

# Cane planters used in controlled traffic farming systems

The Farming System is not a one-size-fits-all recipe, but rather the adoption of the concepts of controlled traffic and reduced tillage, and the use of a fallow legume break crop to break disease cycles and reduce compaction.

Where modified equipment is needed it has been developed. However, in many cases existing farm machinery can be used to implement the concepts of the improved farming system.

This fact sheet looks at the cane planters that are used in the Farming System and how existing equipment has been modified to suit the new systems. The types of planters used in the Farming System are:

1. Conventional cane planters
2. Wide-chute planter
3. Dual-row planter
4. Double-disc opener planter

## 1. Conventional planters

Conventional cane planters are either whole-stick or billet planters, each with a planting chute of about 250 mm wide. These planters are used to plant a single row of cane into flat ground. After the cane has been planted, it is left in a furrow with steep sides. Usually, the first cultivation after planting is undertaken with a cutaway. This is done to give some shape to the furrow and to control the first flush of weeds.

In the controlled traffic farming system, these planters are used to plant a single row of cane at a 1.8 m wheel centres.

### Benefits

- Conventional planters are common on most farms and allow change to a controlled-traffic farming system with no additional capital investment.

### Issues

- Narrow stools that have been planted on a wide (1.8 m) spacing can take a long time to give canopy closure. This can lead to weed-control issues in some cases. To overcome this, some growers have increased the width of the planting chute to create a wide-chute planter.

- Conventional planters do not allow reduced tillage as the steep-sided planter furrows need to be cut-away to produce a suitable planting furrow, and additional cultivation is required to hill-up the plant cane to allow for harvesting.
- Conventional planters require high cultivation, so they are unsuitable where trash is retained from a fallow legume crops. Research has shown it is best to leave the stubble of legume crops standing and plant through it - this is not possible with conventional planters.



**Image 1:** Conventional whole-stick planter - note the deep planter furrow.

## 2. Wide-chute planter

Wide-chute planters are billet planters that have had the planting chute widened to 350-500 mm. In many cases, a divider is used in the centre of the planter chute to send the billets to the edges of the chute so that emerging cane appears like dual rows.

The planting rate is normally increased from about 7 t/ha to 10 t/ha, and while the higher planting rate produces a large number of initial shoots many of these stool die out before harvest making the higher plant rate unnecessary.

These wide-chute planters are used to plant into flat ground and leave a fairly flat profile after the planter. Typically, growers use herbicides or tined cultivation units to control weeds in these systems, as it is not necessary to cutaway as the planter leaves a flat profile.

### Benefits

- Modification from a conventional billet planter is fairly straight forward
- A wider planter chute and higher planting rate lead to faster canopy closure as the interspace is narrower than where a conventional planter is used.
- The flatter planting furrow needs less tillage than in a conventional planting system.

### Issues

- The higher planting rate does produce more initial shoots, but many of these die out before harvest. Trials have shown that reducing planting rates to 5 t/ha with good quality planting material does not result in yield loss.
- The wide chute creates considerable soil disturbance and requires more horsepower than the narrower conventional chutes.
- As with conventional planters, the wide-chute planter can not plant through legume trash.



**Image 2:** 500-mm wide chute on a billet planter. Note the small covering disc.



**Image 3:** Young plant cane planted with a wide-chute planter - note the width of the stool and the open planter furrow.

### 3. Dual-row planter

Many growers who have moved to controlled-traffic systems have also adopted a dual-row farming system. This typically has two rows of cane planted 500 mm apart. With dual rows the canopy closes faster and weed control is improved.

Most dual-row planters are billet planters that have two feed chains, with one chain feeding each planting chute. The planting chutes on dual-row planters are typically narrow chutes about 150 mm wide.

Dual-row billet planters with planter chutes are used to plant both into flat ground and into preformed beds. A problem with dual-row planters is how to hill-up between the two rows, as it is difficult to move soil from the inter-space through a row of cane to the area between the two rows. To overcome this issue, many growers who use dual-row planters leave a ridge of soil between the two rows at planting. This soil is used later in the hill-up stage.

Most dual-row billet planters use a planting rate of about 10 t/ha, similar that used by wide-chute planters.

### Benefits

- Faster canopy closure than single rows gives improved weed control.

### Issues

- Much more planting material used than with conventional planters
- Hilling-up between the dual rows can be difficult, but this can be overcome by leaving a ridge of soil between the two rows of cane.



#### 4. Double-disc-opener planter

The early double-disc-opener planters were manufactured from a whole-stick planter. This was done so that the cane fed into the two discs could be managed better and allowed the discs to be placed very close together with only about 50 mm of clearance at the back of the discs.

A disc planter that has large discs and only opens a narrow 50-mm-wide furrow allows these planters to plant through cane trash or legume stubble.

Later, the double-disc concept was adapted to suit billet planters. The space between the backs of the discs was increased to 150 mm, but, while this modification allows a greater volume of cane to be planted, it also results in an increased area of soil disturbance.

Double-disc-opener planters usually use lower planting rates than other planters. Many whole-stick double-disc-opener planters plant about 3 t/ha, while many double-disc-opener billet planters plant about 5-7 t/ha.

Double-disc-opener planters are ideal for planting through cane or legume trash on existing preformed beds. Once the cane is planted, no further cultivation is needed and weeds can be controlled with herbicides and suppressed by the trash.

Double-disc-opener planters have been setup as either single-row or dual-row machines - dual-row machines are the most popular.

##### Benefits

- No further cultivation needed after planting
- Can plant through trash
- Accurate placement of billets by the planter
- Moisture conservation
- Little soil disturbance

##### Issues

- Because the planter creates a narrow furrow, canegrub insecticides can not be placed in the recommended 150-200 mm band.
- In a zero-till situation, the depth of soil cover is limited to the planting depth.



**Image 5:** Cane planted through trash with a single-row double-disc-opener planter.



**Image 6:** Young cane planted with a dual-row double-disc-opener planter into preformed beds.



**Image 7:** Dual-row double-disc-opener planter.



**Image 8:** Cane planted into preformed beds with a double-disc-opener planter - note the standing stubble and low soil disturbance.



**Image 10:** A double-disc-opener setup on a wide-chute billet planter.



**Image 9:** A double-disc setup.

### Benefits of adopting a controlled traffic farming system

The improved farming system is about adopting the concepts of controlled traffic, reduced tillage and fallow legume break crops.

- All of the current planters used in the industry can be used to plant rows of cane at 1.8 m or wider spacing to allow for the adoption of controlled traffic
- When moving to a wider row spacing the area between the rows is increased leading to increased weed pressure and time to canopy closure. To overcome this issue many growers have adopted either a wide single row of cane or a dual row where two rows of cane are planted 500 mm apart.
- If all the Improved Farming System concepts are to be adopted then the dual row double disc opener planter is the most suited. This planter is capable of planting through soybean stubble from fallow break crops and by planting dual rows plant populations cane be maintained.