



Pressurized Sprayer Calibration

(Backpack, Pump-Up, or Motor Powered Spraying of Narrow Strips)

Dr. Josh A. McGinty, Assistant Professor and Extension Agronomist

Dr. Paul A. Baumann, Professor and Extension Weed Specialist

* Uniform sprayer pressure must be maintained for whatever equipment is being used.

Step 1: Measure the effective spray swath in feet (width the spray covers as the operator travels, assuming you use an even distribution spray nozzle). This is most effectively measured on concrete where the spray pattern is clearly visible.

Step 2: Refer to the table below to determine the length of the calibration course.

| Effective spray swath width (ft.) | Length of calibration course (ft.) | For banded applications | | |
|--------------------------------------|---------------------------------------|-------------------------|--|-------|
| | | Band width (ft.) | Distance required to treat one acre (ft.) | miles |
| 2 | 62.5 | 1 | 43,560 | 8.25 |
| 3 | 42 | 2 | 21,780 | 4.13 |
| 4 | 31 | 3 | 14,520 | 2.75 |
| 5 | 25 | 4 | 10,890 | 2.06 |
| 6 | 21 | 5 | 8,712 | 1.65 |
| 7 | 18 | 6 | 7,260 | 1.38 |
| 8 | 15.5 | 8 | 5,445 | 1.03 |
| 10 | 12.5 | 10 | 4,356 | 0.8 |

Step 3: Record the time required to travel the calibration course on the same terrain that you will be travelling on while spraying, either while maintaining a constant walking speed or driving.

Step 4: While maintaining a constant operating pressure, catch the water for a time equal to that required to travel the calibration course. This may require the use of a heavy duty trash bag and bucket to catch the water.

Step 5: Measure the volume of water caught in pints. The pints of water equals the **gallons of water applied per 1,000 sq. ft.** To convert this to gallons per acre, multiply gallons per 1000 sq. ft. x 43.56 = **gallons per acre.** To adjust the volume of water applied, refer to the table below.

| To increase the volume: | To decrease the volume: |
|---------------------------------|---------------------------------|
| Increase the nozzle size | Decrease the nozzle size |
| Increase the operating pressure | Decrease the operating pressure |
| Decrease the application speed | Increase the application speed |

Step 6: Refer to pesticide label for recommendations on appropriate spray volume in gallons per 1,000 sq. ft. **OR** gallons per acre. Then, divide this number into your spray tank capacity to determine how many 1,000 square feet blocks **OR** acres per tank you can treat.

Sprayer Calibration Examples

Example 1. Assuming we have a 2 gallon pump-up sprayer that produces a 2 foot swath and a desired pesticide application rate of 2 fl oz per 1,000 sq. ft.:

Referring to the table on the previous page, we would need a calibration course that is **62.5 feet long**.

While walking at a constant pace, we find that it takes **15 seconds** to travel the length of the calibration course.

With the sprayer filled with **clean water only** and pressurized, we catch the spray for 15 seconds. If we catch **1.0 pint**, this means that we are currently applying **1.0 gal of water per 1,000 sq. ft.**

With our 2 gal sprayer, we can treat **(2) 1,000 sq. ft. blocks, or 2,000 sq. ft.**

$$2 \text{ gal} / 1.0 \text{ gal per } 1,000 \text{ sq.ft.} = 2.0 \text{ } 1,000 \text{ sq. ft. blocks}$$

Since we want to apply our pesticide at 2 fl oz per 1,000 sq.ft., we would then need to add 4.0 fl oz of product to a full 2 gallon tank.

$$2 \text{ fl oz per } 1,000 \text{ sq. ft.} \times 2.0 = 4.0 \text{ fl oz}$$

Example 2. Assuming we have a 25 gallon sprayer with an offset (boomless) spray nozzle producing a 4 foot swath with a desired pesticide application rate of 1.5 pints per acre:

Referring to the table on the previous page, we would need a calibration course that is **31 feet long**.

While driving at a constant speed, we find that it takes **10 seconds** to drive the length of the calibration course.

With the sprayer operating at a constant pressure with **clean water only**, we catch the spray for 10 seconds. If we caught **0.5 pint**, this means that we are applying **0.5 gal of water per 1,000 sq. ft., or 21.78 gal of water per acre.**

$$0.5 \text{ gal per sq.ft.} \times 43.56 = 21.78 \text{ gal per acre}$$

With our 25 gal spray tank, we can treat 1.15 acres per tank

$$25 \text{ gal} / 21.78 \text{ gal per acre} = 1.15 \text{ acre}$$

Since we want to apply our pesticide at 1.5 pints per acre, we would then need to add 1.725 pints of our herbicide to a full 25 gallon tank.

$$1.5 \text{ pints per acre} \times 1.15 \text{ acre} = 1.725 \text{ pints}$$

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