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### Checking Weed Sprayers

Cooperative Extension South Dakota State University

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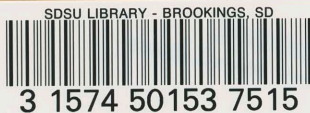
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# Checking Weed Sprayers

## ● Calibrations

## ● Field Spraying

## ● Mixing Chemicals

## ● Patch Spraying

It is absolutely essential that a sprayer operator knows how much spray is being applied per acre. If he does not, he runs the risk of injuring his crop with too much spray or getting poor weed control with too little spray. He must, therefore calibrate his sprayer carefully and measure his chemical accurately.

**Step 1.** Select an area for a test run that is similar to the field to be sprayed. Accurately measure a distance of one-fourth mile or 1320 feet.

**Step 2.** Place the sprayer on level ground and fill the tank with water. It should be filled to the brim.

**Step 3.** Adjust the speed of the tractor and the pressure of the sprayer to the speed and pressure that will be used when spraying. Spray the one-fourth mile test run.

**Step 4.** With the sprayer in a level position, measure the amount of water required to fill the sprayer to the original level.

**Step 5.** Refer to table 1 to determine the number of gallons to be applied per acre.

Locate the width of swath that your sprayer covers in left hand column on table. Then find the number of gallons required to refill the sprayer on the top line. Follow the "width of swath" line across until it is under this column. The figure at that point is the number of gallons to be applied per acre.

**Example:** Suppose that three gallons were applied in the test run and the width of swath was 16 feet. The table shows that 6.2 gallons were applied per acre.

Table 1. Calculating the amount of spray solution applied per acre when a measured amount is applied in a 1/4-mile test run  
Gallons spray solution delivered in 1/4-mile test run—read down for gallons per acre

	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	11	12	13	14
Width of Swath																					
	Gallons spray solution delivered per acre for spray swath widths at left																				
14	4.7	5.9	7.1	8.3	9.4	10.6	11.8	12.9	14.1	15.3	16.5	17.7	18.8	20.0	21.2	22.4	23.6	26.0	28.2	30.6	33.0
15	4.4	5.5	6.6	7.7	8.8	9.9	11.0	12.1	13.2	14.3	15.4	16.5	17.6	18.7	19.8	20.9	22.0	24.2	26.4	28.6	30.8
16	4.1	5.2	6.2	7.2	8.3	9.3	10.3	11.3	12.4	13.4	14.5	15.5	16.5	17.5	18.6	19.6	20.6	22.7	24.8	26.9	29.0
18	3.7	4.6	5.5	6.4	7.3	8.3	9.2	10.1	11.0	11.9	12.8	13.8	14.7	15.6	16.5	17.4	18.3	20.2	22.0	23.8	25.6
20	3.3	4.1	5.0	5.8	6.6	7.4	8.3	9.1	9.9	10.7	11.5	12.4	13.2	14.0	14.9	15.7	16.5	18.2	19.8	21.5	23.0
22	3.0	3.7	4.5	5.3	6.0	6.8	7.5	8.3	9.0	9.8	10.5	11.3	12.0	12.8	13.5	14.3	15.0	16.5	18.0	19.5	21.0
24	2.8	3.4	4.1	4.8	5.5	6.2	6.9	7.6	8.3	9.0	9.6	10.3	11.0	11.7	12.4	13.1	13.8	15.1	16.5	17.9	19.2

	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	11	12	13	14	15	16	18	20
26	5.1	5.7	6.4	7.0	7.6	8.3	8.9	9.5	10.1	10.8	11.4	12.0	12.7	14.0	15.1	16.5	17.8	19.1	20.3	22.8	25.4
28	4.7	5.3	5.9	6.5	7.1	7.7	8.3	8.9	9.4	10.0	10.6	11.2	11.8	13.0	14.1	15.3	16.5	17.8	18.8	21.2	23.6
30	4.4	5.0	5.5	6.1	6.6	7.2	7.7	8.3	8.8	9.4	9.9	10.4	11.0	12.1	13.2	14.3	15.4	16.6	17.6	19.8	22.0
32	4.1	4.7	5.2	5.7	6.2	6.7	7.2	7.8	8.3	8.8	9.3	9.8	10.3	11.3	12.3	13.4	14.4	15.6	16.5	18.6	20.6
36	3.7	4.1	4.6	5.1	5.5	6.0	6.4	6.9	7.4	7.8	8.3	8.7	9.2	10.1	11.0	11.9	12.8	13.8	14.8	16.6	18.4
40	3.3	3.7	4.1	4.5	5.0	5.4	5.8	6.2	6.6	7.0	7.4	7.8	8.3	9.1	9.9	10.7	11.5	12.4	13.2	14.9	16.5

After the amount of spray solution applied per acre is determined, it is essential that the right amount of chemical be added. Table 2 can be used for most of the formulations now available commercially. The calculations for 2,4-D, MCP and 2,4, 5-T are identical and the calculations for TCA are very similar.

**Step 6.** Decide how much 2,4-D acid per acre is needed to control the weeds to be sprayed. Locate this amount in the left hand column of Table 2.

