

Fertilizer Applicator Calibration

Paul E. Sumner

The following procedure will give the pounds (total weight) of material applied per acre broadcast or row basis as indicated for large volumes (i.e., 10 lbs and up). This calibration procedure is based on 1/16 of an acre, which is equal to 16 ounces in a pound of material. The measured distances indicated in Table 2 correspond to the liquid sprayer calibration, but the material collected is multiplied by 8 to obtain rate per acre.

A weight scale incremented in ounces is required for this procedure. Check uniformity of outlets across the swath or rows. Collect from each for a known time period. Each outlet should be within 5 percent of the average output. Exercise extreme care and use protective equipment when an active ingredient is involved.

Step 1. Determine type of application to be made and select appropriate procedure from Table 1.

Example: Broadcast - Procedure A.

Type of Application	Procedure	Coverage Basis (Volume of Application)
Broadcast	A	Broadcast (lbs/acre)
Band	B	Broadcast (lbs/acre of band)

Note: Determine and use average row spacing for modified row patterns. Use width of area covered per row as row spacing in skip row patterns for broadcast rates.

Step 2. Use procedure A or B below as selected in Step 1. Determine appropriate calibration distance from Table 2.

- **A. Broadcast Application:** Outlets must be evenly spaced. Measure outlet spacing. Find this spacing in left column of Table 2 and read the corresponding calibration distance. *Example:* For a 19" spacing, the distance would be 214.9 feet.
- **B. Band Application:** Measure band width. Find this band width in the left column of Table 2, and read the corresponding calibration distance. *Example:* For a 12" band, the distance would be 340.3.

Step 3. Measure and mark calibration distance in a typical portion of the field to be treated.

Step 4. With all attachments in operation (harrows, planters, etc.), and traveling at the desired operating speed, determine the number of seconds it takes to travel calibration distance. Be sure machinery is traveling at full operating speed the full length of the calibration distance. Mark or make a note of engine rpm. Machine must be operated at same speed used for calibration.

Step 5. With applicator sitting still and operating at same speed as used in Step 4, adjust gate openings to desired setting.

Step 6.**

- Procedure A, Step 2, broadcast application - collect from one outlet for the number of seconds required to travel the calibration distance.
- Procedure B, Step 2, band application - collect from all outlets used on one band width for the number of seconds required to travel the calibration distance.

** For ground driven equipment, multiply the calibration distance by 8 and collect from each outlet while traveling the calibration distance.

Step 7. Weigh the amount of material collected in ounces. The number of ounces collected multiplied by 8 is the pounds per acre rate on the coverage basis selected in Table 1. For example, if you collect 40 ounces using procedure A or B, the applicator will apply 40 multiplied by 8 = 320 pounds per acre on a broadcast coverage basis. Adjust applicator speed, gate opening, etc., to obtain recommended rate.

Step 8. Applicators should be checked for proper calibration every 4-8 hours of use. Simply repeat steps 6 and 7. If there is a difference of more than 5 percent of original calibration, check the system.

Band Application

To determine the pounds of material required to make a band application on a field, the number of acres that will be in the actually-treated band must be determined. When all treated bands are the same width and all untreated bands are the same width - which is actually the case - the acres in the actually-treated band can be calculated by placing the width of the treated band over the sum of the widths of the treated band and the untreated band and multiplying this fraction times the number of acres in the field.

Example: How many acres will actually be treated in a 30-acre field if a 12-inch band of material is applied over the drill of rows spaced 36 inches apart. The treated band width is 12 inches. The untreated band width is 24 inches. Acres actually treated will be:

$$\frac{12''}{12'' + 24''} \times 30 \text{ acres} = 10 \text{ acres}$$

The amount of material required will be 10 times the number of pounds per acre from Step 7. Check rate recommendations carefully as to type of application, broadcast, band and type of material specified, formulated product, active ingredient, etc.

Table 2. Calibration Distances for Various Row and Outlet Spacings or Band Widths

Row Spacing, Outlet Spacing or Band Width (whichever applies) (inches)²	Calibration Distance¹ (feet)
48	85.8
46	88.8
44	92.8
42	97.2
40	102.1
38	107.5
36	113.4
34	120.1
32	127.6
30	136.1
24	170.2
20	204.2
19	214.9
18	226.9
12	340.3
10	408.4
8	510.5

¹ To determine distance for spacing or band width not listed, divide the spacing or band width expressed in feet into 340.3. *Example:* For a 13" band, the calibration distance would be 340 divided by 13/12 = 314.1.

² To increase calibration accuracy for a wide outlet spacing, multiply calibration distance by a factor (for example, 2); then divide Step 7 by the same factor for pounds per acre. For narrow spacings with long calibration distances, divide calibration distance by a factor (for example, 4); then multiply Step 7 by the same factor for pounds per acre.

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Gale A. Buchanan, Dean and Director