

Boom Sprayer Calibration Tables¹

Michael J. Mulvaney, Pratap Devkota, Ethan Carter, De Broughton, and Mark Mauldin²

Introduction

Sprayer calibration is critical to prevent over- or under-application of pesticides (Fishel 2017). However, this procedure is often not performed on a regular basis, partly due to the perceived complexity of the math involved. Tools that make the process easier should make calibration a more common practice. This publication is meant to make calibration of boom sprayers easier, and therefore more common, by providing a convenient chart that can be kept in barns, tractor cabs, sprayers, and mix-load facilities for quick reference.

This publication does not cover calibration procedures. There are multiple methods for calibrating a sprayer, many of which are covered in *Broadcast Boom Sprayer Calibration* (Dean and Fishel 2017), *Calibration of Herbicide Applicators* (Ferrell et al. 2015), and *Boom Sprayer Nozzle Performance Test* (Fishel 2017). The tables in this document help pesticide applicators to quickly verify that equipment is accurately calibrated. **These tables are not meant for spreaders, banded applications, or in-furrow applications. These tables are exclusively for use with broadcast sprayer applications.**

There are several differences between the tables presented here and those found in typical commercial nozzle catalogs, including:

1. Commercial tables are primarily meant to assist growers with nozzle selection, not sprayer calibration. The information included in commercial tables is not well suited to calibration.
2. While commercial tables assume new nozzles without blockages or wear, the values presented in Table 1 do not. They represent actual nozzle output volume rather than theoretical output volume from new nozzles. This is why commercial tables often call the nozzle output volume “capacity of one nozzle,” because actual nozzle output may vary with use. Using the tables below accounts for nozzle wear, because the amount of water collected will pass through those nozzles.
3. Commercial nozzle tip tables commonly show values at 20-, 40-, and 60-inch nozzle spacings, which may not be relevant for most growers, who commonly spray 36-inch rows with 18-inch nozzle spacing. In Mississippi, common nozzle spacings are 19 inches. Table 1 shows values for common nozzle spacings in the southeastern United States.
4. Commercial tables are only accurate when water temperatures are at a given value. Table 1 determines output volumes under your actual field conditions, because the calibration will be done under those conditions.

1. This document is SS-AGR-446, one of a series of the Agronomy Department, UF/IFAS Extension. Original publication date November 2020. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication.

2. Michael J. Mulvaney, assistant professor, Agronomy Department, UF/IFAS West Florida Research and Education Center; Pratap Devkota, assistant professor, Agronomy Department, UF/IFAS West Florida REC; Ethan Carter, RSA Extension agent I, UF/IFAS Extension Jackson County; De Broughton, RSA Extension agent, UF/IFAS North Florida REC; and Mark Mauldin, Extension agent II, UF/IFAS Extension Washington County; UF/IFAS Extension, Gainesville, FL 32611.

Use pesticides safely. Read and follow directions on the manufacturer’s label.

5. Commercial tables do not provide the equations needed to calculate gallons per acre (GPA) or the volume of water to be collected for values not shown in the tables.

Using the Tables

The calibration tables require that you know three of the following four variables:

- Ground speed (miles per hour, or MPH)
- Spray volume (gallons per acre, or GPA)
- Nozzle spacing (in inches)
- Output per nozzle (fl oz per nozzle)

The unknown variable (usually output per nozzle or spray volume) can be determined using Table 1, Equation 1, or Equation 2.

Cleaning nozzle screens, inspecting tips for spray pattern, and replacing nozzles as needed prior to calibration are advised. To inspect spray pattern, it is a good idea to spray clean water first and look at the spray pattern to see if there are any obvious problems, such as clogged tips or worn nozzles. The bad nozzles can be replaced immediately, which saves time during calibration and provides precise spray output.

For any given ground speed, the tables below contain a highlighted box meant to represent the calibration volume per nozzle at common nozzle spacings and spray volumes for row crop farmers in the Florida Panhandle. If you wish to calculate a value not shown in the tables, use Equation 1 to determine the amount of water (in fl oz) to be collected in 15 seconds. For accurate results, use a graduated cylinder with fine graduations, such as tenths of fluid ounces, especially at slow ground speeds and low spray volumes.

