2} \text{ gallons} = 500 \text{ sq ft/tank}$
 $5000 \text{ sq ft} \div 500 \text{ sq ft/tank} = \mathbf{10 \text{ tanks}}$

Conversions

3 teaspoons = 1 tablespoon = ½ ounce
8 tablespoons = ½ cup = 4 ounces
1 cup = 8 ounces
2 cups = 1 pint = 16 ounces
2 pints = 1 quart = 32 ounces
4 quarts = 1 gallon = 128 ounces
1 ounce = 28.35 grams
1 pound = 453.59 grams
2.2 pounds = 1 kilogram
0.035 ounces = 1 gram

References and Resources

Buffington, E.J. and McDonald, S.K. 2001. *General Colorado Commercial Pesticide Application and Safety Training Guide*. Colorado State University and Colorado Department of Agriculture, Fort Collins, CO.

Calibrate a Hand Sprayer. 1997. Home Pesticide Education & Safety Training, University of Wisconsin Extension, Madison, WI .

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