

Influence of seed quality and temperature on field emergence

By Tony Heckendorf, Deltapine Australia

Dr Tom Kerby was recently in Australia where he was involved in a series of grower meetings and industry field days throughout the cotton-growing regions. At these meetings Tom addressed the issues of achieving good yield and quality after a cold start to the season, as well as physiological aspects of seed vigour and emergence.

During the presentations Tom also presented data on the resulting cotton emergence using seed of varying quality subjected to a range of temperatures.

The data from trials conducted in 1987 by Tom Kerby and others, highlights several interesting points.

Final plant stand achieved is influenced mainly by temperature but also by seed quality. Temperature is the main driver of emergence and a certain number of day degrees need to be accumulated for seed to emerge.

Both good and poor quality seed behave similarly under warm conditions and require roughly the same day degree accumulation for plant stand establishment. But under cooler emergence conditions, poorer quality seed needs more day degrees to establish a stand, than good quality seed.

This means that poorer quality seed will take several days longer to emerge under cooler conditions than good quality seed. The longer emergence period means seedlings will be exposed to seedling disease pathogens for a longer period before establishment. The longer exposure to pathogens results in a greater likelihood of seedling losses to diseases such as *Rhizoctonia*, *Pythium*, *Fusarium* and black root rot during emergence.



Dr Tom Kerby

TABLE 1: Seed vigour index (SVI) ratings for Deltapine seed

	SVI rating
<i>Poor quality</i>	< 120
<i>Fair quality</i>	120-139
<i>Good quality</i>	140-159
<i>Excellent quality</i>	> 160

In any season the conditions experienced during planting can vary quite dramatically. The choice of good quality planting seed becomes an important way of minimising seedling losses and reduces the likelihood of an expensive replant.

Deltapine recommends the use of the Seed Vigour Index (SVI) by growers to gain a better understanding of seed quality issues. The SVI is determined by adding the four day warm germination percentage and the seven day cool germination percentage figures together to arrive a number out of 200.

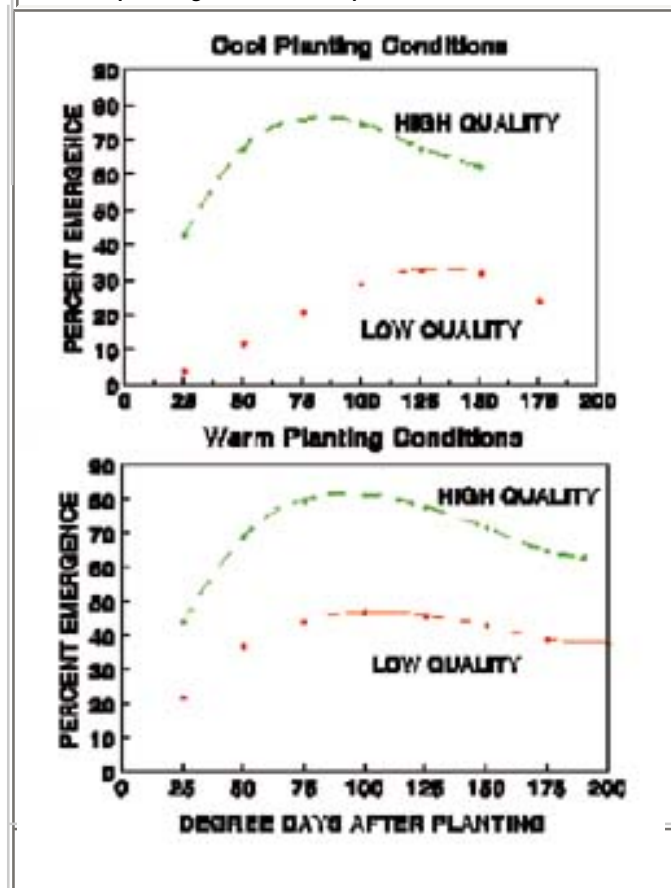
The SVI rating does not provide a guide to the expected field performance of a seed lot. But it does give a better estimation of the ability of a seed lot to emerge under adverse conditions than the standard germination percentage.

To assist growers on seed quality Deltapine has put in place a set of minimum standards for growers to look for. For Deltapine to sell seed the following standards must be achieved:

- Minimum of 80 per cent standard nine day warm germination;
- Minimum of 60 per cent seven day cool germination; and,
- Minimum of 140 Seed Vigour Index (SVI).

For more details contact Deltapine Australia Pty Ltd at Narrabri on ph: 02 6792 5233 or at Narromine on ph: 02 6889 2888.

FIGURE 1: Plant emergence based on seed quality and temperature



Seed quality is especially important under adverse conditions.