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EC65-169 Calibrating a Sprayer

C. Fenster

L. Robinson

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CALIBRATING A SPRAYER

By C. R. Fenster, L.R. Robison

Since most chemicals are applied in water, and at a recommended rate, it is important to know how much water the sprayer will deliver. Application rates vary with nozzle size, tank pressure, and speed of travel. Sprayers are usually calibrated on a small area and the water discharged calculated on gallon per acre basis.

To calibrate a boom type sprayer:

1. Measure and stake 330 feet (20 rods) in a straight line.
2. Fasten a container to catch the spray on 2 or more of the nozzles.
3. Fill the sprayer with water and spray the 330 feet using the same pressure (30 psi.) and speed used for spraying. Uniform speed and pressure must be maintained.
4. Measure separately the water collected from each nozzle. Average together the ounces of water collected from the nozzles.
5. Use the chart on the next page to determine the amount of water (in gallons per acre) being delivered.

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To determine the amount of herbicide needed:

READ THE LABEL

Use the recommended rate.

Divide the number of gallons the tank will hold by the previously calibrated gallons per acre of water the sprayer will apply to get the number of acres a tank will spray.

Example: Assume the sprayer tank holds 150 gallons and from calibrating the sprayer, you have determined the sprayer will apply water at the rate of 25 gallons per acre.

$$\frac{\text{150 gallon tank}}{\text{25 gal/A.}} = \text{6 acres 1 tank will cover.}$$

Extension Service
University of Nebraska College of Agriculture and Home Economics
and U. S. Department of Agriculture Cooperating
E. F. Frolik, Dean J. L. Adams, Director

