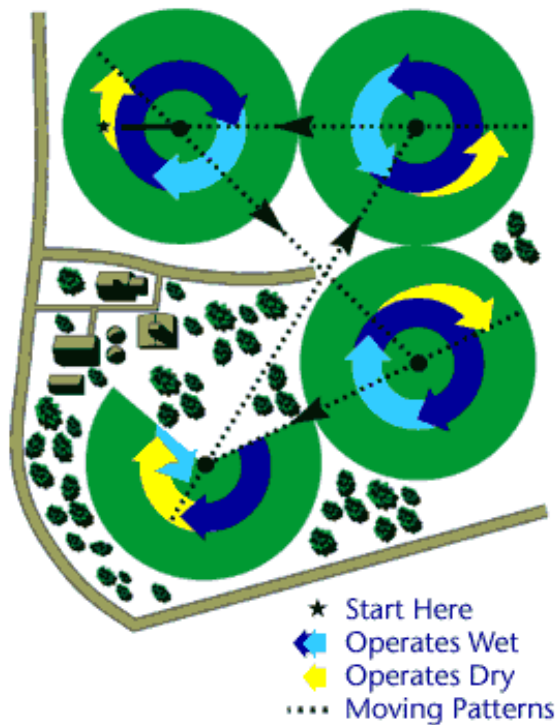


Irrigation for Profit

Centre Pivot Irrigation – Moving Towable Pivots

Introduction

Towable pivots systems are capable of irrigating a number of adjacent fields. Towable pivots lower the cost per irrigated hectare as the cost is spread over a number of fields. However the system capacity of towable machines must be increased to account for the greater irrigated area and the non-irrigating time associated with moving the machine.



Moving Towable Pivots

When moving towable pivots consideration should be given to the following:

- Lifting;
- Towing speed;
- Anchoring;
- Towing in sloping fields;
- Wheel tracks and ridges; and
- Towing accessories and pivot design.

Lifting Wheels

The rotation of the tower wheels is generally the longest operation in moving a pivot. There are a number of methods that can be used to lift the wheels on the towers before turning ready for moving:

- Hand jack (wallaby jack);
- Hydraulic jack;
- Front-end loader; and
- Fitted hydraulic scissor jacks.



Fitted scissor jacks cuts down the time to move a pivot but these are only available on hydraulic driven pivots.

Towing Speed

The towing speed should not exceed 5km/hour and ensure the spans do not bounce up and down. It is best to establish smooth tow lanes between adjacent fields.

Anchoring

When moving a pivot, the centre pivot should be placed in the same position every time. If they are in different location each time, the pivot has to fight against existing wheel tracks.

The anchoring required for the pivot depends on the pivot length and soil type. Concrete pads are recommended for larger machines.

Towing in Sloping Fields

When towing on sloping fields it is possible for the pivot to free wheel. When moving over sloped country it is wise to use an additional tractor at the last tower as a brake if needed.

Wheel Tracks and Ridges

When a pivot is towed across rows, wheel tracks or ridges it is best to flatten and fill them before moving. Towing over rough ground can cause a greater amount of pull, especially if the wheels are sitting in wheel tracks. This can cause a significant amount of stress on the machine.

Generally the span lengths are the same so the wheel tracks are equal distance apart. When towing all towers move over the tracks at the same time, as span lengths match wheel rut spacing. Before moving the centre pivot to the tow lane for towing, the wheel ruts should be filled in.

Towing Accessories

Some moveable pivots are fitted with reverse towing options. This allows the pivot to be towed backwards when a part circle field is irrigated due to physical obstructions.



Gearboxes

Gearboxes on towable pivots are different to non-movable pivots, as they are required to freewheel when in the tow position. The construction of the gearboxes means that extra stress is placed on secondary bearings when being towed.

Pivot Design

The pivot tower design has a number of different options and is dependent on how often the pivot is moved:

- Two-wheel tower, ideal for frequent moves in any direction;
- Three-wheel tower, ideal for towing in any direction;
- Four-wheel tower, ideal when pivot points are in a straight line; and
- Skids, low cost and for infrequent towing.



Some growers move the centre pivot as a lateral move with a tractor and a towed portable power supply without turning the wheels.

Limitations of Movable Pivots

Movable pivots are appropriate for supplementary irrigation when a number of fields are irrigated. During peak crop water use the pivot may require daily movement on light soils for shallow rooted crops. This constant moving means significant non-irrigation time, increased labour cost and lower system capacity.

Quite often the pivot is unable to meet the crop water requirement and signs of crop stress occurs. Therefore movable pivots are usually only moved once or twice a year as part of a crop rotation program.

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