Equation 1. The amount of water needed from each nozzle to calibrate a boom sprayer for a given spray volume (gallons per acre, GPA), ground speed (miles per hour, MPH), and nozzle spacing (inches).

fl oz to collect per nozzle in 15 seconds = (GPA) × (MPH) × (nozzle spacing, inches) × 0.005387

Using the Tables for Research Applications

For research applications, it is often preferred to adjust the tank pressure to achieve a desired spray volume for a given ground speed and nozzle spacing. In this case, find the table with your ground speed in the left column. Find the

column with your nozzle spacing and the row with your desired spray volume and adjust your tank pressure so that each nozzle delivers the volume of water shown.

For example, suppose you have a fungicide trial that requires application using a backpack sprayer. If your walking speed is 3 MPH, your nozzle spacing is 18 inches, and your desired spray volume is 20 gallons per acre (GPA), adjust the tank pressure to deliver 5.8 fl oz in 15 seconds.

Using the Tables for On-Farm Applications

For on-farm applications, it is often important to know the spray volume being used. In this case, the equipment is set at a given engine speed (revolutions per minute, rpm), tank pressure (the middle of the operating range is a good starting point), and ground speed appropriate for operator control under field conditions. Those values should be written down and “set in stone” for future spray applications.

Once engine speed, tank pressure, and ground speed are set, collect water from each nozzle for 15 seconds. Find the table with your ground speed, then find the column with your nozzle spacing. Move down the column until you find the closest value to the amount of water you collected from a single nozzle and move along the row to the left to find the spray volume (GPA).

For example, suppose your running speed is 8 MPH with an 18-inch nozzle spacing, with your engine speed and tank pressure set for field application. If you collect 10 fl oz in 15 seconds from each nozzle, you are running somewhere between 10 and 15 gallons per acre spray volume. To determine a more exact volume, you can extrapolate the GPA in the table (10 fl oz is about halfway between 7.8 and 11.6, so you are about halfway between 10 and 15 GPA, or about 12.5 GPA, Table 1). More accurately, we can rearrange Equation 1 to solve for spray volume (Equation 2) to determine that your spray volume is 12.9 gallons per acre in this example.

Equation 2. Determination of spray volume (gallons per acre, GPA) for a given ground speed (miles per hour, MPH) and nozzle spacing (inches) after collecting a volume of water in 15 seconds from each nozzle.

$$GPA = \frac{(fl\ oz\ collected\ per\ nozzle\ in\ 15\ seconds) \times 185.6}{(MPH) \times (nozzle\ spacing,\ inches)}$$

References

Dean, T. W., and F. M. Fishel. 2017. *Broadcast Boom Sprayer Calibration*. PI-24. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/pi016>

Ferrell, J. A., B. A. Sellers, and R. Leon. 2015. *Calibration of Herbicide Applicators*. SS-AGR-102. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/wg013>

Fishel, F. M. 2017. *Boom Sprayer Nozzle Performance Test*. PI-23. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/pi015>

Table 1. Broadcast sprayer calibration chart for common ground speeds, spray volumes, and nozzle spacings. The values are the amount of water to be collected per nozzle in 15 seconds.

