

## Backpack and Spot Treatment Calibration Guidelines

### How do I make the most of my herbicide spot treatments?

Accurate timing, careful measurements of herbicide and uniform spray motions are essential to proper, economical application. Consistent spray motions can help obtain good coverage of troublesome weeds. Soaking scattered weeds rather than using regular spray motions may result in excessive rates that could injure desirable species.

### How much herbicide do I put in my tank?

The mix amount is dependent on your spray volume and your application rate. Therefore, this question cannot be answered until we know the volume that is being applied with your particular spraying style in gallons per acre (GPA). The following step-by-step procedure will allow you to calibrate your spray volume (see answer at end).

### Sprayer Calibration

## Six Simple Steps

The following step-by-step method of calibrating a backpack or hand-gun sprayer involves very little math or formulas. It is based on the following principal:

**One gallon = 128 fluid ounces and your calibration area to be sprayed is 1/128 of an acre, thus fluid ounces collected = gallons per acre.**

**1.** Clean sprayer and nozzle thoroughly. Then, fill the spray tank with clean water. Spray with water only to check to see that the nozzle forms a uniform spray pattern. If the pattern is uneven, check to make sure the nozzle is clean and replace it

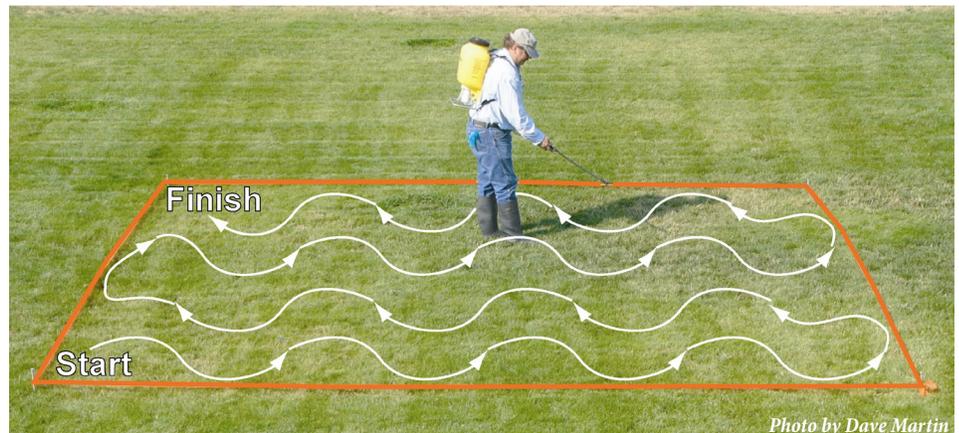


Photo by Dave Martin

if needed. Adjustable nozzles should be set and marked to permit repeated use of the selected spray pattern. If necessary, add a marker dye to the water to more easily see your spray pattern.

**2.** Measure an area 18.5 feet by 18.5 feet, which is equal to 1/128th of an acre. If possible, this should be done in the field on which you will be spraying.

**3.** Time the number of seconds it takes to spray the measured area uniformly with water using gentle side-to-side sweeping motion with the spray wand similar to spray painting a home or automobile. Record the number of seconds required to spray the area. During application be sure to maintain a constant sprayer pressure and cover the entire area uniformly one time.

**You should repeat step 3 at least twice and use the average of the two times.**

**4.** Spray into a container for the average time calculated in step 3. Be sure to maintain constant sprayer pressure while you spray into the container.

**5.** Measure the number of fluid ounces of water in the bucket. The number of fluid ounces collected from the bucket is equal to the number of gallons of water per acre the sprayer is delivering. Volume sprayed in fluid ounces = gallons of water per acre (GPA).

**6.** Add the proper amount of herbicide to the tank. For backpack sprayers, use Table 1 to determine how much liquid herbicide to add to each gallon of water. For large sprayer, use Table 2 to determine the amount of liquid herbicide to add to your spray tank.

**Find your spray volume in gallons per acre (GPA - calculated above) and read across the tables to determine the amount of herbicide to add to each gallon of water based on the recommended herbicide application rate.**

**Tip** Use a syringe to measure herbicide if you are applying a low-rate product like Milestone (e.g., 5 to 7 fl oz/ac).

