Natural Resources Conservation Service (NRCS) April 2003

Calibration of Back-pack Sprayer and Mixing Small Quantities of Herbicide

Michigan Forestry Conservation Technical Note #24

Calibration of Backpack Sprayer:

1) Fill the clean sprayer with exactly 1 gallon of water.

2) Pressurize sprayer and measure the width of the spray band (in feet) while holding the sprayer at the elevation above the ground for the vegetation which you intend to spray. (Note: A concrete or other hard surface works best for this.)

3) Place a 100-foot tape on ground and walk slowly (at a normal spraying pace) along the tape while maintaining tank pressure until sprayer is empty. Measure distance (in feet) traveled and multiply this by the width (in feet) of spray band to obtain the square footage covered by 1 gallon. (Note: a fan-type spray head will spray a band more evenly than a cone-type nozzle)

4) Multiply the square footage covered by one gallon times the tank size to obtain square footage covered per tank. Divide the square footage covered per tank into 43,560 (square feet per acre) to determine how many tanks will be needed to cover one acre.

5) Example:

   Spray band width = 1.5 feet
   Spray distance w/1 gallon water = 450 feet
   1.5ft.x450ft. =675 sq.ft./gal.
   Sprayer tank holds 3 gallons =3gal. x 675 ft. = 2025 sq. ft. of coverage/tank.

   43,560 sq. ft. / ac. divided by 2025 sq. ft. /tank = 21.51 tanks/ac. = 64.5 gallons/ac. sprayer application rate.

Mixing Small Quantities of Herbicide

Problem: The label for your herbicide to control grasses calls for an application rate of 1/2oz. /ac. applied (Oust XP) over-the-top to your dormant, 2 year-old, 1-acre planting of 2-0 red pine seedlings to control grass and broadleaf weeds. How much herbicide do you need to put into your 3-gallon backpack sprayer tank to apply at the label rate? **Bad Solution:** Using the above calibration results, mix ½ oz. of herbicide into a 64.4 gallon tank of water and apply that with your backpack sprayer over 1 acre of seedlings! **Better Solution:** Mix 1/2 oz. of herbicide into a 1-gallon container (128 oz.) and divide that by the number of tanks (21.51) it will take to cover the acre. (128 oz. divided by 21.51 tanks) = 5.95 oz. (6 oz.) per tank full of your mixed concentrate to make a very accurate mixture!

- Always follow label instructions carefully.
- Never store pesticides in unofficial or unmarked containers.
- Always wear protective clothing and triple rinse equipment before storing.

6) Some herbicides are restricted-use pesticides and require a certified applicator's permit. The Michigan Pesticide Act of 1988 and amendments regulate private and commercial application of pesticides. For further information, contact the Michigan Dept. of Agriculture, Pesticide and Plant Management Division, P.O. Box 30017, Lansing, MI 48909 (517-373-1087) or online at: www.michigan.gov/mda/

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