

Field Sprayer Calibration

Introduction

Sprayer output can vary from season to season due to nozzle wear, change in pressure, tractor speed or the use of a different tractor. It is important to properly calibrate your sprayer as misapplication can be costly in terms of poor pest control, crop injury and potential environmental contamination. Therefore, your sprayer should be calibrated at the beginning of each growing season. Proper calibration requires little time and can achieve substantial economic and environmental benefits.

Pre-Calibration Checklist

1. Ensure the sprayer is in good operating condition, there are no leaks, there is adequate agitation, the boom is stable and level, and the pressure gauge is working properly.
2. Ensure the tractor tachometer is working so that a consistent operating speed can be maintained.
3. Determine nozzle type and size based on product and the desired application rate and pressure.
 - Nozzles must be the same type, size and spaced evenly along the boom.
 - Flat fan nozzles should be installed slightly offset so the spray pattern from one nozzle does not interfere with the next.
4. Determine correct boom height based on the nozzle discharge angle and required height above target (Table 1).

Table 1. Sprayer boom heights

Nozzle Discharge	Boom Height above target
65° angle	55 cm - 60 cm (22 in. - 24 in.)
80° angle	45 cm - 50 cm (18 in. - 20 in.)
110° angle	37 cm - 45 cm (15 in. - 18 in.)

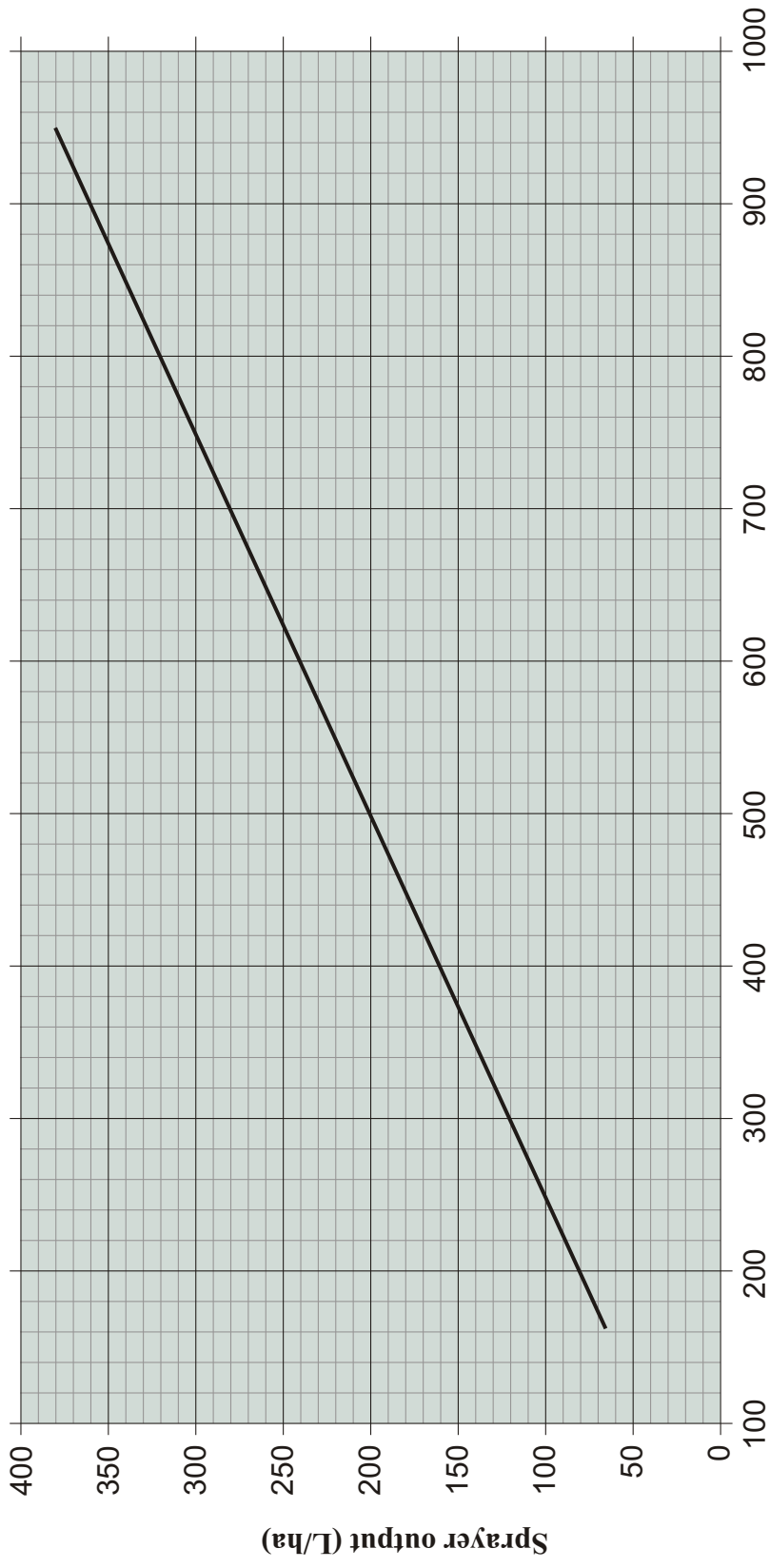
5. Check uniformity of spray pattern and output by:
 - Run sprayer at operating pressure and rpm, visually checking spray pattern from nozzles.
 - Collect water from each nozzle for 30 seconds and record each volume to determine average.
 - Replace nozzles that vary more than 5% from average first checking that nozzles and screens are clear of any debris or chemical residue.

Sprayer Calibration

1. Measure a calibration course of 50 m (164 ft).
2. Half fill the sprayer tank with clean water.
3. Record the time required to travel the course at the desired speed noting the tractor gear and rpm. Repeat three times for an average.
4. Collect water from a nozzle at the same rpm and amount of time required to travel course. Measure in millilitres (mL).
5. The application rate for a 50 cm (20 in.) nozzle spacing can be determined using Figure 1. For different nozzle spacings or band applications multiply rate by the corresponding conversion factor found in Table 2.
6. If the volume of water collected is off-scale, collect for half the test run time, and multiply results by 2. Application rates can be changed by adjusting nozzle size, tractor speed, or boom pressure (minimal effect).
7. Repeat steps 4 and 5 to verify results. Keep results of your calibration in a crop record book.

Regular Maintenance

1. Wash the outside of the sprayer.
2. Remove and clean all screens and nozzles.
3. Rinse tank thoroughly, dispose of rinsate according to label instructions.
4. Disinfect tank when changing pesticides.



mL/nozzle collected for 50 m course time

Figure 1. Sprayer Output Determination 50 m (164 ft.) for broadcast spray based on a 50 cm (20 in.) nozzle spacing.

Table 2: Conversion factors for band sprays or nozzle spacings other than 50 cm (20 in.).

Nozzle Spacing or band width	30 cm 12"	35 cm 14"	40 cm 16"	45 cm 18"	55 cm 22"	60 cm 24"	75 cm 30"	90 cm 36"	100 cm 40"
Conversion factor	1.67	1.43	1.25	1.11	0.91	0.83	0.66	0.55	0.50

Conversions

L/ha x 0.089 = Imperial gallons/acre
 L/ha x 0.4 = Litres/acre
 L/ha x 0.11 = US gallons/acre

For further information contact:
 Rick Hoeg, Environmental Technical Support
 Phone : (902)893-6577; E-mail: hoegr@gov.ns.ca