



Information Sheet

6.15 Ridging

Poor growth, low yields and the need for frequent crop re-establishment are features of cane grown on shallow or poorly draining soils such as Longlands, Westleigh, Kroonstad, Valsrivier, Katspruit and Swartland forms. These soils have sandy, permeable topsoil layers overlying relatively impermeable subsoils. Root distribution in such soils are generally poor, and rainfall efficiency is limited by low plant available water capacity and surface crusting. There is a high compaction hazard that leads to waterlogged fields and increased run-off during storms. These soils are vulnerable to the development of saline/sodic conditions and have a high erodibility status.

Ridging, is a technique which permits to cover the base of the plants with the soil.

Advantages of ridges

- Soil compaction is confined to the interrow (controlled traffic).
- Creates more room for root development and improves access to applied nutrients.
- Creates a favourable water and aeration environment for roots.
- Controlled disposal of excess surface water.
- Enhanced control of soil erosion.
- Improved efficiency of mechanical harvesting.

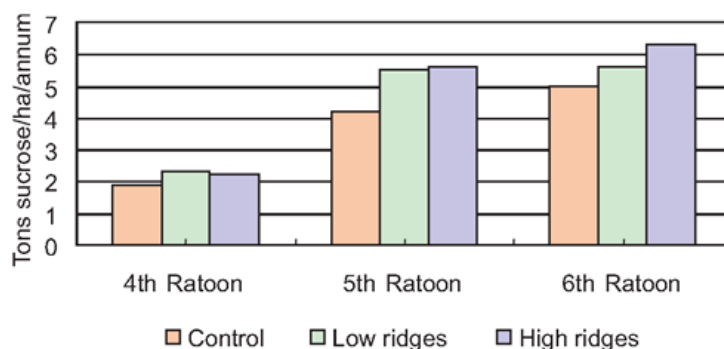
Disadvantages of ridges

- Will incur an operational cost to construct the ridges.
- Creating ridges on ratoon crops result in a lowering of yield for the first crop only. The loss in yield is equivalent to the depth of stalk buried by the newly created ridge.
- Traffic must follow the row to the end of the field as short cuts out of the field will not be possible.
- Only slewing boom loaders can be used.
- Wheels of equipment must be set to run in the interrow.
- If not properly laid out it could result in serious soil erosion and hamper other management operations.

Crop response to ridging

A yield, response to ridging is most likely in ratoon cane where rainfall is above the long-term mean, as shown by the following trial results:

- The cumulative response obtained over seven crops in a trial at Mtunzini on a Longlands form soil was 7.9 tons sucrose per hectare for an input cost equivalent to about half a ton of sucrose.
- The cumulative response obtained over three crops near Eston on a Kroonstad form soil was three tons sucrose per hectare.



Sucrose yields of three crops from a ridging trial conducted near Eston. The trial was established after harvesting the third ratoon and the low ridges had a height of 150 mm and that of the higher ridges was 250 mm.

Conditions suited to ridging

Ridging should be considered mainly in flat or low-lying areas, where:

- the water table is within 0.6 m of the soil surface.
- an impervious layer is found within 0.6 m of the soil surface.
- In addition to the above, soils that have a very low infiltration rate and water will dam on the surface for several days after rain or irrigation.

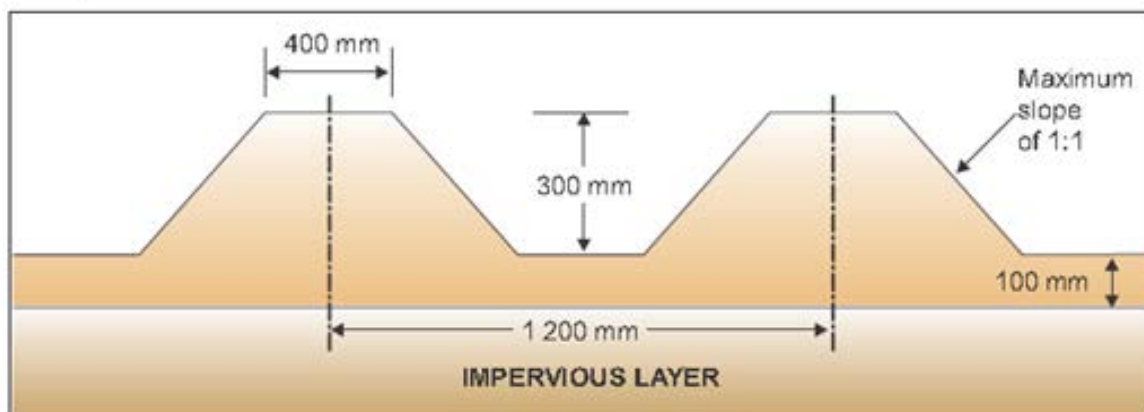
Timing of ridging operations

- Ridging can be implemented before planting or after harvesting.
- To minimise damage to the root system ratoon fields should be ridged within a week after harvest in spring or autumn or within two weeks in winter.

Construction of ridges

Ridges must be constructed as high as possible to maximise the effect using a disc or mouldboard ridger. See suggested dimensions in the diagram below.

- The crown width should be about 400 mm but not less than 325 mm to ensure that applied fertiliser remains on the row.
- Care should be taken when drawing the planting furrow on the ridge to avoid flattening the structure.
- The height of the ridge, measured from the bottom of the interrow, should be 300 mm or more, but not less than 150 mm.
- To ensure stable ridges, the maximum slope of the sides should not exceed 45 degrees.



Factors limiting ridge height

- Row spacing should increase with decreasing soil depth and should not be less than 1.2 m to maintain a ridge height greater than 150 mm. If the ridge height is less than 150 mm, yield responses are unlikely.
- Minimum soil depth to the impervious layer in the interrow before ridging must exceed 250 mm.
- Fields with a controlled traffic layout (tram lines) that are shallower than 300 mm to the limiting layer will not have enough soil to move from the traffic zone to the production zone to create a meaningful ridge.
- The ground-free height of equipment to be used on ridged fields will limit maximum height of ridges.

Notes

- Ridges must be drawn to a gradient of not less than 1:150 to prevent waterlogging in the interrow.
- To minimise soil erosion, slopes of ridges must not exceed 1:100.
- The stability of ridges on soils with sandy loam topsoil (less than 20% clay) will be improved if compacted during construction. Setting wheel spacing of tractor to run between the interrow and row is one way of obtaining this goal.
- Ridges of about 150 mm height after harvest will have to be rebuilt.

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