

CALIBRATION TO INSURE CORRECT HERBICIDE RATE

Herbicide labels indicate rate of application as amount of product per acre; that is, per acre actually treated. Only if you broadcast herbicide over the entire orchard floor will the treated acreage equal the orchard acreage. Follow the instructions below to assure application of the correct herbicide rate.

CALCULATING NOZZLE FLOW RATE

Travel Speed: For most situations, 2–2.5 mph is best (176–220 ft./min.).

Pressure: Use low pressure (20–35 psi) to minimize formation of small droplets, because small droplets can drift off target.

Spray Volume per Treated Acre: Generally, low rates (20–30 gals./acre, or less) are more suitable for post-emergence herbicides, where runoff from weeds would reduce effectiveness. Higher rates, 40–50 gals./acre, may provide better coverage and control when using pre-emergence herbicides.

Nozzles: Avoid nozzles that produce fine mist. Generally, hollow cone nozzles produce the finest droplets, flat sprays are second, and full cone nozzles produce the coarsest spray.

A single boomless off-center flat spray nozzle, or a flooding nozzle, may be suitable for some orchards, but one or more regular flat spray nozzles on a boom may be better where branches are close to the ground.

Use the following formula to determine nozzle flow rate in gal./min., then consult a nozzle manufacturer's chart to select the proper nozzle.

DEFINITION OF TERMS

1. **Gallons per Treated Acre (G/TA)** = Amount of herbicide spray you want to apply per treated acre.
2. **Swath (S)** = Width of the sprayed area in feet.
3. **Travel Speed (TS)** = Feet traveled per minute.
4. **Nozzle flow rate** (gallons per minute)
= (Gallons per Acre x Swath x Travel Speed)
divided by 43,560
Nozzle Flow Rate = (G/TA x S x TS) / 43,560

EXAMPLE 1: What nozzle flow rate do you need to apply 25 gallons of herbicide spray mix per treated acre, using a 3-foot-wide swath and a travel speed of 220 feet per minute (=2.5 miles per hour)?

Nozzle flow rate
= (25 x 3 x 220) divided by 43,560
= (16,500) divided by 43,560
= 0.38 gallons per minute.

If using 2 nozzles, select 2 that will give 0.19 gallon per minute each at the selected pressure.

CHECKING HERBICIDE SPRAYER OUTPUT

Spray Pattern: Check uniformity of spray pattern, using corrugated fiberglass roofing panels as a spraying surface. Spray from the same height as will be used in the orchard. Compare liquid volume collected in each trough.

Actual Spray Volume: With proper nozzles installed, travel a measured distance at the selected speed and pump pressure. Use this formula to determine the actual spray volume in gallons per treated acre.

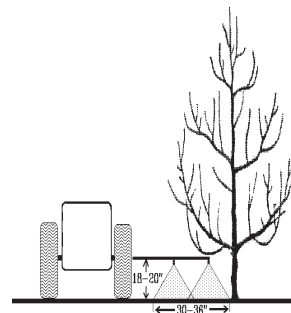
Gallons per Treated Acre = (Gallons sprayed during trial run x 43,560) divided by (Feet traveled during trial run x Swath width in feet).

EXAMPLE 2: You emptied a tank containing exactly 3 gallons in a distance of 1,200 feet. The treated swath was 3 feet wide. How many gallons of spray are you applying per treated acre?

Gallons per Treated Acre
= (3 x 43,560) divided by (1,200 x 3)
= (130,680) / (3,600)
= 36.3 gallons

If you want to apply 4 lbs. of herbicide per acre, then in this case you would add 4 lbs. of herbicide to each 36 gallons of water in the tank.

Agitation: If herbicides are allowed to settle or separate in the sprayer tank, distribution in the orchard will not be uniform. Provide constant agitation when using wettable powders, or any other insoluble formulation (emulsions, emulsifiable concentrates, dry flowables, liquid flowables, and suspensions). Use defoaming adjuvant when needed to control excessive foam.



USING THE TABLES

- Use Tables 20 and 21 to determine whether herbicides are available for the particular situation you want to treat.
- See Table 22 and *Notes on Herbicides* for individual product information.
- Before deciding which materials to use, obtain and read the labels for those products being considered. Sample labels are available on the web and from most local pesticide dealers.