Determining formulation per acre in a Christmas tree field to achieve target Ai per acre
Backpack mistblower and Tristar example

1. Determine how many trees per planted acre farmer has (see inset)
2. Determine the volume of spray per tree:
   1. Fill up mistblower with known amount of water
   2. Spray the complete amount of water at trees as if you were treating. *This is called 'volume of spray disbursed'*
   3. Count the number of trees you treated
3. Determine the volume of spray per acre of trees:
   1. Multiply *volume of spray disbursed* by number of planted trees in an acre
   2. Divide that number by number of trees treated
4. Read formulation label
5. If target Ai per acre is in lbs per acre, convert to ounces per acre so farmer can more easily measure material
6. Determine target oz of formulation per acre by dividing target oz of Ai per acre by % Ai in formulation.
7. Determine oz of formulation per volume to spray in backpack mistblower by dividing 6 by 3

EXAMPLE

1. Determine how many trees per planted acre farmer has (see inset)
   in this example the farmer has 5 x 5 spacing, so 1742 trees per acre
2. Determine the volume of spray per tree:
   1. Fill up mistblower with known amount of water. *3 gallons*
   2. Spray the complete amount of water at trees as if you were treating. *This is called 'volume of spray disbursed'*
   3. Count the number of trees you treated
   100 trees are sprayed with 3 gallons of water with backpack mistblower
3. Determine the volume of spray per acre of trees:
   1. Multiply *volume of spray disbursed* by number of planted trees in an acre
   2. Divide that number by number of trees treated

$$\frac{\text{Volume of spray disbursed}}{\text{Number of trees treated}} = \frac{X}{\text{number of trees per acre}}$$

$\frac{3\ gallons}{100\ trees} = \frac{X\ gallons}{1742}$ $(100)(X)=(3)(1742)$ $100X = 5226$ or   *52.26 gallons per acre*

4. **Read formulation label:**   *Tristar:*
   8.5% Ai in formulation (weight)
   .76 lbs Ai per gallon (volume)
   Target Ai per acre: .154 lbs Ai per acre (weight)

Trees per planted acre

Formula:
ft^2 in an acre ÷ ft^2 spacing

1 acre = 43560 ft^2

4 x 4 spacing = 16 ft^2
43560 ft^2 ÷ 16 ft^2 = **2722 trees per planted acre**

4.5 X 4.5 spacing = 20.25 ft^2
43560 ft^2 ÷ 20.25 ft^2 = **2151 trees per planted acre**

5 x 5 spacing = 25 ft^2
43560 ft^2 ÷ 25 ft^2 = **1742 trees per planted acre**

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5. If target Ai per acre is in lbs per acre, convert to ounces per acre so farmer can more easily measure material
   .154 lbs Ai per acre(16 oz/ 1lb) = 2.46 oz target Ai per acre*
6. Determine target oz of formulation per acre by dividing target oz of Ai per acre by % Ai in formulation.
   2.46 target Ai per acre ÷ .085 = 28.98 oz of Tristar formulation. To achieve our target Ai (2.64 oz per acre) farmer must spray 28.98 oz Tristar formulation per acre with the farmer's backpack mistblower
7. Determine oz of formulation per volume to spray in backpack mistblower by dividing 6 by 3
   *28.98 oz Tristar per acre ÷ 52.26 gallons per acre sprayed by backpack mistblower in 5*5 spacing = .554 oz per gallon*

Therefore, the farmer in this example must add ~.5 oz of Tristar per gallon in a Stihl backpack mistblower in order to apply target .154 Ai per acre

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