

Calibrating Liquid Hand Pump and Backpack Sprayers

Manual sprayers – hand pumps, hand cans and back packs — are designed for spot treatments and for spraying areas not suitable for power sprayers because of size of the area to be treated, site access, or other factors.

Most of these sprayers do not have pressure gauges or pressure controls unless you have a deluxe model or have purchased gauges separately. The pressure drops continuously in these sprayers as you spray. Therefore, you need to repressurize the tank at frequent intervals or with continuous pumping. When spraying, either hold the nozzle steady at a constant height and walk back and forth, or swing the nozzle in a steady, sweeping, overlapping motion. Maintaining a uniform nozzle height and walking speed are essential to keeping the application rate uniform throughout the spraying operation.

How to calibrate manual sprayers:

When you calibrate a manual sprayer you should understand that, in part, you are calibrating the applicator.



Step 1. Measure and mark off an area equal to 1,000 sq ft (such as 20 ft x 50 ft).

Step 2. Add a measured amount of water to the tank, spray the area and then measure the amount of water remaining in the tank. The difference between the amount in the tank before and after spraying is the amount used per 1,000 sq ft.

Step 3. Compare the measured rate with the intended or recommended rate, make necessary adjustments and recalibrate the sprayer.

An alternative time method is to record the time required to spray 1,000 sq ft and later catch and measure the spray from the nozzle (or nozzles) used for the same time period.

Tips for more uniform applications using manual sprayers:

- For backpack sprayers, tie a weighted cord or chain to the wand near the nozzle. This serves as a height gauge to maintain a set distance from the nozzle. Or tie a cord to the wand near the nozzle, and tie the other end to the tank top.
- Walk a known space that should be covered by the sprayer. Practice until you can consistently spray this area with the correct amount of material. Use a ticking stop watch or timer to improve your pacing.
- For hand pump sprayers, attach a pressure gauge to the spray wand and check how fast the pressure drops. Count the number of seconds needed for the pressure to drop 10 psi. Count the number of pumps needed to return the pressure to the proper level.
- For backpack sprayers, attach a gauge to the spray wand and determine how fast you need to pump to keep the gauge pressure constant while spraying.

Adapted in part from The Ohio State Extension Service Bulletin 817-00 *Calibrating Turfgrass Chemical Application Equipment*

