Easy Approach to Calibrating Your Broadcast Sprayer

One ounce is 1/128th of a gallon. If you know the number of ounces sprayed in 1/128th of an acre, then gallons per acre are immediately known without the use of a formula. A table is used to find a nozzle spacing and a calibration distance equal to 1/128th of an acre. Follow these steps for a quick and easy calibration procedure.

1. **Make sure there is no more than a 10% variation** of spray volume across the boom.
2. **Use the chart** for distance to drive in the field.
3. **Set throttle for spraying and operate all equipment.** Note seconds required to drive measured distance.
4. **Catch spray for the noted time in Step 3 at the same RPMs and pressure.** Use a container marked in ounces (a calibrated bottle or measuring cup). Catch spray from one nozzle during noted time.
5. **Nozzle output in ounces equals gallons per acre actually applied.**
6. **Divide the capacity of your tank by the gallons applied per acre** as determined in Step 5 to find the number of acres you can treat per tank of spray.
7. **To determine how much chemical to add to the tank, multiply the rate per acre recommended by the number of acres your tank will cover** as determined in Step 6.

Nozzle Spacing (Inches)	Distance (Feet)
44	93
42	97
40	102
38	107
36	113
34	120
32	127
30	136
28	146
26	157
24	170
22	185
20	204
18	227
16	255
14	291

Example:

- Horizontal boom – One nozzle per 20"; travels 204 ft. course in 19 seconds at 4 mph.
- Output per nozzle at 20" spacing is 15 ounces in 19 seconds.
- 15 ounces = 15 gallons/acre
- 20 acres to be sprayed.
- 20 X 15 = 300 gallons to be sprayed.
- Chemical application rate on label is 1 pt/acre.
- 20 X 1 pt. = 20 pts (2.5 gallons) chemical added to 300 gallons of water in the spray tank.

Desired spray volume for most chemicals is 15-20 gallons per acre (10 GPA for glyphosate); Keep your pressure below 40 psi.

Your Figures

Tractor Make & Model _____

Tractor RPM _____

Tractor Gear _____

Sprayer Pressure _____

Determined Spray Volume:

_____ **Gallons Per Acre**

At the above settings add _____ (oz / pts / qts / gal.) of _____ pesticide to _____ gallons of water to treat _____ acres.

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Calibrating Boomless Sprayers

1. **Determine overall swath width.**
2. **Use the chart** for distance to drive in the field.
3. **Set throttle for spraying and operate equipment.** Note seconds required to drive measured distance.
4. **Keep the sprayer going and get off the tractor.**
5. **Catch spray for the noted time in Step 3 at the same RPMs and pressure.** Use a container marked in pints (a calibrated bottle or measuring cup). Catch spray from one nozzle during noted time.
6. **Nozzle output in pints equals gallons per acre actually applied.**
7. **Divide the capacity of your tank by the gallons applied per acre** as determined in Step 6 to find the number of acres you can treat per tank of spray.
8. **To determine how much chemical to add to the tank, multiply the rate per acre recommended by the number of acres your tank will cover** as determined in Step 7.

Swath Width (Feet)	Distance (Feet)
25	218
30	182
35	156
40	136
45	121
50	109

If the swath width on your boomless sprayer is different than the options shown, divide 5460 (1/8 of an acre = 5460 square feet) by your swath width in feet.

Desired spray volume for most chemicals is 15-20 gallons per acre (10 GPA for glyphosate); Try to keep your pressure below 40 psi. Boomless sprayers are at higher risk for spray drift.

Useful Formula for Choosing Nozzles for Broadcast Sprayers

$$GPM = \frac{GPA \times mph \times W}{5940}$$

GPM = Gallons Per Minute
GPA = Gallons Per Acre Spray Volume
MPH = Miles Per Hour Speed
W = Nozzle Spacing Width

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For more information contact your local University of Missouri Extension Center