Ground speed	GPA	Nozzle spacing (inches)										
		12	15	18	19	20	24	30				
1.0 mph	5	0.3	0.4	0.5	0.5	0.5	0.6	0.8				
68.2 sec/100 ft	10	0.6	0.8	1.0	1.0	1.1	1.3	1.6				
102.3 sec/150 ft	15	1.0	1.2	1.5	1.5	1.6	1.9	2.4				
	20	1.3	1.6	1.9	2.0	2.2	2.6	3.2				
	25	1.6	2.0	2.4	2.6	2.7	3.2	4.0				
	30	1.9	2.4	2.9	3.1	3.2	3.9	4.8				
	35	2.3	2.8	3.4	3.6	3.8	4.5	5.7				
	40	2.6	3.2	3.9	4.1	4.3	5.2	6.5				
1.5 mph	5	0.5	0.6	0.7	0.8	0.8	1.0	1.2				
45.5 sec/100 ft	10	1.0	1.2	1.5	1.5	1.6	1.9	2.4				
68.2 sec/150 ft	15	1.5	1.8	2.2	2.3	2.4	2.9	3.6				
	20	1.9	2.4	2.9	3.1	3.2	3.9	4.8				
	25	2.4	3.0	3.6	3.8	4.0	4.8	6.1				
	30	2.9	3.6	4.4	4.6	4.8	5.8	7.3				
	35	3.4	4.2	5.1	5.4	5.7	6.8	8.5				
	40	3.9	4.8	5.8	6.1	6.5	7.8	9.7				
2.0 mph	5	0.6	0.8	1.0	1.0	1.1	1.3	1.6				
34.1 sec/100 ft	10	1.3	1.6	1.9	2.0	2.2	2.6	3.2				
51.1 sec/150 ft	15	1.9	2.4	2.9	3.1	3.2	3.9	4.8				
	20	2.6	3.2	3.9	4.1	4.3	5.2	6.5				
	25	3.2	4.0	4.8	5.1	5.4	6.5	8.1				
	30	3.9	4.8	5.8	6.1	6.5	7.8	9.7				
	35	4.5	5.7	6.8	7.2	7.5	9.0	11.3				
	40	5.2	6.5	7.8	8.2	8.6	10.3	12.9				

Ground speed	GPA	Nozzle spacing (inches)								
		12	15	18	19	20	24	30		
		----- fl oz/15 seconds -----								
2.5 mph	5	0.8	1.0	1.2	1.3	1.3	1.6	2.0		
27.3 sec/100 ft	10	1.6	2.0	2.4	2.6	2.7	3.2	4.0		
40.9 sec/150 ft	15	2.4	3.0	3.6	3.8	4.0	4.8	6.1		
	20	3.2	4.0	4.8	5.1	5.4	6.5	8.1		
	25	4.0	5.0	6.1	6.4	6.7	8.1	10.1		
	30	4.8	6.1	7.3	7.7	8.1	9.7	12.1		
	35	5.7	7.1	8.5	9.0	9.4	11.3	14.1		
	40	6.5	8.1	9.7	10.2	10.8	12.9	16.2		
3.0 mph	5	1.0	1.2	1.5	1.5	1.6	1.9	2.4		
22.7 sec/100 ft	10	1.9	2.4	2.9	3.1	3.2	3.9	4.8		
34.1 sec/150 ft	15	2.9	3.6	4.4	4.6	4.8	5.8	7.3		
	20	3.9	4.8	5.8	6.1	6.5	7.8	9.7		
	25	4.8	6.1	7.3	7.7	8.1	9.7	12.1		
	30	5.8	7.3	8.7	9.2	9.7	11.6	14.5		
	35	6.8	8.5	10.2	10.7	11.3	13.6	17.0		
	40	7.8	9.7	11.6	12.3	12.9	15.5	19.4		
3.5 mph	5	1.1	1.4	1.7	1.8	1.9	2.3	2.8		
19.5 sec/100 ft	10	2.3	2.8	3.4	3.6	3.8	4.5	5.7		
29.2 sec/150 ft	15	3.4	4.2	5.1	5.4	5.7	6.8	8.5		
	20	4.5	5.7	6.8	7.2	7.5	9.0	11.3		
	25	5.7	7.1	8.5	9.0	9.4	11.3	14.1		
	30	6.8	8.5	10.2	10.7	11.3	13.6	17.0		
	35	7.9	9.9	11.9	12.5	13.2	15.8	19.8		
	40	9.0	11.3	13.6	14.3	15.1	18.1	22.6		