Amount of Water (in Gallons Per Acre) Being Delivered

If the Average Ounces of water is:	And if the distance between nozzles, or band width, in inches is:						
	7"	8"	12"	14"	16"	18"	20"
	Then the gallons of water per acre are:						
2	3.5	3.1	2.1	1.8	1.5	1.4	1.2
3	5.3	4.6	3.1	2.7	2.3	2.0	1.8
4	7.1	6.2	4.1	3.5	3.1	2.7	2.5
5	8.8	7.7	5.1	4.4	3.8	3.4	3.1
6	10.6	9.2	6.2	5.3	4.6	4.1	3.7
7	12.3	10.8	7.2	6.2	5.4	4.8	4.3
8	14.1	12.4	8.2	7.1	6.2	5.5	4.9
9	15.9	13.9	9.4	7.9	6.9	6.2	5.5
10	17.7	15.4	10.8	8.8	7.7	6.9	6.2
11	19.4	17.0	11.6	9.7	8.5	7.5	6.8
12	21.2	18.6	12.4	10.6	9.3	8.2	7.4
13	22.9	20.1	13.4	11.5	10.5	8.9	8.0
14	24.7	21.7	14.4	12.4	10.8	9.6	8.7
15	26.4	23.3	15.4	13.2	11.6	10.3	9.3
16	28.2	24.8	16.5	14.1	12.4	11.0	9.9
17	30.0	26.3	17.5	15.0	13.1	11.7	10.5
18	31.8	27.8	18.6	15.9	13.9	12.4	11.1
19	33.5	28.9	19.6	16.8	14.7	13.0	11.7
20	35.3	30.1	20.6	17.7	15.5	13.7	12.4
21	37.1	32.0	21.6	18.5	16.2	14.4	13.0
22	38.9	34.0	22.7	19.4	17.0	15.1	13.6
23	40.6	35.6	23.7	20.3	17.8	15.8	14.2
24	42.4	37.1	24.7	21.2	18.6	16.5	14.8
25	44.2	38.6	25.7	22.1	19.3	17.2	15.4
26	46.0	40.2	26.8	23.0	20.0	17.9	16.1
27	47.7	41.7	27.8	23.8	20.8	18.5	16.7
28	49.5	43.3	28.9	24.7	21.7	19.2	17.3
29	51.2	44.8	29.9	25.6	22.4	19.9	17.9
30	53.0	46.4	30.9	26.5	23.2	20.6	18.5
31	54.8	47.9	31.9	27.4	24.0	21.3	19.1
32	56.6	49.5	33.0	28.3	24.8	22.0	19.8
33	58.3	51.0	34.0	29.1	25.5	22.7	20.4
34	60.0	52.6	35.0	30.0	26.3	23.4	21.0
35	61.8	54.1	36.0	30.9	27.0	24.1	21.6
36	63.6	55.7	37.1	31.8	27.8	24.8	22.3
38	67.1	58.8	39.1	33.6	29.3	26.1	23.5
40	70.7	61.9	41.2	35.4	30.9	27.5	24.8
42	74.3	65.0	43.3	37.1	32.4	28.9	26.0
44	77.8	68.1	45.4	38.9	34.0	30.3	27.2
46	81.3	71.2	47.4	40.6	35.5	31.6	28.4
48	84.9	74.3	49.5	42.4	37.1	33.0	29.7
50	88.4	77.4	51.5	44.2	38.6	34.4	30.9
52	91.9	80.4	53.6	46.0	40.2	35.8	32.2
54	95.4	83.5	55.6	47.7	41.7	37.1	33.4
56	99.0	86.6	57.7	49.5	43.3	38.5	34.7
58	102.5	89.7	59.8	51.2	44.8	39.9	35.9
60	106.0	92.8	61.9	53.0	46.4	41.3	37.1
62			63.9	54.8	47.9	42.6	38.3
64			66.0	56.6	49.5	44.0	39.6
66			68.1	58.3	51.0	45.4	40.8
68			70.1	60.1	52.6	46.8	42.1
70			72.1	61.8	54.1	48.1	43.3
72			74.2	63.6	55.7	49.5	44.6
74			76.3	65.4	57.2	50.9	45.8
76			78.4	67.2	58.8	52.3	47.0
78			80.4	68.9	60.3	53.6	48.2
80			82.5	70.7	61.9	55.0	49.5
82			84.5	72.5	63.4	56.4	50.7
84			86.6	74.3	65.0	57.8	52.0
86			87.6	76.1	66.5	59.1	53.2
88			88.6	77.9	68.1	60.5	54.5
90			89.6	79.6	70.0	61.8	55.7
92			90.7	81.4	72.0	63.2	56.9
94			94.8	83.1	73.1	64.6	58.1
96			99.0	84.9	74.3	66.0	59.4
98			101.0	86.6	75.8	67.4	60.6
100			103.1	88.4	77.4	68.8	61.9

Determine the amount of commercial product needed per tankful of water.

Example for liquid formulation:

The recommended application rate on the label of herbicide you plan to use is 1 pound of active ingredient per acre. You also note the herbicide is formulated to have 4 pounds of active ingredient per gallon.

To determine the amount of herbicide to use in each tankful, divide pounds of active ingredient needed to be applied by the pounds of active ingredient per gallon of commercial product. Multiply the answer by the number of acres one sprayer tank will apply.

$$\frac{\text{1 lb/A application rate}}{\text{4 lb/gal.}} = \text{0.25 gallon of herbicide for each acre.}$$

0.25 gallon x 6 acres = 1.5 gallons of commercial product for each tankful of water.

Example for wettable powder:

The label on a wettable powder reads 80W and recommends an application rate of 2 pounds per acre of active ingredient. To find the amount of commercial product to apply, divide rate of active ingredient to be applied per acre by the per cent active ingredient of commercial material. Multiply this answer by the number of acres one sprayer tank will cover. (80W means 80% active ingredient).

$$\frac{\text{2 lbs/A application rate}}{.80} = \text{2.5 pounds of commercial product per acre.}$$

2.5 pounds per acre x 6 acres = 15 lbs. of commercial product for each tankful of water.