

Table 1. Useful conversions.

Multiply	By	To Get
Acres	43,560	Square Feet
Cups	8	Ounces
Gallons	128	Ounces
Liters	.264	Gallons
Ounces	2	Tablespoons
Ounces	30	Milliliters
Pints	.125	Gallons
Pints	16	Liquid (oz)
Quarts	32	Ounces
Tablespoon	0.5	Ounces

Table 2.

Total product (ml or cc's) to add per gallon of pesticide solution.

Recommended Pesticide Product Rate (oz/acre)							
GPA	1 fl oz	2 fl oz	3 fl oz	5 fl oz	8 fl oz	16 fl oz	32 fl oz
10	3.0	6.0	9.0	15.0	24.0	48.0	96.0
20	1.5	3.0	4.5	7.5	12.0	24.0	48.0
30	1.0	2.0	3.0	5.0	8.0	16.0	32.0
40	0.8	1.5	2.3	3.8	6.0	12.0	24.0
50	0.6	1.2	1.8	3.0	4.8	9.6	19.2
60	0.5	1.0	1.5	2.5	4.0	8.0	16.0
70	0.4	0.9	1.3	2.1	3.4	6.9	13.7

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Calibrating Boom & Broadjet Sprayers

Determining Sprayer Output (GPA)

Boom Sprayers

Nozzles may be worn or damaged, preventing uniform spray coverage. All nozzles across a boom must be tested for uniformity prior to obtaining spray output. Follow these steps to test nozzles:

- Step 1: For 1 minute, measure the volume of water from each nozzle at constant pressure and / or RPM.
- Step 2: Determine average nozzle output.
- Step 3: Determine acceptable error range (usually within 10%).
- Step 4: Replace or clean nozzles outside of error range and retest.

Nozzle = 1 2 3 4 5
 Ounces = 30 29 30 24 30
 Total = 143 ounces

Avg Nozzle Output = $143 / 5 = 28.6$ oz.
 Find your 10% range: $28.6 \times 0.10 = 2.86$ oz. to
 add and subtract from the average.
Your range is 25.74 – 31.46 ounces.
 Replace or clean nozzle 4 and retest.

Once all nozzle outputs are within the 10% error range, applicators can determine boom sprayer GPA by following these steps:

- Step 1: Define course length (see Table 1).
- Step 2: Travel course while timing at a constant spray speed (repeat 3 times and average)
- Step 3: Collect liquid from 1 nozzle at a constant pressure and/or RPM for that amount of time.
- Step 4: Measure the number of fluid ounces collected in container. The fluid ounces collected is equal to the number of gallons per acre your sprayer is delivering.

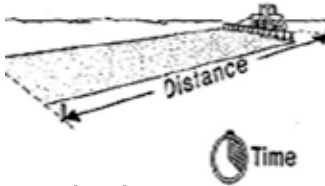


Table 1. Defined course lengths.

Nozzle Spacing or Band Width (inches)	Course Length (feet)
18	227
20	204
30	136
36	113
40	102

If you have another nozzle width use this formula:
 Course Length = 340 / nozzle spacing in feet.

Broadjet Sprayers

When determining the output of your broadjet sprayer, follow these steps:

- Step 1: Define course length by dividing 340.3 (constant) by spray swath width (ft) and multiplying by 10.
 Example: (340.3 / 30 ft swath) x 10 = 113.4 ft.
- Step 2: Travel course length while timing at a constant spray speed (repeat 3 times and average).
- Step 3: Collect liquid from nozzles that are part of the spray swath width for that amount of time.
- Step 4: Divide fluid ounces collected by 10 to obtain output of your sprayer in gallons per acre.

Example: It takes 45 seconds for John to travel the 113.4 ft course length with his broadjet sprayer, which delivered a 30 ft. spray swath. John sprays the broadjet into a measuring container for the same amount of time (45 seconds) and collects 100 ounces of water. His broadjet is calibrated to deliver 10 GPA.

Tank Mixing

Only precise amounts of diluent and pesticide product should be added to your tank. Follow these steps when determining your pesticide solution:

- Step 1: To determine the spray solution needed in tank, multiply output of your sprayer (GPA) by acres you wish to cover.
- Step 2: To determine the amount of pesticide product (ounces) to add per gallon of solution, divide recommended product rate (in an amount per acre) by the output (GPA) of your sprayer.

Spray Mix Needed = GPA x Acres

Amount of pesticide product to add per gallon of solution	=	$\frac{\text{Product Label Recommendation (per acre)}}{\text{GPA (Gallons Per Acre)}}$
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By knowing the output (GPA) of your sprayer and recommended product rate (oz/acre), you may reference Table 2 to assess milliliters of product needed in your tank per gallon of solution.

Example: If your sprayer was calibrated at 30 GPA and you need to apply pesticide product at 3 oz. per acre, how much pesticide product do you add to your 500 gallon tank?

- Step 1: 3 ounces / 30 GPA = 0.1 ounces per gallon of solution
- Step 2: 0.1 oz x 30 = 3 ml per gallon of solution (see Table 2).
- Step 3: 3 ml per gallon x 500 gallon tank = 1,500 ml