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Calibration of boom sprays

By J.R. Pierce*

Boom sprays have become increasingly common on Western Australian farms, allowing farmers to take advantage of modern herbicides. Probably the most significant advance has been the design of a spray capable of delivering a constant volume per area regardless of speed. This has taken the greatest error out of applying herbicides. In addition the change in nozzle size due to the abrasive action of the chemicals does not alter the output over a given area.

Other improvements have been made to spray tank design and construction. Spherical tanks have replaced square tanks, eliminating many of the problems of chemicals in the corners. Fibre glass construction has removed the problem of corroded flakes from metal tanks entering the spray lines and blocking nozzles. The incorporation of filter strainers, in-line filters and nozzle strainers has stopped the entry of lumps of undissolved powder into the spray lines.

Most boom sprays used on farms have 50 cm nozzle spacings and require calibrating regularly to ensure accurate herbicide application. This is a simple job, but is neglected by many farmers because they are not familiar with the procedure.

By following the steps below, the boom will deliver accurate amounts of herbicide.

• Remove all nozzles and strainers from the boom and soak in water. Thoroughly clean all nozzles and filters, including in-line filters. An old tooth brush will help remove any grit or residue.

• Remove dirt in the boom by flushing clean water through while the nozzles are out.

• Replace nozzles. Do not over tighten, especially if the connections are plastic. Set the pump pressure between 170 and 240 kPa.

• Run the boom and collect the spray from each nozzle for one minute and measure the amount of water. Those nozzles showing the greatest variation should be discarded and replaced by new nozzles. Once you have chosen a series of nozzles with similar outputs, the boom is ready for calibration.

• Measure the output of several nozzles for one minute. Find the average output by totalling the volumes and dividing by the number of nozzles used in your test.

• Select a suitable speed for spraying. Most spraying should be done around 8 to 10 km/h. Mark out 100 metres and measure the time to cover the distance. For best results this should be 34 to 35 seconds. Refer to Figure 1 and find the output per hectare.

• The machine is now calibrated for spraying. The only further adjustments required are to make sure the nozzles are all offset so that the spray from each nozzle is not running into another, and that the height of the boom is correct. Height of the boom is correct when the spray from one nozzle overlaps half the spray fan from the next nozzle. (Fig. 2). This overlap should occur where the spray reaches the plants to be sprayed, not the top of the crop or the ground surface.

This calibration only applies to boom sprays with 50 mm nozzle spacings.

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