MAURITIUS SUGAR INDUSTRY RESEARCH INSTITUTE
Recommendation Sheet

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Management of wheel tracks of Centre Pivot

The formation of ruts along the wheel tracks of the centre pivot (*Figure 1*) can damage the equipment. Ruts are formed in water saturated conditions, when the weight bearing capacity of the soil is reduced.

Formation of ruts may be due to :

- soils having a high water holding capacity, a slow drainage and which remain wet for a long period
- number of centre pivot revolutions
- weight of towers
- wheel area in contact with the soil surface

Figure 1. Deep wheel track

How to curtail the problem of ruts?

Management practices

- Schedule irrigation so as to avoid unnecessary pivot revolutions.
- Ensure that the correct tyre inflation pressure is used to maintain the right wheel contact area (refer to Users' Manual for recommended tyre pressure).
- Reduce the amount of applied water by increasing pivot speed in areas of the field prone to rut formation, taking care however, not to reduce irrigation amounts below the crop water requirements (*this practice should be envisaged as a last resort*).

Figure 2. Wheel track paved with stones

Mechanical solutions:

- Use high flotation tyres. The correct inflation pressure for these tyres is 125 kPa (18 psi) as compared to 150 kPa (22 psi) for standard normal tyres.

Some manufacturers recommend the use of large diameter tyres (11.2" x 38"), which offer greater flotation than the standard high float tyres (14.9" x 24") or the standard normal tyres (11.2" x 24"). However, the larger radius of the tyre increases the torque load on the gearbox and users must ensure that the size and strength of the drive mechanism are suitable for high flotation tyres.

- Build a raised wheel track by pulling soil from both sides of the track, or place stones along the wheel track (*Figure 2*).
- Place rigid drops to direct sprinklers away from the towers.

Manufacturers recommend the use of 'boombacks' with directional spray nozzles which can be fixed on either side of the towers. 'Boombacks' apply water to the soil after the wheel passage on the dry track (Figure 3).

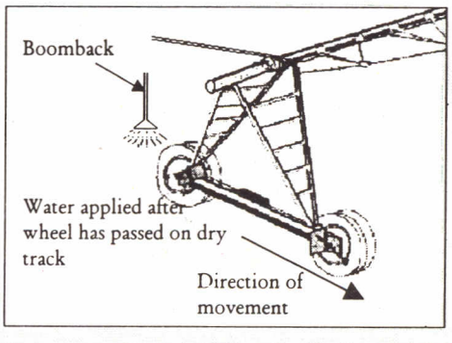

Figure 3. Schematic diagram showing boomback

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