Ground speed	GPA	Nozzle spacing (inches)									
		12	15	18	19	20	24	30			
		----- fl oz/15 seconds -----									
4.0 mph	5	1.3	1.6	1.9	2.0	2.2	2.6	3.2			
17.0 sec/100 ft	10	2.6	3.2	3.9	4.1	4.3	5.2	6.5			
25.6 sec/150 ft	15	3.9	4.8	5.8	6.1	6.5	7.8	9.7			
	20	5.2	6.5	7.8	8.2	8.6	10.3	12.9			
	25	6.5	8.1	9.7	10.2	10.8	12.9	16.2			
	30	7.8	9.7	11.6	12.3	12.9	15.5	19.4			
	35	9.0	11.3	13.6	14.3	15.1	18.1	22.6			
	40	10.3	12.9	15.5	16.4	17.2	20.7	25.9			
4.5 mph	5	1.5	1.8	2.2	2.3	2.4	2.9	3.6			
15.2 sec/100 ft	10	2.9	3.6	4.4	4.6	4.8	5.8	7.3			
22.7 sec/150 ft	15	4.4	5.5	6.5	6.9	7.3	8.7	10.9			
	20	5.8	7.3	8.7	9.2	9.7	11.6	14.5			
	25	7.3	9.1	10.9	11.5	12.1	14.5	18.2			
	30	8.7	10.9	13.1	13.8	14.5	17.5	21.8			
	35	10.2	12.7	15.3	16.1	17.0	20.4	25.5			
	40	11.6	14.5	17.5	18.4	19.4	23.3	29.1			
5.0 mph	5	1.6	2.0	2.4	2.6	2.7	3.2	4.0			
13.6 sec/100 ft	10	3.2	4.0	4.8	5.1	5.4	6.5	8.1			
20.5 sec/150 ft	15	4.8	6.1	7.3	7.7	8.1	9.7	12.1			
	20	6.5	8.1	9.7	10.2	10.8	12.9	16.2			
	25	8.1	10.1	12.1	12.8	13.5	16.2	20.2			
	30	9.7	12.1	14.5	15.4	16.2	19.4	24.2			
	35	11.3	14.1	17.0	17.9	18.9	22.6	28.3			
	40	12.9	16.2	19.4	20.5	21.5	25.9	32.3			

Ground speed	GPA	Nozzle spacing (inches)								
		12	15	18	19	20	24	30		
		----- fl oz/15 seconds -----								
5.5 mph	5	1.8	2.2	2.7	2.8	3.0	3.6	4.4		
12.4 sec/100 ft	10	3.6	4.4	5.3	5.6	5.9	7.1	8.9		
18.6 sec/150 ft	15	5.3	6.7	8.0	8.4	8.9	10.7	13.3		
	20	7.1	8.9	10.7	11.3	11.9	14.2	17.8		
	25	8.9	11.1	13.3	14.1	14.8	17.8	22.2		
	30	10.7	13.3	16.0	16.9	17.8	21.3	26.7		
	35	12.4	15.6	18.7	19.7	20.7	24.9	31.1		
	40	14.2	17.8	21.3	22.5	23.7	28.4	35.6		
6.0 mph	5	1.9	2.4	2.9	3.1	3.2	3.9	4.8		
11.4 sec/100 ft	10	3.9	4.8	5.8	6.1	6.5	7.8	9.7		
17.0 sec/150 ft	15	5.8	7.3	8.7	9.2	9.7	11.6	14.5		
	20	7.8	9.7	11.6	12.3	12.9	15.5	19.4		
	25	9.7	12.1	14.5	15.4	16.2	19.4	24.2		
	30	11.6	14.5	17.5	18.4	19.4	23.3	29.1		
	35	13.6	17.0	20.4	21.5	22.6	27.1	33.9		
	40	15.5	19.4	23.3	24.6	25.9	31.0	38.8		
6.5 mph	5	2.1	2.6	3.2	3.3	3.5	4.2	5.3		
10.5 sec/100 ft	10	4.2	5.3	6.3	6.7	7.0	8.4	10.5		
15.7 sec/150 ft	15	6.3	7.9	9.5	10.0	10.5	12.6	15.8		
	20	8.4	10.5	12.6	13.3	14.0	16.8	21.0		
	25	10.5	13.1	15.8	16.6	17.5	21.0	26.3		
	30	12.6	15.8	18.9	20.0	21.0	25.2	31.5		
	35	14.7	18.4	22.1	23.3	24.5	29.4	36.8		
	40	16.8	21.0	25.2	26.6	28.0	33.6	42.0		

