



## Sprayer Calibration

### BOOM SPRAYER CALIBRATION

Boom sprayers are most often used as tractor-mounted systems in row crop production, hayfields, or by smaller landowners using ATV-mounted equipment. Depending on the operation, booms may span a width of 4 feet to more than 60 feet with multiple nozzles equally spaced along the boom length to deliver a uniform spray pattern over the target pest.



**Figure 75.** Calibrating a boom sprayer requires catching output from individual nozzles in fluid ounces for the calculated time.

There are a few ways to calibrate a sprayer; possibly the simplest is the 1/128 acre, also called the “baby bottle” method. This involves simply scaling down the calibration course to 1/128 acre (340 ft<sup>2</sup>), since there are 128 fluid ounces in a gallon. This means that the spray collected from a single nozzle in fluid ounces directly correlates to gallons per acre (GPA), regardless of the number of nozzles on the boom. Following is the process:

- **Fill** the sprayer with clean water.
- **Measure** nozzle spacing in inches then convert to feet by dividing by 12.
- **Refer** to table 11 to determine the calibration course.
- **Measure and stake off** the appropriate calibration course based on nozzle spacing. The course should be on the same type of ground as that to be sprayed. Speeds may be faster on roads than on sod, thus changing the application rate.

**Table 11. Boom Spray Calibration Course**

Nozzle Spacing (in.)	Length of Calibration Course (ft.)*
14	292
16	25
18	227
20	204
22	186
24	170

\*To determine calibration course for a nozzle spacing not listed, first convert the distance between two nozzles from inches to feet. Divide 340 by the nozzle spacing in feet (1/128 of an acre is 340 feet). Example: Calibration distance for 19-inch nozzle spacing is  $340 \div 19 \div 12 = 215$  feet.

- **Drive** the course in the speed, gear, and rpm you will use when actually spraying. Record the time in seconds. Do this twice and get an average.
- **Park** the tractor/vehicle and maintain the same rpm.
- **Turn on** the sprayer and catch the water from one nozzle for exactly the same amount of time that it took to drive the calibration course. Ounces caught equal gallons per acre.

## BOOMLESS SPRAYER CALIBRATION

Boomless sprayers typically have a single nozzle or may be designed with up to three nozzles that produce swath patterns ranging up to 50 feet. These systems are often mounted on tractors or ATVs for broadcast applications in pastures, hayfields, or non-crop scenarios. These spray designs are useful for tight spaces, uneven terrain, brush control, or chemically side-trimming fence rows and rights-of-way.

As with boom sprayers it is necessary to scale down the calibration course to a fraction of an acre, in this case 1/8 of an acre (5,445 ft<sup>2</sup>), as the output will be measured in pints. The sprayer output collected from the boomless nozzle measured in pints will directly correlate to gallons per acre (GPA). Following is the process:

- **Fill** the sprayer with clean water.
- **Turn the sprayer on** and measure the effective swath width in feet. Spray patterns are most visible on dry soil, concrete, or gravel.
- **Refer** to table 12 to determine the calibration course.
- **Drive** the course in the speed, gear, and rpm you will use when actually spraying. Record the time in seconds. Do this twice and get an average.
- **Park** the tractor/vehicle and maintain the same rpm.
- **Turn on the sprayer** and use a trash bag or other improvised funnel and bucket to catch the water for exactly the same number of seconds required to drive the calibration course. Pints caught equal gallons per minute (GPM).



**Figure 76.** Using a clean container fitted over a boomless nozzle works well as a funnel to determine sprayer output.

**Table 12. Boomless Sprayer Calibration Course**

Effective Swath Width (ft.)	Length of Calibration Course (ft.)*
12	454
16	340
20	272
24	227
28	194
32	170
36	151
40	136

\*To determine the length of calibration course for a swath not listed, divide 5,445 ft<sup>2</sup> (1/8 acre) by the swath width in feet. Example: Calibration distance for 26-foot swath width is 5,445 / 26 = 209 feet.