

Sprayer Calibration for Accurate Application

SpraySURE

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Accurate sprayer calibration is essential to know what volume of spray is being applied. Calibration is a straightforward process that, once established as a routine, takes just a few minutes and can make a significant difference to accuracy and results.

Calibration is a three stage process:

- Establish the accurate forward speed used when spraying
- Identify the output per nozzle
- Calculate the application rate per hectare

Checking sprayer speed

1. Accurately measure out a run of 100 m on a turf surface, using a stake to mark each end
2. Using a stopwatch, start timing as you drive past the first stake at full spraying speed; stop the clock as you drive past the second stake (it's easier and more accurate if a colleague can assist with the timing)
3. Divide 360 by the time taken to drive the 100 m in seconds = speed in km/h
4. Repeat if different spraying speeds are used for different areas, e.g. greens and fairways



Case Study:

Green spraying – First gear

Time taken for 100 m:
1 minute 34 seconds
 $360 \div 94 = 3.8 \text{ km/h}$

Fairway spraying – Third gear

Time taken for 100 m:
57 seconds
 $360 \div 57 = 6.3 \text{ km/h}$

TOP TIP

Always use a calibration cylinder for checking nozzle output; measuring jugs are good for measuring product, but are not sufficiently accurate for checking nozzles.



TOP TIP

If you have collected nozzle output for 30 seconds in your nozzle check, don't forget to double it to get the output per minute for the spray volume calculation.

Checking nozzle output

Check nozzle output at least quarterly, and possibly each month during busy spraying periods.

First refer to the manufacturer's nozzle output chart to establish expected flow rate. Check for visible signs of damage, then measure output from each nozzle.

1. Fill the tank with clean water, set the pump to the standard operating pressure and collect the output from each nozzle for 30 seconds, using a Syngenta spray calibration checker cylinder
2. Note down the output from each nozzle. Add up the total and divide by the number of nozzles, to give the average output per nozzle across the boom
3. Calculate the difference from average for each nozzle. If the output from any nozzle is +/- 4% of the average, nozzles are unacceptably worn and the complete nozzle set should be replaced

Calculating application rate

With the knowledge of the forward speed of the sprayer and the output from nozzles, the calculation to work out the volume of spray being applied per hectare is:

Nozzle output (L/min) x 600 ÷ forward speed (km/h) ÷ nozzle spacing (m) = spray volume (L/ha)

Spray volume output can be adjusted by:

- Changing the forward speed
- Altering the operating pressure
- Changing to different sized nozzles

Case Study (example):

With a flow rate per nozzle of 1.36 L per minute and nozzles at 0.5 m spacing, the water volume application rate when spraying greens at 3.8 km/hr would calculate as follows:
 $1.36 \times 600 = 816 \div 3.8 = 215 \div 0.5 = 430 \text{ L/ha}$

Putting it into practice

With the knowledge of the water volume application rate for any given speed and nozzles, operators can work out the correct product inclusion rate.

If the calibration process establishes, for example, an application rate of 450 L/ha and there is one hectare of greens to be sprayed with HEADWAY MAXX at 9 L/ha using a 300 L capacity sprayer:

First fill the sprayer to 225 L; add 4.5 L of HEADWAY MAXX and spray the first nine greens

Then return to the shed and add a further 225 L to the remaining spray mix; add another 4.5 L of HEADWAY MAXX and complete spraying.

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For further information on the Syngenta SpraySure program, please contact your local Syngenta Sales Manager or Agent Representative.

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