

Water for Profit

EFFECT OF ROTATION ANGLE ON TRAVELLING GUN PERFORMANCE



Catch can trials can be used to measure uniformity (evenness of application) of the irrigation water from sprinkler systems.

Introduction

The angle of gun rotation for travelling irrigators is important as it greatly influences the sprinkler pattern and uniformity of water application.

Effect of gun rotation on uniformity

Varying the angle of gun rotation will affect the uniformity of water applied to the crop. However, changing the rotation angle does not change the volume of water applied as the same amount of water will still exit the nozzle.

Figure 1 shows a typical pattern produced by a gun rotating through a full circle (360°). The red lines indicate the position of the laneways. Note that a 'dome' shape pattern is produced due to the full circle rotation applying too much water to the middle of the run. When the patterns are overlapped, it can be difficult to achieve a high uniformity. The spikes either side of the laneway are caused by the discharge due to the walker jets

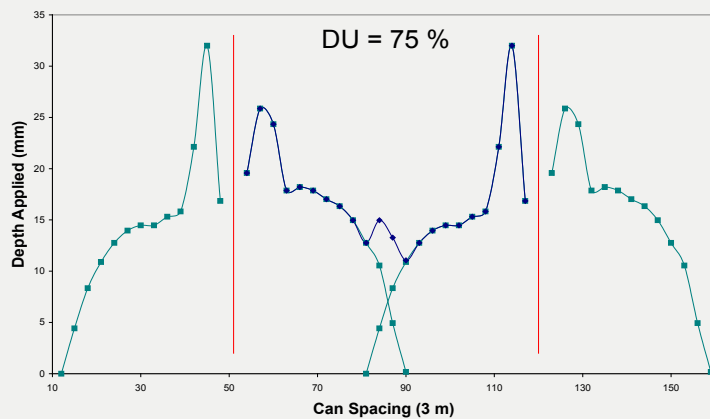


Figure 1: 360° gun rotation

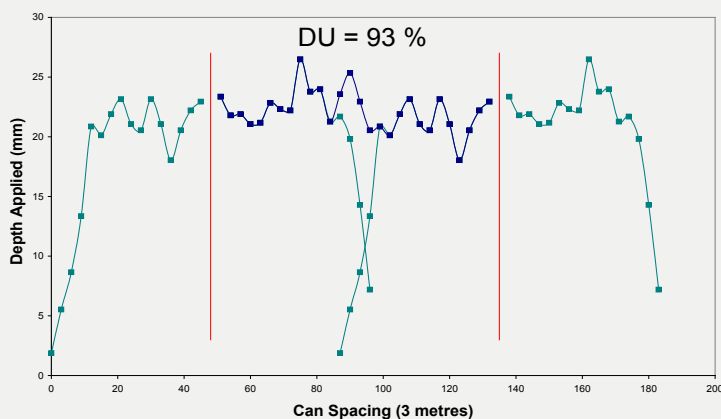


Figure 2: 270° gun rotation

Where a three quarter circle gun rotation is used the water is typically applied much more uniformly (see Figure 2), particularly when matched with an appropriate lane spacing. In this case, the pattern of water application is much more uniform and it is much easier to target the required water application across the field. For most systems, the angle of gun rotation should normally be between 240° to 270°.

For more details contact Growcom on 07 3620 3844.



Disclaimer: This information is provided as a reference tool only. Seek professional advice for irrigation specifics.

A Growcom project conducted in collaboration with the Queensland Department of Agriculture, Fisheries and Forestry and the National Centre for Engineering in Agriculture with funding provided by the Queensland Government's Rural Water Use Efficiency Initiative.