Ground speed	GPA	Nozzle spacing (inches)								
		12	15	18	19	20	24	30		
		----- fl oz/15 seconds -----								
7.0 mph	5	2.3	2.8	3.4	3.6	3.8	4.5	5.7		
9.7 sec/100 ft	10	4.5	5.7	6.8	7.2	7.5	9.0	11.3		
14.6 sec/150 ft	15	6.8	8.5	10.2	10.7	11.3	13.6	17.0		
	20	9.0	11.3	13.6	14.3	15.1	18.1	22.6		
	25	11.3	14.1	17.0	17.9	18.9	22.6	28.3		
	30	13.6	17.0	20.4	21.5	22.6	27.1	33.9		
	35	15.8	19.8	23.8	25.1	26.4	31.7	39.6		
	40	18.1	22.6	27.1	28.7	30.2	36.2	45.2		
7.5 mph	5	2.4	3.0	3.6	3.8	4.0	4.8	6.1		
9.1 sec/100 ft	10	4.8	6.1	7.3	7.7	8.1	9.7	12.1		
13.6 sec/150 ft	15	7.3	9.1	10.9	11.5	12.1	14.5	18.2		
	20	9.7	12.1	14.5	15.4	16.2	19.4	24.2		
	25	12.1	15.1	18.2	19.2	20.2	24.2	30.3		
	30	14.5	18.2	21.8	23.0	24.2	29.1	36.4		
	35	17.0	21.2	25.5	26.9	28.3	33.9	42.4		
	40	19.4	24.2	29.1	30.7	32.3	38.8	48.5		
8.0 mph	5	2.6	3.2	3.9	4.1	4.3	5.2	6.5		
8.5 sec/100 ft	10	5.2	6.5	7.8	8.2	8.6	10.3	12.9		
12.8 sec/150 ft	15	7.8	9.7	11.6	12.3	12.9	15.5	19.4		
	20	10.3	12.9	15.5	16.4	17.2	20.7	25.9		
	25	12.9	16.2	19.4	20.5	21.5	25.9	32.3		
	30	15.5	19.4	23.3	24.6	25.9	31.0	38.8		
	35	18.1	22.6	27.1	28.7	30.2	36.2	45.2		
	40	20.7	25.9	31.0	32.8	34.5	41.4	51.7		

Ground speed	GPA	Nozzle spacing (inches)								
		12	15	18	19	20	24	30		
		----- fl oz/15 seconds -----								
8.5 mph	5	2.7	3.4	4.1	4.3	4.6	5.5	6.9		
8.0 sec/100 ft	10	5.5	6.9	8.2	8.7	9.2	11.0	13.7		
12.0 sec/150 ft	15	8.2	10.3	12.4	13.0	13.7	16.5	20.6		
	20	11.0	13.7	16.5	17.4	18.3	22.0	27.5		
	25	13.7	17.2	20.6	21.7	22.9	27.5	34.3		
	30	16.5	20.6	24.7	26.1	27.5	33.0	41.2		
	35	19.2	24.0	28.8	30.4	32.1	38.5	48.1		
	40	22.0	27.5	33.0	34.8	36.6	44.0	54.9		
9.0 mph	5	2.9	3.6	4.4	4.6	4.8	5.8	7.3		
7.6 sec/100 ft	10	5.8	7.3	8.7	9.2	9.7	11.6	14.5		
11.4 sec/150 ft	15	8.7	10.9	13.1	13.8	14.5	17.5	21.8		
	20	11.6	14.5	17.5	18.4	19.4	23.3	29.1		
	25	14.5	18.2	21.8	23.0	24.2	29.1	36.4		
	30	17.5	21.8	26.2	27.6	29.1	34.9	43.6		
	35	20.4	25.5	30.5	32.2	33.9	40.7	50.9		
	40	23.3	29.1	34.9	36.8	38.8	46.5	58.2		
9.5 mph	5	3.1	3.8	4.6	4.9	5.1	6.1	7.7		
7.2 sec/100 ft	10	6.1	7.7	9.2	9.7	10.2	12.3	15.4		
10.8 sec/150 ft	15	9.2	11.5	13.8	14.6	15.4	18.4	23.0		
	20	12.3	15.4	18.4	19.4	20.5	24.6	30.7		
	25	15.4	19.2	23.0	24.3	25.6	30.7	38.4		
	30	18.4	23.0	27.6	29.2	30.7	36.8	46.1		
	35	21.5	26.9	32.2	34.0	35.8	43.0	53.7		
	40	24.6	30.7	36.8	38.9	40.9	49.1	61.4		

