1/128 Method of Calibration - Calibrating Single Nozzle Hand Sprayers and High Pressure Hand Guns

There are several reasons to calibrate application equipment:

1. It is illegal to apply more product than stated on the label.
2. When calibrated correctly you will be using the product as intended to control target pests as determined by the manufacturer.
3. Pesticide applications made according to the label will help protect you, your family, and the environment.

In calibrating pesticide applicator equipment, one needs to determine how many **gallons per acre (GPA)** the equipment is applying. GPA for these types of applicators will vary by individual. The 1/128th method, also known as the "ounce calibration method", is easy and can be completed quickly.

Because one gallon is 128 ounces, and the test area to be sprayed is 1/128th of an acre, the ounces collected over time to apply to 1/128th of an acre is equal to GPA. There is a direct ratio established when determining how much material is applied to 1/128th of an acre (since 128 is the number of ounces in one gallon).

Step 1

Measure out an area equal to 1/128th of an acre (43,560 ft^2 divided by 128). This is an area that is approximately 340 ft^2 or an area 18.5 feet by 18.5 feet.

Step 2

Fill the spray tank with water only, pressurize or pump to the correct* pressure. Repeat several times and use the average time.

***What is the "correct" speed and pressure at which to apply?**

Anyone who uses application equipment should calibrate the equipment to their use.

Speed and pressure will vary by individual. The correct pressure on a hand pump unit is usually based on "feel."

Step 3

Pressurize the application equipment. Direct the spray into a measured container with ounces for units, for the same amount of time it took to spray the 340 ft^2 area. The amount of water collected in ounces equals gallons per acre (GPA).

Example: Hand sprayer

- Time to spray area (340 ft2) = 51 seconds.
- Amount collected = 40 ounces; therefore, 40 ounces = 40 gallons per acre (GPA).

How much pesticide do I add to the spray tank?

- The product label recommends 1 quart (32 ounces) of 2,4-D per acre.
- The sprayer is applying 40 gallons per acre; therefore, you will need to add 1 quart (32 ounces) of 2,4-D to each 40 gallons of water.

How much pesticide will you need to add to the gallon of water?

- 1 quart (32 ounces) divided by 40 gallons = 0.8 ounces.
- 1 fluid ounce = 2 tablespoons; therefore, you will need approximately 2 tablespoon of 2,4-D per gallon of water.
- 1 fluid ounce also = 29.57 milliliters (ml); therefore, if measuring in ml, you will need 0.8 ounces times 29.57 ml per ounce = 24 ml per gallon of water.

How much area will 1 gallon spray?

- There is 43,560ft^2 per acre. If 40 gallons will spray one acre then one gallon will spray an area 1/40 that size or 43,560 ft^2 divided by 40 = **1,089ft^2**.

Couple of items to keep in mind:

- Each time you adjust the spray pattern (width of material coming out of the nozzle) you will need to recalibrate.
- If you are using single nozzle application equipment for border or perimeter applications – it would make sense to modify the 340ft^2 area to a strip equal to 340ft^2. For instance, adjust the spray pattern width to cover 1.5 feet wide (18 inches). 340ft^2 is also equivalent to 1.5ft wide by 226ft long. Measure the amount of time it takes to "cover" 226 linear feet. Proceed to step 3 from above.
- If you are calibrated and making spot applications, walk at the same speed during the application as when calibrating. Lingering or hesitating in an area will be over application.
- Remember if you are calibrated correctly and have added the correct amount of pesticide to the tank all applications should be at a consistent speed and pressure – product manufacturers have determined that the recommended rate will kill the target pest when calibrated correctly.