**Step 7.** Read the label on the container of chemical that is to be used to see how

many pounds of 2,4-D acid equivalent are contained in a gallon of chemical. Locate this amount in the top line.

**Step 8.** Follow the "pounds per acre" line across until it is under the "Acid equivalent per gallon heading". The figure at that point is the amount of chemical needed for each acre.

**Step 9.** Multiply the figure located in step 3 by the number of acres that can be sprayed with one tankful. Add this amount to each tankful of spray.

**Example:** Suppose that you wished to apply 1/3 pound of 2,4-D acid per acre and

that your chemical contained 4 pounds of 2,4-D acid per acre. Locate 1/3 pound in the left hand column of the Table 2 and follow this line across until it is under 4.00 in the top line. The table shows that you need 2/3 pint for each acre.

Suppose you were applying 6.2 gallons per acre as determined in Table 1 and that your sprayer tank held 56 gallons. You could spray  $(56 \div 6.2)$  9 acres with one tank load. You would then need  $(9 \times 2/3 \text{ pt.})$  6 pints or 3 quarts of chemical for each tank of spray solution.

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**Table 2. Calculating the Amount of Chemical to Apply per Acre**

Your Chemical Contains This Much 2,4-D Acid Equivalent or MCP Acid Equivalent or 2,4,5-T Acid Equivalent per Gallon								Your Chemical Contains 90% Sodium Salt of TCA	
If You Wish To Apply This Many Pounds per Acre	2.00	2.64	3.34	3.40	4.00	6.00	6.40	Granular	Liquid
	Apply This Amount on Each Acre							Apply This	Amount on Each Acre
1/8	1/2 pt.	3/8 pt.	1/3 pt.	3/10 pt.	1/4 pt.	1/6 pt.	3/20 pt.		
1/4	1 pt.	3/4 pt.	2/3 pt.	3/5 pt.	1/2 pt.	1/3 pt.	3/10 pt.		
1/3	1 1/3 pts.	1 pt.	8/9 pt.	7/9 pt.	2/3 pt.	4/9 pt.	4/10 pt.		
1/2	1 qt.	3/4 qt.	2/3 qt.	1 1/5 pt.	1 pt.	2/3 pt.	3/5 pt.		
3/4	1 1/2 qts.	1 1/7 qt.	1 qt.	9/10 qt.	1 1/2 pts.	1 pt.	9/10 pt.		
1	2 qts.	1 1/2 qts.	1 1/3 qts.	1 1/5 qts.	1 qt.	2/3 qt.	3/5 qt.		
2	1 gal.	3 qts.	2 2/3 qts.	2 2/5 qts.	2 qts.	1 1/3 qts.	1 1/4 qt.		
5								6 1/4 lbs.	1 gal.
7								9 3/8 lbs.	1 1/2 gals.
10								12 1/2 lbs.	2 gals.
20	10 gals.	7 1/2 gals.	6 2/3 gals.	6 gals.	5 gals.	3 1/3 gals.	3 gal.	25 lbs.	4 gals.
30	15 gals.	11 1/4 gals.	10 gals.	9 gals.	7 1/2 gals.	5 gals.	4 1/2 gal.	37 lbs.	6 gals.

It is important to apply the right amount of chemical even when spraying patches. The amount of chemical needed for a square rod area for several rates of application is given in Table 3. These chemicals can be applied in one quart to

one gallon of water per square rod, depending on the size of the nozzle and the speed that the operator walks. It is best to mark out a square rod plot (16 1/2 ft. x 16 1/2 ft.) and determine the amount of water required to cover it. If two

quarts are needed, the amount of chemical for one square rod (from table 3) should be measured into each two quarts of water used. The same is true for any other amount of water.

**Table 3. The Amount of Chemical Needed for Spraying Patches**

If Pounds of Acid Equivalent per Acre to Be Used Are:	This Much Chemical Should Be Used on a Square Rod (16 1/2 Ft. x 16 1/2 Ft.)				
	2,4-D, MCP or 2,4,5-T		TCA		MH
	Contains 4 Lbs. per Gallon	Contains 3 Lbs. per Gallon	Granular (90% Sodium Salt)	Liquid (6.3 Lbs. 90% Salt per Gallon)	40% Sodium Salt
1/2	2/3 teaspoonful	7/8 teaspoonful			
3/4	1 teaspoonful	1 1/3 teaspoonsful			
1	1 1/3 teaspoonsful	1 3/4 teaspoonsful			
1 1/2	2 teaspoonsful	2 2/3 teaspoonsful			
2	2 1/2 teaspoonsful	3 1/2 teaspoonsful			
5			4 1/2 teaspoonsful	4 1/2 teaspoonsful	1 cup
7 1/2			6 3/4 teaspoonsful	6 3/4 teaspoonsful	1 1/2 cups
10			3 tablespoonsful	3 tablespoonsful	2 cups
25	5/8 cupful	11/12 cupful	1/2 cupful	1/2 cupful	
50			1 cupful	1 cupful	
100			2 cupsful	2 cupsful	

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