Ground speed	GPA	Nozzle spacing (inches)								
		12	15	18	19	20	24	30		
		----- fl oz/15 seconds -----								
10.0 mph	5	3.2	4.0	4.8	5.1	5.4	6.5	8.1		
6.8 sec/100 ft	10	6.5	8.1	9.7	10.2	10.8	12.9	16.2		
10.2 sec/150 ft	15	9.7	12.1	14.5	15.4	16.2	19.4	24.2		
	20	12.9	16.2	19.4	20.5	21.5	25.9	32.3		
	25	16.2	20.2	24.2	25.6	26.9	32.3	40.4		
	30	19.4	24.2	29.1	30.7	32.3	38.8	48.5		
	35	22.6	28.3	33.9	35.8	37.7	45.2	56.6		
	40	25.9	32.3	38.8	40.9	43.1	51.7	64.6		
10.5 mph	5	3.4	4.2	5.1	5.4	5.7	6.8	8.5		
6.5 sec/100 ft	10	6.8	8.5	10.2	10.7	11.3	13.6	17.0		
9.7 sec/150 ft	15	10.2	12.7	15.3	16.1	17.0	20.4	25.5		
	20	13.6	17.0	20.4	21.5	22.6	27.1	33.9		
	25	17.0	21.2	25.5	26.9	28.3	33.9	42.4		
	30	20.4	25.5	30.5	32.2	33.9	40.7	50.9		
	35	23.8	29.7	35.6	37.6	39.6	47.5	59.4		
	40	27.1	33.9	40.7	43.0	45.2	54.3	67.9		
11.0 mph	5	3.6	4.4	5.3	5.6	5.9	7.1	8.9		
6.2 sec/100 ft	10	7.1	8.9	10.7	11.3	11.9	14.2	17.8		
9.3 sec/150 ft	15	10.7	13.3	16.0	16.9	17.8	21.3	26.7		
	20	14.2	17.8	21.3	22.5	23.7	28.4	35.6		
	25	17.8	22.2	26.7	28.1	29.6	35.6	44.4		
	30	21.3	26.7	32.0	33.8	35.6	42.7	53.3		
	35	24.9	31.1	37.3	39.4	41.5	49.8	62.2		
	40	28.4	35.6	42.7	45.0	47.4	56.9	71.1		

Ground speed	GPA	Nozzle spacing (inches)								
		12	15	18	19	20	24	30		
		----- fl oz/15 seconds -----								
11.5 mph	5	3.7	4.6	5.6	5.9	6.2	7.4	9.3		
5.9 sec/100 ft	10	7.4	9.3	11.2	11.8	12.4	14.9	18.6		
8.9 sec/150 ft	15	11.2	13.9	16.7	17.7	18.6	22.3	27.9		
	20	14.9	18.6	22.3	23.5	24.8	29.7	37.2		
	25	18.6	23.2	27.9	29.4	31.0	37.2	46.5		
	30	22.3	27.9	33.5	35.3	37.2	44.6	55.8		
	35	26.0	32.5	39.0	41.2	43.4	52.0	65.0		
	40	29.7	37.2	44.6	47.1	49.6	59.5	74.3		
12.0 mph	5	3.9	4.8	5.8	6.1	6.5	7.8	9.7		
5.7 sec/100 ft	10	7.8	9.7	11.6	12.3	12.9	15.5	19.4		
8.5 sec/150 ft	15	11.6	14.5	17.5	18.4	19.4	23.3	29.1		
	20	15.5	19.4	23.3	24.6	25.9	31.0	38.8		
	25	19.4	24.2	29.1	30.7	32.3	38.8	48.5		
	30	23.3	29.1	34.9	36.8	38.8	46.5	58.2		
	35	27.1	33.9	40.7	43.0	45.2	54.3	67.9		
	40	31.0	38.8	46.5	49.1	51.7	62.1	77.6		
12.5 mph	5	4.0	5.0	6.1	6.4	6.7	8.1	10.1		
5.5 sec/100 ft	10	8.1	10.1	12.1	12.8	13.5	16.2	20.2		
8.2 sec/150 ft	15	12.1	15.1	18.2	19.2	20.2	24.2	30.3		
	20	16.2	20.2	24.2	25.6	26.9	32.3	40.4		
	25	20.2	25.2	30.3	32.0	33.7	40.4	50.5		
	30	24.2	30.3	36.4	38.4	40.4	48.5	60.6		
	35	28.3	35.3	42.4	44.8	47.1	56.6	70.7		
	40	32.3	40.4	48.5	51.2	53.9	64.6	80.8		

