

Centre Pivot Irrigation – Managing Wheel Tracks

Introduction

Deep wheel ruts can develop in centre pivot irrigation if wheel tracks are not well managed. Significant damage can occur to the centre pivot as well as tillage and harvesting equipment from deep wheel tracks.

Factors Influencing Wheel Track Depth

- Soil type (Heavier soils, higher water holding capacity and slower drainage).
- Number of revolutions.
- Weight supported by each tower (Longer spans, more weight).
- Amount of wheel contact area with the soil surface.



Wheel track depth should not exceed 100 mm.

Wheel Track Management

There are a number of the management techniques that can be implemented to reduce the impact of wheel tracks. They include:

- Limit irrigations when the field is wet, avoiding unnecessary pivot revolutions;
- Allow soil surface to dry between irrigation events (This however is not always feasible);
- Keep tire inflation pressures at the manufacturer's recommended level;
- Consider working in circles;

- Compaction of the wheel tracks, or the addition of polyacrylamides (track sacks);
- Fill the wheel track with crushed rock or other organic material; and
- Raise wheel tracks to prevent ponding.

Mechanical Alterations

A number of mechanical modifications can be done to reduce the depth of wheel tracks:

- Increase the tire-soil contact area by installing larger diameter/width tyres (the extra load on the drive mechanism should be considered);
- Install directional sprinklers either side of the tower to eliminate tower-water interception and keep the wheel track dry;
- Install “boom backs” on the sprinklers near the tower;



- Attach track-closing disks to each tower;
- Alter sprinkler height to decrease tower-water interception;
- Use double length LEPA Hose; and
- Designing the system with shorter spans.

Considerations must be given to the water application efficiency and uniformity when alterations are made to the system. Best management practices are required to manage wheel tracks.