How Much Herbicide Do I Need?

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Herbicides are usually prescribed in rates per acre such as 4 pounds per acre (4 lbs/A) or 2 quarts per acre (2 qts/A). These recommendations are rates per area of ground actually sprayed. In Ohio, herbicides are not usually applied over the entire ground area but rather in bands along the tree rows or in circles around the base of the trees. Only a fraction of each acre is actually sprayed. To determine the amount of herbicide need to spray a particular planting, follow the procedures outlined below.

When Herbicide is Applied in Bands

1. To determine the ground area per acre actually sprayed, divide the width of the herbicide bands by the distance between tree rows.

   Example: If tree rows are 8 feet (96 inches) apart and the herbicide bands are 2 feet (24 inches) wide, then 24 inches/96 inches = ¼

   This means that 1/4 acre of ground is actually sprayed when 1 acre of trees, planted 8 feet between rows, is sprayed with herbicide in 2-foot-wide bands.

2. To determine the amount of herbicide required for a particular operation, multiply the fraction of an acre actually sprayed (determined in #1 above) by the number of acres times the herbicide rate per acre.

   Example: If 8 acres of trees are to be planted with 8 feet between rows and 2-foot-wide bands of herbicide are to be applied along the tree rows at a rate of 4 lb/A, then 24 inches/96 inches x 8A/planting x 4 lbs/A = 8 lbs/planting

   Eight pounds of herbicide are required to spray herbicide in 2-foot-wide bands on the 8-acre tree planting with 8 feet between rows.

When Herbicide is Applied in Circles Around Base of Tree

1. Determine the size of area sprayed around each tree. The area of a circle in square feet is:

   \[3.14d^2/576\] where \(d\) is the diameter of the circle in inches.

   Example: If 3-foot-diameter circles are sprayed around each tree, the square foot area sprayed around each tree is:

   \[\text{Area} = (3.14)(36)^2/576 = 7.07 \text{ sq ft.}\]

2. Determine the number of trees planted per acre. If this is not known, it can be estimated for square spacing as follows:

   Example: If trees are planted 8 feet between rows and 6 feet between trees within rows, then:

   Number of trees = \(43,560/(8)(6) = 908\) trees
3. To determine the ground area per acre actually sprayed, multiply the number of trees planted per acre (determined in #2 above) by the square foot area sprayed around each tree (determined in #1 above) and divide by 43,560 sq ft/A.

No. of Trees = \( \frac{43560}{(\text{distance between tree rows})(\text{distance between trees in rows})} \)

**Example:** If 908 trees are planted per acre and herbicide is applied in 3-foot-wide circles around the base of each tree, the ground area actually sprayed per acre of trees planted is

A ground area of 0.147 acre is actually sprayed when 3-foot-diameter circles are sprayed around 908 trees.

4. To determine the amount of herbicide required for a particular operation, multiply the fraction of an acre actually sprayed (determined in #3 above) by the number of acres times the herbicide rate per acre.

**Example:** The amount of herbicide required to spray an 8-acre planting of 908 trees per acre with an herbicide application of 4 lbs/A applied in 3-foot-diameter circles around the base of the trees is 908 trees/A \( \times 7.07 \) sq ft/tree/43560 sq ft acre = 0.147 acre

To spray 3-foot herbicide circles at a rate of 4 lbs/A around the base of 8 acres of trees planted 908 trees per acre, 4.7 pounds (75.2 ounces) of herbicide will be required.