1 tsp=5cc  
1/2 tsp=2.5 cc  
1/4 tsp=1.3 cc



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**Table 1: Backpack or Other Small-volume Sprayers**

The amount of herbicide you need to add to each gallon of water based on the recommended rate for the weed you are treating.

Gallons/Ac (from step 5)	Recommended Herbicide Rate/Acre				
	5 fl oz/ac	7 fl oz/ac	1 pint/ac	1 quart/ac	2 quarts/ac
20	7.5 cc/gal	10.5 cc/gal	5 tsp/gal	10 tsp/gal	3 1/4 fl oz/gal
30	5 cc/gal	7.0 cc/gal	3 tsp/gal	6 tsp/gal	2 fl oz/gal
40	3.8 cc/gal	5.3 cc/gal	2 1/3 tsp/gal	4 3/4 tsp/gal	1 2/3 fl oz/gal
50	3.0 cc/gal	4.2 cc/gal	2 tsp/gal	3 3/4 tsp/gal	1 1/4 fl oz/gal
60	2.5 cc/gal	3.5 cc/gal	1 2/3 tsp/gal	3 1/4 tsp/gal	6 1/3 tsp/gal
70	2.1 cc/gal	3.0 cc/gal	1 1/3 tsp/gal	2 3/4 tsp/gal	5 1/2 tsp/gal
80	1.9 cc/gal	2.6 cc/gal	1 1/4 tsp/gal	2 1/3 tsp/gal	4 3/4 tsp/gal
90	1.7 cc/gal	2.3 cc/gal	1 tsp/gal	2 tsp/gal	4 1/4 tsp/gal
100	1.5 cc/gal	2.1 cc/gal	1 tsp/gal	2 tsp/gal	3 3/4 tsp/gal

Liquid conversions: tsp = teaspoons; TBS = tablespoons; fl oz = fluid ounces; 1 cc = 1 ml; 3 teaspoons = 1 tablespoon; 8 fluid ounces = 1 cup; 2 tablespoon = 1 fluid ounce; 1 cup = 16 tablespoons

**Example for Backpack Sprayers:** You have completed the calibration procedure and applied 30 fluid ounces in the measured area. Therefore, your spray volume is 30 GPA. Look at Table 1 above for the amount to mix in 1 gallon of water. Assume you want to apply 5 fluid ounces of Milestone® per acre; the amount listed for your volume (GPA) and this application rate is 5 cc in each gallon of water. If you are filling a 3-gallon backpack sprayer take this amount times 3 and you would need to measure 15 cc (with a syringe) or 3 tsp of Milestone® for your 3 gallon mix. It doesn't take much.

**Table 2: Larger Hand-gun Sprayers**

The amount of herbicide you need to mix in 100 gallons of water based on the recommended rate for the weed you are treating.

Gallons/Ac (from step 5)	Recommended Herbicide Rate/Acre				
	5 fl oz/ac	7 fl oz/ac	1 pint/ac	1 quart/ac	2 quarts/ac
20	25.0 fl oz	35.0 fl oz	5 pints	5 quarts	10 quarts
30	16.7 fl oz	23.3 fl oz	3.3 pints	3.3 quarts	6.6 quarts
40	12.5 fl oz	17.5 fl oz	2.5 pints	2.5 quarts	5 quarts
50	10.0 fl oz	14.0 fl oz	2 pints	2 quarts	4 quarts
60	8.3 fl oz	11.7 fl oz	1.6 pints	1.6 quarts	3.2 quarts
70	7.1 fl oz	10.0 fl oz	1.4 pints	1.4 quarts	2.8 quarts
80	6.3 fl oz	8.8 fl oz	1.25 pints	1.25 quarts	2.5 quarts
90	5.6 fl oz	7.8 fl oz	1.1 pints	1.1 quarts	2.2 quarts
100	5.0 fl oz	7.0 fl oz	1 pints	1 quarts	2 quarts

Conversions: 16 fluid ounces = 1 pint; 32 fluid ounces = 1 quart; 64 fluid ounces = 2 quarts

**Example for Larger Sprayers:** You calibrate your sprayer and the output is 50 GPA, and your sprayer holds 100 gallons. The amount of area you can treat is 2 acres with your full spray tank. The label requires an herbicide application rate of 5 fl oz/acre for the target weed. You would add 10 fl oz of herbicide to your tank since you are treating 2 acres with each full tank mix.