Sugar Research Australia

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Booklet

Harvester modification to cut wider row spacings

When harvesting cane grown on row spacing wider then 1.5 m several factors need to be considered:

- The track or wheel centres of the machine - this should be matched to the row spacing to achieve controlled traffic.
- The width of the crop divider on the front of the machine.
- The throat width of the machine in front of the base cutters.
- The elevator length.
- The width of the base cutters.

The standard Toft 7000 series cane harvester (1988 to 2008) has the following dimensions:

- Track centres width – 1880 mm
- Wheel centres width – 1860 mm
- Crop divider width – 1500 mm
- Throat width – 900 mm
- Base cutter centres – 630 mm
- Standard elevator length – 4250 mm.

The post 2003 models have:

- Crop divider width – 1500 adjustable to 1800 mm
- Throat width – 1080 mm.

Cameco harvesters are available in two series. The 2500 series (1992-2002) and the 3500 series (2003 on). These have the following dimensions:

2500 series:

- Track centres width – 1880 mm
- Wheel centres width – 1880 mm
- Crop divider width – 1550 mm
- Throat width – 900 mm
- Base cutter centres – 630 mm
- Elevator length – 4250 mm.

The 3500 series has the same dimensions as above except it has a wider 40” or 1000 mm throat.

Elevators

Both manufacturers offer three elevator lengths.

Toft

1. Standard length elevator.
2. The extended length elevator with an additional 300 mm at the top.
3. The extended length elevator with an additional 300 mm at the and an additional 250 mm in the body.

Cameco

1. Standard length elevator.
2. The extended length elevator with an additional 300 mm of length.
3. The extended length elevator with an additional 600 mm of length.

Image 1 shows a harvester in position to load cane into the haulout. The arrows show the distance from the centre of the harvester to the centre of the haulout at various row spacings.

				Distance from harvester to haulout
Row spacing	1.5	1.5	1.5	= 4.5 m
	1.8	1.8	1.8	= 5.4 m
	2.0	2.0	2.0	= 6.0 m

The table image 1 show that by increasing the row width from 1.5 m to 1.8 m the distance from the harvester to the haulout increases from 4.5 m to 5.4 m – an additional 900 mm.

Growers and contractors who harvest both 1.5 m rows and 1.8 m have found that the long elevator with the 600 mm extra length is suitable for both the row spacings.

Harvester setups/modifications needed to cut various row configurations

1.8 m single rows

Necessary

- The standard harvester elevator is too short to elevate into a haulout at a 1.8 m row spacing as the haulout is 900 mm further from the machine. This issue can be overcome by fitting an extended length elevator to the machine or by using an attachable elevator extension.
- When farms are still converting row spaces and have both 1.5 m and 1.8 m rows to harvest thought needs to given to the best option of a permanently mounted longer elevator or an attachable elevator extension which can be removed for 1.5 m row harvest.

Image 2: Attachable elevator extension.

Beneficial

- There may be some benefit in widening out the crop dividers to 1.8 m so that they track up the centre of the inter-row.

1.8 m dual rows

Necessary

- The standard harvester elevator is too short to elevate into a haulout at a 1.8 m row spacing as the haulout is 900 mm further from the machine. This issue can be over come by fitting an extended length elevator to the machine or by using an attachable elevator extension. When farms still converting row spaces and have both 1.5 m and 1.8 m rows to harvest thought needs to given to the best option of a permanently mounted longer elevator or an attachable elevator extension which can be removed for 1.5 m row harvest.

Beneficial

- There may be some benefit in widening out the crop dividers to 1.8 m so that they track up the centre of the inter-row.
- Although 500 mm dual rows will fit up the 900 mm throat of a standard machine there is no room to spare. The later model machines with a wider 1080 mm throat are more suited to dual row harvesting. Several growers have modified older model machines by moving the crop dividers out to the very edge of the harvester frame to increase the width of the throat of the harvester. This modification can result in a throat width of 1050 mm.

Image 3: Widened front for harvesting dual rows at 0.5 m – the throat width has been increased from 900 mm to 1050 mm.

2.0 m dual rows

Elevators

Some growers on 2 m systems have found it is better to only have one row between the harvester and the haulout. When this practice is used there is 4 m from the centre of the harvester to the centre of the haulout which is less than the 4.5 m distance in a conventional 1.5 m row system. In this situation a short upright elevator is necessary.

If you wish to still stay two rows out from the harvester it will be 6 m from the centre of the harvester to the centre of the haulout. This large distance will require a very long and heavy elevator.

Image 4: Harvesting 2 m dual rows with an extended elevator allowing two rows between the harvester and the haulout. The elevator has a 900 mm extension over the standard length.

Fronts

Cane which is grown on the 2 m system is typically grown with 800 mm between the dual rows and this produces large stools which are difficult to feed into a conventional harvester. EHS manufacturing in Mackay has widened the fronts to 1300 mm of several machines used to harvest cane on the 2.0 m dual row systems.

Base cutters

Standard base cutters with 630 mm centres are not suitable for harvesting dual rows at 800 mm. To overcome this issue some growers have reduced the distance between the dual rows to 600 mm. The other option is to widen the base cutter box and this procedure has been under taken on several machines by EHS manufacturing in Mackay where the base cutter box has been widened to 780 mm.

Image 6: Modified harvester front with 1300 mm wide throat and 780 mm wide base cutters and 2 m track centres.

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