Germinating ideas

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After a cool start for many areas and reports of sandblasting from several very windy days, the crop has struggled to get established. Black root rot and wireworm damage has also reduced and delayed establishment in several areas.

Day degree records show that many areas are behind long-term averages up to mid November. Central Queensland is the exception to this with day degrees close to or above long-term averages.

CROP DEVELOPMENT

It is important to know the stages of crop development. This is useful for early and mid season monitoring of squaring nodes. Table 1 gives day degree requirements for crop stage development from planting.

Fruiting branches appear at regular intervals of about 45 day degrees.

A total of about 1200 day degrees are required for crop maturity.

In a season with a cool start and many cold shock days, it takes additional day degrees to reach first flower — approximating 5.2 day degrees per cold shock day

TABLE 1: Crop stage day degree requirements

Crop Stage	Day degrees required
Emergence	80
5th true leaf	330
1st Square	505
1st Flower	777

Craig McDonald in a crop of Sicot 80 at Emerald.

SEED EMERGENCE TRIALS

CSD has been conducting seed emergence trials for five years and these trials have shown that weather and field conditions at and after planting will have the biggest influence on plant stand establishment. Seed quality has been high after dry picking seasons in recent years. Having good quality seed is one of the keys to establishing an ideal plant stand.

Table 2 shows the emergence and establishment numbers for two varieties at the CSD conventional trial at Emerald. The crop was planted on September 18, 2003 and has experienced warm ambient soil temperatures since planting. This establishment is one of the highest over the five years that the trials have been conducted. The crop was watered up. Soil temperature at planting was 18°C. Soil temperatures during emergence ranged from 19°C to 22°C and very little evidence of seedling disease was recorded despite heavy stubble levels.

This highlights the difference between establishing cotton crops under variable conditions

Table 3 shows the germination and final

TABLE 2: Seed emergence and establishment at Emerald

Variety	Stand. germ%	SVI	Seeds/kg	Seeds planted/m	Total emerged per metre	Final Stand per metre	% emerged	% Losses	Final Est. %
Sicot 80	96	185	9500	11.8	11.3	11.2	96	1	95
Sicot 71	96	181	10,330	11.6	10.7	10.6	92	1	91

TABLE 3: Seed emergence and establishment at St George

Variety	Stand. germ%	SVI	Seeds/kg	Seeds planted/m	Total emerged per metre	Final Stand per metre	% emerged	% Losses	Final Est. %
Sicot 80	96	183	9360	14.9	9.4	9.4	63	0	63

Seedlings damaged by sandblasting.

establishment at the St George conventional trial. The trial was planted on September 29, but 16 mm of rain combined with temperatures as low as 7°C slowed emergence dramatically and resulted in just an average establishment level. Post emergent disease was not evident at this site despite heavy stubble levels.

SANDBLASTING

There have been reports of sandblasting of cotton seedlings in many areas this season. This has not been a problem for several years and is area and weather specific.

Severe winds and dust storms can cause damage to young cotton that normally then needs replanting if damage to growing points is severe enough. There were incidents where strong winds followed heavy rainfall that brought sand and silt particles to the surface. These particles were then blown across the plants causing the damage. Field areas adjacent to farm roads were also damaged from finer particles blowing from the road surface.

The amount of damage appears to be very dependent on soil type, ground cover, cotton row orientation, flat or hilled country and the size of the cotton seedlings when the winds hit.

TABLE 4: Bollgard background

CSX Experimental Number	CSD Commercial Name
CSX 405B	Sicot 289B
CSX 415BR	Sicot 289BR
CSX 404B	Sicala 40B
CSX 414B	Sicala 40BR
CSX 401B	Siokra V-16B
CSX 413BR	Siokra V-16BR
CSX 409B	Siokra V-18B
CSX 407BR	Sicala V-3BR

Lillistons being used to roughen a seed bed in a previously sand blasted field.

There are several things that can be done to help reduce the risk of sandblasting:

- Maintain ground cover and trash levels on the surface.
- Hilled up or rough surfaced seed beds may reduce the impact.
- Row orientation at right angles to the direction of prevailing winds.
- Cultivating (eg lillistons) the rows to 'rough up' the seedbed soon after emergence. This is important on long fallow fields.
- Tree shelterbelts can help with problem areas. Research has shown that wind velocity can be reduced up to 25 times the height of trees into a field.
- Leaving a 'windrow' along the edge of farm roads to catch sand blown from their surfaces. This could be a strip of winter cereal that could then be ploughed in after the cotton is established.
- Not pulling, raking and burning fields that have a predisposition to sandblasting.

John Marshall, CSD Dalby, in a Bollgard II crop at Emerald.

NEW BOLLGARD II LINES LAUNCHED

The CSIRO lines available commercially in the 2003–04 season have been officially launched. This follows four years of testing in both small plot and commercial evaluations. They have been derived by conventional backcrossing from conventional lines and have included the addition of Roundup Ready technology in several of them.

The naming of these varieties is an important part in the cycle of the Bollgard II lines as it represents the commercialisation of the experimental lines to full release to the Australian cotton industry. Knowing the backgrounds of these new Bollgard lines can be of great assistance in managing the crop even though there can be large differences in plant physiology and agronomics given potentially higher fruit retention in the Bollgard II lines.

Trials and commercial areas planted this season were carried out using the CSX line numbers, a system used by the CSIRO and CSD in bringing experimental lines through to commercialisation. These varieties are being trialed in both irrigated and dryland situations as well as full disease screening.

Great emphasis is placed on fibre quality data from both small trial plots and larger commercial sized areas so that the full spectrum of data can be collected and fully analysed.