Ground speed	GPA	Nozzle spacing (inches)								
		12	15	18	19	20	24	30		
		----- fl oz/15 seconds -----								
13.0 mph	5	4.2	5.3	6.3	6.7	7.0	8.4	10.5		
5.2 sec/100 ft	10	8.4	10.5	12.6	13.3	14.0	16.8	21.0		
7.9 sec/150 ft	15	12.6	15.8	18.9	20.0	21.0	25.2	31.5		
	20	16.8	21.0	25.2	26.6	28.0	33.6	42.0		
	25	21.0	26.3	31.5	33.3	35.0	42.0	52.5		
	30	25.2	31.5	37.8	39.9	42.0	50.4	63.0		
	35	29.4	36.8	44.1	46.6	49.0	58.8	73.5		
	40	33.6	42.0	50.4	53.2	56.0	67.2	84.0		
13.5 mph	5	4.4	5.5	6.5	6.9	7.3	8.7	10.9		
5.1 sec/100 ft	10	8.7	10.9	13.1	13.8	14.5	17.5	21.8		
7.6 sec/150 ft	15	13.1	16.4	19.6	20.7	21.8	26.2	32.7		
	20	17.5	21.8	26.2	27.6	29.1	34.9	43.6		
	25	21.8	27.3	32.7	34.5	36.4	43.6	54.5		
	30	26.2	32.7	39.3	41.5	43.6	52.4	65.4		
	35	30.5	38.2	45.8	48.4	50.9	61.1	76.4		
	40	34.9	43.6	52.4	55.3	58.2	69.8	87.3		
14.0 mph	5	4.5	5.7	6.8	7.2	7.5	9.0	11.3		
4.9 sec/100 ft	10	9.0	11.3	13.6	14.3	15.1	18.1	22.6		
7.3 sec/150 ft	15	13.6	17.0	20.4	21.5	22.6	27.1	33.9		
	20	18.1	22.6	27.1	28.7	30.2	36.2	45.2		
	25	22.6	28.3	33.9	35.8	37.7	45.2	56.6		
	30	27.1	33.9	40.7	43.0	45.2	54.3	67.9		
	35	31.7	39.6	47.5	50.1	52.8	63.3	79.2		
	40	36.2	45.2	54.3	57.3	60.3	72.4	90.5		

Ground speed	GPA	Nozzle spacing (inches)							
		12	15	18	19	20	24	30	
		----- fl oz/15 seconds -----							
14.5 mph	5	4.7	5.9	7.0	7.4	7.8	9.4	11.7	
4.7 sec/100 ft	10	9.4	11.7	14.1	14.8	15.6	18.7	23.4	
7.1 sec/150 ft	15	14.1	17.6	21.1	22.3	23.4	28.1	35.1	
	20	18.7	23.4	28.1	29.7	31.2	37.5	46.9	
	25	23.4	29.3	35.1	37.1	39.1	46.9	58.6	
	30	28.1	35.1	42.2	44.5	46.9	56.2	70.3	
	35	32.8	41.0	49.2	51.9	54.7	65.6	82.0	
	40	37.5	46.9	56.2	59.4	62.5	75.0	93.7	
15.0 mph	5	4.8	6.1	7.3	7.7	8.1	9.7	12.1	
4.5 sec/100 ft	10	9.7	12.1	14.5	15.4	16.2	19.4	24.2	
6.8 sec/150 ft	15	14.5	18.2	21.8	23.0	24.2	29.1	36.4	
	20	19.4	24.2	29.1	30.7	32.3	38.8	48.5	
	25	24.2	30.3	36.4	38.4	40.4	48.5	60.6	
	30	29.1	36.4	43.6	46.1	48.5	58.2	72.7	
	35	33.9	42.4	50.9	53.7	56.6	67.9	84.8	
	40	38.8	48.5	58.2	61.4	64.6	77.6	97.0	