



Mixing Herbicides

Using "Per-Acre" Rates

1. Use page 2 to figure out how much your sprayer applies per acre
2. Use your numbers from page 2 and figure out how much to mix

If you're using Microsoft Excel this form calculates rates for you

Units	Gallon	Quart	Pint	Cup	Pound
Ounces	128	32	16	8	16
1 MPH = 88 Feet per Minute					
1 Acre = 43,560 Square Feet					

Mixing Herbicides: Amount of Herbicide Concentrate for Total Mix Volume

Microsoft Excel: Enter your info here



How much are you mixing: _____

A. Total Mix Volume (gallons): tank size or gallons of mix

Sprayer Application Rate: _____

B. Gallons Per Acre: use application rate **E** from Page 2

Herbicide Application Rate: _____

C. Ounces, pints, or quarts Per Acre: read the label

Herbicide Concentrate: _____

D. How much herbicide concentrate you need in your tank (use formula)



$$D \text{ (Yellow)} = \left(A \text{ (Green)} \div B \text{ (Yellow)} \right) \times C \text{ (Blue)}$$

Herbicide Concentrate = (Total Mix Volume ÷ Sprayer Application Rate) X Herbicide Application Rate

Mixing Example: If your sprayer application rate is 100 gallons-per-acre, you're mixing a 50 gallon load, and you're using an herbicide that is applied at 7 ounces to the acre: mix your herbicide at 3.5 ounces per load. $(50 \div 100) \times 7 = 3.5$

Hand Sprayers and Backpack Sprayers: Calculating application rate (Gallons Per Acre)

- Adjust your nozzle to a cone pattern: try to replicate how you would normally spray
- Review recommendations listed below

- Measure out an 18.5 Foot Square (342 square feet)
- Time yourself as you spray the area
- Spray into a bucket for the same amount of time
- Measure the water you collected in ounces
- Gallons Per Acre = ounces collected

Ounces Collected: _____

Sprayer Application Rate: _____

Example: If it takes 100 ounces to cover an 18.5' square --> Sprayer Application Rate = 100 Gallons-Per-Acre

Mathematical Explanation: $18.5' \times 18.5' = 43,560$ (square feet per acre) \div 128 (ounces per gallon)

Calibration Recommendations:

- Use Clean Water
- Concrete or asphalt shows spray pattern more clearly
- Application rates will vary from person to person
- "Spray-till-wet" : Your test area should be wet but not pooling or running off

Application Recommendations:

- "Spray-till-wet" : If weeds are wet (but not dripping), you will have good coverage and an accurate herbicide rate...You can adjust your nozzle (stream or cone pattern) and maintain your application rate.

Boom Sprayers and Boomless Nozzles: Calculating application rate (Gallons Per Acre)

Speed: _____

A. How many feet do you travel in one minute (1 mph = 88 ft/min)

Boom Width: _____

B. Measure the width of your spray pattern (in feet)

Gallons Per Minute: _____

C. How many gallons do your booms or nozzles spray in one minute

Square feet per minute: _____

D. Multiply your speed (feet per minute) by your spray pattern width

Sprayer Application Rate: _____

E. Calculate your Sprayer's Gallons Per Acre using the formula below

$$\begin{array}{c}
 \text{A} \\
 \text{E}
 \end{array}
 \times
 \begin{array}{c}
 \text{B} \\
 \text{C}
 \end{array}
 =
 \left(
 \begin{array}{c}
 \text{C} \\
 \text{D}
 \end{array}
 \right)
 \times 43,560$$

Example: Gallons per minute = 1.58, Boom Width = 12 feet, Speed = 2 MPH (176 feet per minute)

Boom Width (12') X Speed (176' per minute) = 2,112 square feet per minute

(1.58 gallons per minute \div 2,112 square feet per minute) X 43,560 square feet per acre = 32.59 Gallons Per Acre

Mathematical Explanation: $GPA = (\text{gallons per minute} \div \text{square feet per minute}) \times 43,560 \text{ square feet per acre}$

↖ = boom width X speed (in feet per minute)

Speed Matters: If you calibrate at 2 Mph and your speed drops to 1 Mph, your applying twice as much herbicide