



UI Extension Forestry Information Series

Herbicide Application with Hand-Held Sprayers

Randy Brooks

Hand-held sprayers are often used for spot treating patches of weeds or for treating small areas or tree plantings. Spray coverage should be uniform and thorough. Spray the target plants to the point of being wet, but not to the point of runoff. Calibrating a hand-held sprayer can be difficult because of the size and dimension of the area to be sprayed and difficulty in applying a uniform spray coverage with a single nozzle. The following calibration information may be useful in determining the proper amount of spray volume to mix for the area of a known dimension. Calibrate hand-held sprayers by 1) spraying a known area using water, 2) measuring the amount of water applied, and 3) calculating the number of gallons applied per acre (gpa).

For example, 1.5 gallons on 1000 square feet is the same as 65 gallons per acre:

$$43,560 \text{ sq. ft. per acre} / 1000 \text{ sq. ft.} \times 1.5 \text{ gallons} = 65 \text{ gpa}$$

The desired rate in lb/ac or pint/ac can be used to calculate the amount of herbicide to add to the spray solution. If 3 pt/ac is desired:

$$\begin{aligned} 3 \text{ pt/ac} / 65 \text{ gpa} &= 0.046 \text{ pt. or } 0.73 \text{ fl oz} \\ &\text{or } 1.5 \text{ tablespoons per gallon of spray solution.} \\ (16 \text{ fl oz} &= 1 \text{ pt; } 2 \text{ tablespoons} = 1 \text{ fl oz}) \end{aligned}$$

When calibration of a hand-held sprayer is not possible and the herbicide used is safe to the environment and non-target plants, a volume of 50 to 70 gpa can be assumed. However, the actual volume applied can vary considerably with the type of sprayer, spray pressure, and technique of the applicator, so calibration is strongly encouraged.

Some herbicide labels specify a percent solution for use in hand-held sprayers. The following table pro-

vides mixing instructions to obtain solutions of varying percent concentrations.

For more information on calibrating backpack sprayers request publication number PNW 320, *Calibrating and Using Backpack Sprayers* from your local Extension office.

Calibration Table					
Desired Solution Volume	Concentration of Herbicide %				
	0.5	1.0	1.5	2.0	5.0
(gal)	amt. Herbicide to add, in fl oz.				
1	0.6	1.3	1.9	2.6	6.4
2	1.3	2.6	3.8	5.1	12.8
5	3.2	6.4	9.6	12.8	32
10	6.4	12.8	19.2	25.6	64
100	64	128	192	256	640

2 tablespoons = 1 fl oz.

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About the Author: Dr. Randy Brooks is an Area Extension Educator - Forestry and Professor at the University of Idaho.

