SOP

Calibrating Equipment

Agrichemical application equipment: the right rate, with no leaks

Key point: the law sets the outcome rather than a calibration method. Equipment must apply at the rate it is designed for, without leaking, and you must stay within any set limits. Calibrating is how you meet that and can show you have.

What the law requires

Equipment that works

Holds the product without leaking at every temperature and pressure, and applies it at the rate and in the manner designed.

HS Regulations 2017, reg 13.7. Class 9: HSNO Hazardous Property Controls Notice, cl 47

Instructions on hand

Use and maintenance documents come with the equipment. Workers can readily get them and understand them.

HS Regulations 2017, reg 13.7

Stay within the rate

Do not exceed any maximum rate or frequency, or apply inside any minimum interval, set by the EPA for that method. Follow the label.

HSNO Hazardous Property Controls Notice, cl 50

Protect the environment

Take all reasonable steps to avoid significant adverse effects beyond the application area. No class 9.1 pesticide directly onto water.

HSNO Hazardous Property Controls Notice, cl 46 and 52

When to calibrate (good practice)

- Start of each season
- New nozzles, pump or pressure
- Change of vehicle or speed
- Different crop or target

Check it first

READY	**Clean, sound and working**	Rinsed and filled with clean water only. Pump, agitation, hoses and gauge work, with no leaks at operating pressure.
FIX FIRST	**Worn or blocked nozzles**	Clean or replace them. Replace any nozzle more than 10% above or below its rated output (good practice).
DO NOT USE	**Leaking, or cannot hold the rate**	Take it out of service until repaired, then calibrate again. Wear PPE if it has held product.

Next page: calibration methods, worked examples, records and contacts

How to calibrate

Boom sprayer

1. Half fill with clean water. Set your normal operating pressure.
2. In the field, time at least 50 m, three times, in normal gear and revs. Average the times.
   km/h = metres ÷ seconds × 3.6
3. Catch each nozzle for one minute in a measuring jug. Fix or replace any more than 10% off.
4. Work out your rate from the average output.
   L/ha = L/min × 60,000 ÷ (km/h × spacing cm)
5. Compare with your target. Adjust speed, pressure or nozzles, then test again.
6. Work out product for each tank.
   Product = label rate per ha × tank L ÷ L/ha

Example: 1.0 L/min at 8 km/h with 50 cm spacing = 150 L/ha. A 600 L tank covers 4 ha. At 2 L/ha, add 8 L of product.

Knapsack

1. Fill with a measured amount of clean water and pump to working pressure.
2. Mark out a test area on similar ground, such as 5 m by 5 m (25 m²).
3. Spray it at your normal walking pace, height and pumping rate.
4. Measure the water needed to refill to the same level. Repeat to confirm.
   L/ha = L used × 10,000 ÷ area m²
5. Work out product for each tank.
   Product = label rate per ha × tank L ÷ L/ha

Example: 0.75 L on 25 m² = 300 L/ha. A 15 L tank covers 500 m². At 2 L/ha, add 100 mL of product.

⚠ **Examples only. Use the rate on your label. Test on the ground you will spray, as hard surfaces can give results up to 15% out.**

Record it

Calibration record

Good practice

- [ ] Date and who did it
- [ ] Equipment, nozzle type and pressure
- [ ] Speed or walking pace, and result in L/ha
- [ ] Faults found and repairs made

Application record

Required for class 9.1A to 9.4A pesticides and growth regulators at 3 kg or more in 24 hours, if likely to enter air or water and leave the area. Keep for 3 years.

- [ ] Substance name and HSNO approval number
- [ ] Date, time, amount and location
- [ ] Wind speed and direction, if applied in air
- [ ] User's name and address, and other measures taken
- [ ] Aerial: also electronic data files and positional information

If something goes wrong

111	0800 764 766	0800 030 040
Fire, injury or uncontained spill	National Poisons Centre, 24 hours	WorkSafe, if a notifiable event

Equipment that has held product can still contaminate. Follow the label and SDS for first aid and spills, keep runoff out of drains and waterways, and tell your employer.

Summary only. Check the label, SDS, manufacturer's instructions and approval conditions: Health and Safety at Work (Hazardous Substances) Regulations 2017; Hazardous Substances and New Organisms Act 1996 and Hazardous Property Controls Notice 2017; NZS 8409:2021; NZQA unit standard 21558.