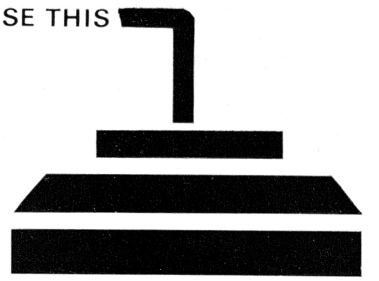
TO MAKE SPRAY APPLICATION MORE ACCURATE USE THIS



FIELD SPRAY CALIBRATION CHART

by Dale Shires

MANY FAILURES with agricultural chemicals are due to improper rates of application. For one popular chemical, one drop of material per cubic foot of a medium soil is the proper rate of application.

Therefore, incomplete incorporation into the soil, a change in speed or pressure in spraying, overlap, poor agitation, worn nozzles or miscalculated mixing may cause ineffective control, crop injury, carryover and economic losses. Use of the field sprayer calibration chart on the next page can help overcome many of the problems of determining mixture, pressure and ground speed for accurate applications.

The starting point in sprayer calibration is nozzle output. Even though spray nozzles are new and output is supposedly known, manufacturing tolerances cause varying results. Also, nozzles wear with use and should be checked regularly. Therefore, both new and old nozzles should be checked for output.

There are two methods of checking the rate of discharge of a nozzle tip. Both methods involve time and quantity measurements. The first method uses the number of seconds required to deliver a pint (16 fluid ounces) of mixture at 40 pounds per square inch pressure in the system. Be sure to use an accurate measure such as a U. S. standard pint container and check each nozzle.

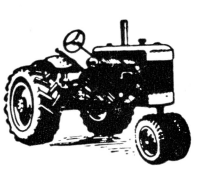
Another method of checking nozzle discharge rate requires a bottle or measuring device marked in fluid ounces. Catch the output of one nozzle for 35 seconds while operating the system at 30 pounds per square inch. The amount in fluid ounces represents the nozzle output in gallons per acre if nozzle spacing is 20 inches and forward speed is 4 miles per hour.

For example, a properly operating nozzle rated at 5 gallons per acre should deliver 5 fluid ounces in 35 seconds at 30 pounds per square inch. Remember, however, that if nozzle spacing is not 20 inches, or speed is not 4 miles per hour, the actual application rate will not correspond to the rating in the test.

To use the spray calibration guide on the next page, use the first nozzle testing method. Once this figure is obtained, follow instructions on the calibration guide to determine proper mixing rates. To check ground speed for use with the table, clock the number of seconds required to drive 264 feet in the field. Your speed can be determined from Table 1.

TABLE 1. Time requirements to travel 264 feet and corresponding speed.

Time required to drive 264 feet in seconds	Ground speed in m.p.h.
18	10
24	7.5.
30	6
36	5
40	4.5
45	4
50	3.6
60	3.0
70	2.6



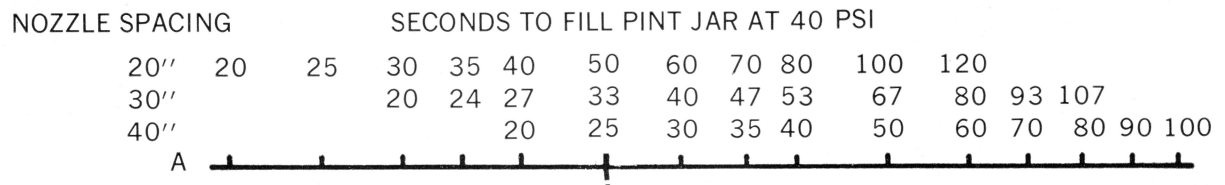
DALE SHIRES is Bremer County extension director.

FIELD SPRAYER CALIBRATION CHART

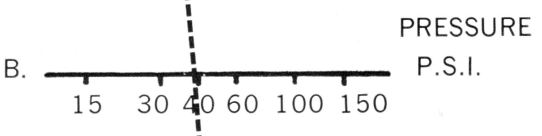
Use this chart with a ruler to aid in adjusting sprayer pressure, speed, or mixture for desired application rate. Example shows nozzles that at 40 psi fill a pint jar in 25 seconds, that are 40″ apart, at 40 psi and 5 mph, deliver about 9 gals. per acre. If 1 lb. product per acre is advised, the chart shows 5½ lbs. product per 50 gals. spray is needed.

Directions

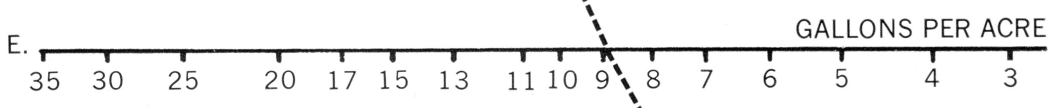
1. TIME EACH NOZZLE'S OUTPUT IN SECONDS to fill a pint jar at 40 psi. Discard nozzle tips that vary 10% or more from the average. Follow line across from nozzle spacing used to nearest number representing seconds, then down to line A.



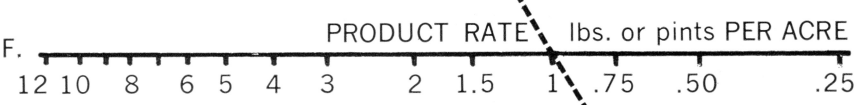
2. ALIGN RULER WITH appropriate spot on line A and desired pressure on line B. Then mark intersection on line C below.

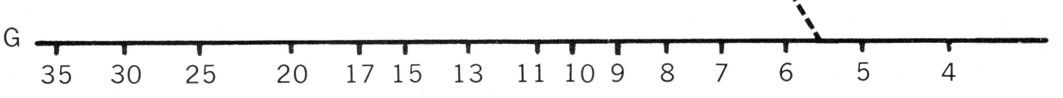


3. FROM LINE C INTERSECTION, align ruler with speed used (line D) and read gallons per acre where ruler crosses line E. (To determine actual speed, see Table 1.)



4. PLACE RULER WITH GALLONS per acre (line E) and product rate per acre, line F; read amount of product for each 50 gallons of spray shown at intersection on line G.





AMOUNT PRODUCT PER 50 GALS. SPRAY (pints of liquid or lbs. of powder)