



Boom Sprayer Calibration Worksheet

One-Minute Method

This worksheet is an accompaniment to the Extension fact sheet, *Boom Sprayers - One-Minute Method of Calibration*, 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)

Calibration

1. Measure the distance between nozzles in inches.
Distance between nozzles _____
2. Drive the tractor over a given distance 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 2 seconds or more.

Note the engine RPM and gear that were used to make the passes.

Measured Distance _____ feet	Measured Distance _____ feet	Measured Distance _____ feet
Tractor Gear _____	Tractor Gear _____	Tractor Gear _____
Tractor RPM _____	Tractor RPM _____	Tractor RPM _____
Time in seconds (down) _____	Time in seconds (down) _____	Time in seconds (down) _____
Time in seconds (back) _____	Time in seconds (back) _____	Time in seconds (back) _____
Average Time in seconds _____	Average Time in seconds _____	Average Time in seconds _____

$$\text{Miles per Hour} = \frac{\text{Distance in Feet} \times 60}{\text{Time in Seconds} \times 88} = \frac{(\text{ } \text{Feet}) \times 60}{(\text{ } \text{Seconds}) \times 88} = \frac{(\text{ })}{(\text{ })} = \text{ } \text{ MPH}$$

$$\text{Speed in Feet per Minute} = \text{MPH} \times 88 = (\text{ } \text{ MPH}) \times 88 = (\text{ }) \text{ Feet per Minute}$$

3. With the tractor in a stationary position, set the same engine RPM used in Step 2. Also set the application pressure that you normally use and spray water through the boom. Collect spray 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 60 seconds.

Pressure _____ PSI
 Number of Nozzles on Boom _____
 Type of Nozzle _____
 Size of Tip _____
 Height of Boom from Target _____
 New Nozzle Tip's Output _____
 All Nozzles Output = (_____ GPM)

*Convert fluid ounces to gallons:

$$\text{Gallons} = \frac{\text{fluid ounces}}{128}$$

Looking at the sprayer from behind, #1 nozzle is on left side							
Nozzle Output				Nozzle Output			
Nozzle #	Tip Size	Output in Fluid Ounces	Output in Gallons*	Nozzle #	Tip Size	Output in Fluid Ounces	Output in Gallons*
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 Gallons per Minute							

$$\text{Average output} = \frac{\text{Total output in gallons}}{\text{Total number of nozzles}} = \left(\frac{\text{_____ gallons}}{\text{_____ nozzles}} \right) = \text{_____ gallons (Average Output)}$$

$$\text{Minimum Output} = 0.90 \times (\text{_____}) \text{ Average Output} = \text{_____ Gallons}$$

$$\text{Maximum Output} = 1.10 \times (\text{_____}) \text{ Average Output} = \text{_____ Gallons}$$

Replace nozzles if output is greater than 10% variation between nozzles*.

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

Crop: _____ Block: (# _____) Spray Swath Width: (_____ ft.)

$$\text{Linear Feet of Row per Acre} = \frac{43,560}{\text{Row Width or Spray Swath Width (_____)}} = \frac{43,560}{\text{_____}} = \text{_____ Feet per Acre}$$

$$\text{Block (# _____) Minutes/Acre} = \frac{\text{Linear Feet Row per Acre}}{\text{Feet per Minute (_____)}} = \frac{\text{_____}}{\text{_____}} = \text{_____ Minutes/Acre}$$

Arrangement Nozzles (# _____)

$$\text{GPA} = \text{GPM} \times \text{MPA} = (\text{_____ GPM}) \times (\text{_____ MPA}) = \text{_____ GPA}$$

George Hamilton, Extension Field Specialist, emeritus, fruit and vegetable production, 2019; 2023, Revised.

extension.unh.edu

The University of New Hampshire Cooperative Extension is an equal opportunity educator and employer. University of New Hampshire, U.S. Department of Agriculture and N.H. counties cooperating.

© 2023 University of New Hampshire

