



Boom Sprayer Calibration Worksheet

1/128th Method

This worksheet is an accompaniment to the Extension fact sheet, *Boom Sprayers - 1/128th Method of Calibration - A Quick and Easy Method*, found at extension.unh.edu.

Retain the following information for your records:

Date _____ ID: _____

Farm _____ Contact _____ Phone _____

Address _____ Town _____ State _____ Zip Code _____

Email _____ Operator _____

Tractor _____ Tractor Tires Brand _____ Sprayer _____

Tractor Gear _____ Tractor Tires Size _____ Tank _____

Tractor RPM _____ Height: Ground to Top of Tire _____ (left) Pump Pressure _____

PTO RPM _____ Ground to Top of Tire _____ (right)

Boom Sprayer Calibration - 1/128th Method

1. Measure the distance between nozzles in inches. For a boom sprayer that has nozzles placed 20” apart, measure off 204 feet on a field like that which you will be spraying (e.g., sod, disked, etc.)

The correct distance of travel for other nozzle spacings is as follows:

<u>Nozzle Space</u>	<u>Travel Distance*</u>	<u>Nozzle Space</u>	<u>Travel Distance*</u>
8 inches	510 feet	22 inches	185 feet
10 inches	408 feet	24 inches	170 feet
12 inches	340 feet	28 inches	146 feet
14 inches	291 feet	32 inches	128 feet
16 inches	256 feet	36 inches	113 feet
18 inches	227 feet	40 inches	102 feet
20 inches	204 feet	48 inches	85 feet

**340 feet/nozzle space (in feet) = distance*

Distance between nozzles _____ Travel Distance _____

2. Drive the tractor the correct distance shown above and note the exact time in seconds it takes to pass the end points. Make a return pass and check the time again. If the time differs by no more than 2 seconds, average the two times. Repeat if the time differs by 3 seconds or more. Note the engine gear that was used to make the passes.

Gear _____

Time in seconds (down) _____ (back) _____

Average Time in seconds _____

Gear _____

Time in seconds (down) _____ (back) _____

Average Time in seconds _____

$$\text{Miles per Hour} = \frac{\text{Distance in feet} \times 60}{\text{Time in seconds} \times 88}$$

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$$\left(\frac{\text{feet}}{\text{seconds}} \right) \times 60 = \left(\frac{\text{feet}}{\text{seconds}} \right) = \text{MPH}$$

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3. With the tractor in a stationary position, set the same engine RPM used in Step 2. Also, set the application pressure (30-40 psi) that you normally use and spray water through the boom. Collect spray water at the nozzles when all the nozzles appear to have a uniform delivery at the desired psi. The container(s) should be quickly placed under the nozzle(s) **for the exact number of seconds noted in Step 2 above.**

Pressure _____ PSI

Number of Nozzles on Boom _____

Type of Nozzle _____

Size of Tip _____

Height of Boom from Target _____

New Nozzle Tip's Output _____

Replace nozzles if output is greater than 10% variation between nozzles as calculated below.

Looking at the sprayer from behind, #1 nozzle is on the left side.					
Nozzle Output			Nozzle Output		
Nozzle #	Tip Size	Output in Fluid Ounces	Nozzle #	Tip Size	Output in Fluid Ounces
1			16		
2			17		
3			18		
4			19		
5			20		
6			21		
7			22		
8			23		
9			24		
10			25		
11			26		
12			27		
13			28		
14			29		
15			30		
Output			Output		
Total Output in Ounces					

$$\text{Average output} = \frac{\text{Total Output in fluid ounces}}{\text{Total number of nozzles}} = \frac{(\text{fluid ozs})}{(\text{nozzles})} = \text{_____ oz per nozzle} = \text{Average Output}$$

$$\text{Minimum Output} = 0.90 \times \text{_____ Average Output} = \text{_____ Fluid ounces}$$

$$\text{Maximum Output} = 1.10 \times \text{_____ Average Output} = \text{_____ Fluid ounces}$$

Replace all nozzles if average output is 15% more than a new nozzle's output (from manufacturer's chart or discharge test).

The average nozzle output for the exact number of seconds traveled, equals the rate of spray per acre in gallons.

_____ GPA

Example: If 18 ounces are collected in the time noted in Step 2 above, you are spraying 18 gallons per acre from that nozzle.

George Hamilton, Extension Field Specialist, emeritus, fruit and vegetable production, 1996; 2023 revised.

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