Sugar Research Australia

Information Sheet

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Billet quality – a key element for planting success

Planting is a major cost to the industry. It is important to get good plant establishment, as it affects your ongoing returns through the crop cycle. Careful attention to the many components of the billet planting system will ensure a successful strike.

For optimal germination rates the following items need to be assessed:

- Seed cane quality
- Harvester set-up to minimise damage
- Planting rates
- Effectiveness of fungicides
- Placement of billets
- Press-wheel set-up.

Seed cane quality

Good quality billets.

Poorly cut billets.

You should only plant good quality, disease-free cane from an approved seed source. Plan ahead:

1. Determine what varieties and volumes of cane will be required for planting.

2. Grow cane specifically for plants. Cane should:

- Be erect with short internodes, this can be achieved through reduced fertiliser rates.
- Have at least two buds per sett.
- Be less than one year old.
- Be no more than three years off hot water treatment.

Note: Approved seed is already one year off hot water treatment when purchased. New approved seed should be introduced onto the farm at least every second year.

Harvester set-up for cutting good quality billets

For billet planting, it is best to use a modified harvester to cut undamaged billets between 250 and 300 mm long. Samples of planting billets should be taken and inspected for split or crushed ends and damaged eyes.

Many commercial cane harvesters have variations in feed roller speeds and aggressive 'teeth' on rollers. This causes highly variable billet length and damage to eyes, which in turn will reduce germination rates. Modifications such as rubber coating rollers and feed-train optimisation to match all roller speeds to chopper speed can significantly improve the quality of planting billets.

Modified harvester – rubberised rollers.

Commercial harvester – aggressive feed-train.

Quality assessments to determine the quantity of viable billets have shown:

- Whole stick planter – 80% viable billets.
- Modified harvester (optimised/rubberised) – 70% viable billets.
- Commercial cane harvester – 30% viable or less.

Cutting lodged cane for plants significantly reduces the level of viable billets, even with a fully modified harvester. It is also important to reduce speed when harvesting for billet planting. This minimises trash levels and avoids overloading the choppers, which can cause billets to become squashed on the ends and split.

Planting rates

The target planting rate is four to six eyes per metre to establish three primary shoots per metre. Key points to remember for planting rates include:

- Higher planting rates will not guarantee a suitable plant stand.
- Excessive tillering may mean unnecessary use of nutrients and moisture.
- For lower planting rates good quality billets are essential.
- Assess the number of viable eyes prior to planting to ensure good strike.
- Need an even feed of billets with no gaps.

Increasing the amount of cane (depth of cane) covering the elevating slats will increase the billet metering rate. Whilst billet planters don't have a consistent metering system, it is important to ensure that the depth of cane remains constant which will allow for a more even billet distribution.

Calculating Planter Output (t/ha)

Step 1

Run the planter over 10 metres, collect the billets and weigh.

Step 2

Planter output (t/ha) =

$$\frac{(\text{Sample weight kg}/10) \times (10{,}000/\text{row spacing m})}{1000}$$

Effectiveness of fungicides

Effective fungicide application is necessary to prevent Pineapple sett rot. Billets must be cleanly cut and protected with an appropriate fungicide such as Shirtan, Tilt, or other cane sett treatments.

Planters that use fungicide sprays must be correctly set up to ensure that both ends of the billet and any growth cracks on the billet are covered. If there is insufficient coverage, check nozzles for correct positioning and ensure there are no nozzle blockages.

If the planter uses a dip for fungicide application the dip must be kept clean. Mud in the dip will reduce the effectiveness of the fungicide. Pineapple sett rot is caused by a fungal infection which is favoured by planting damaged billets and/or cold, dry or wet soil conditions.

Placement of billets

The amount of soil cover over the sett, soil temperature, and moisture content influence the speed of germination. With good soil moisture, 25 to 50 mm of firmed soil is sufficient coverage.

Press-wheel set-up

Correctly set press-wheels enhance crop establishment. It is best to use large diameter pneumatic wheels, with wheel width matched to the planting furrow width. Significant press-wheel forces are required to create adequate sett to soil contact. Down force should be in the range of 2 to 4 kg per cm of wheel width. For example, for a 15 cm wide press-wheel, down force should be in the range of 30 to 60 kg. This can be easily checked using bathroom scales.