

CottonInfo: Connecting growers with research

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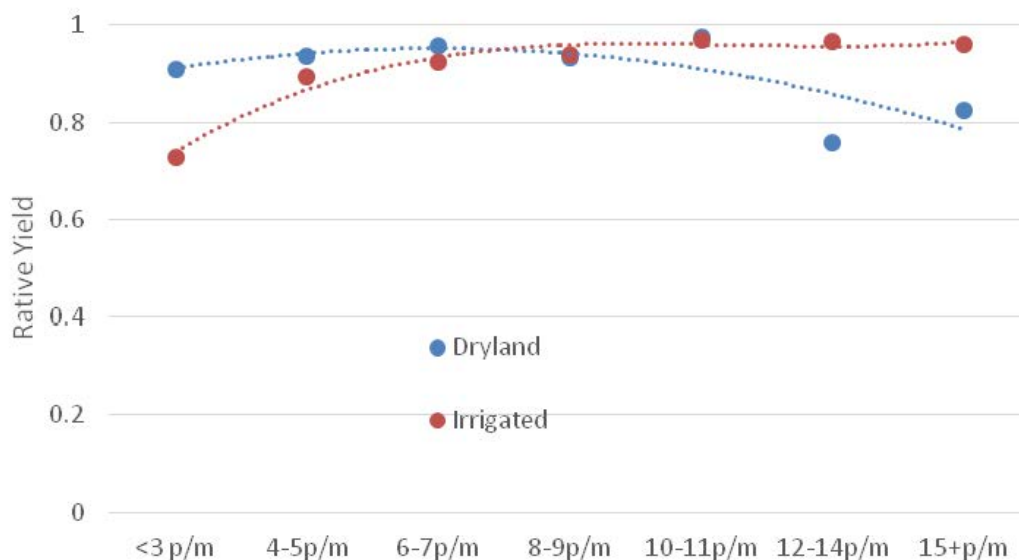
Plant 2016: prep, plant & establish

Establishing the cotton crop is a critical operation, setting the standard for the entire season.

Here's what you need to know, courtesy of CottonInfo partner [CSD](#) and the [Australian Cotton Production Manual](#).

Target plant population:

To optimise your yield, you should aim for an evenly spaced plant population from 8-12 plants per metre in irrigated conditions, and between 5-8 plants per metre in raingrown. You need to avoid gaps greater than 50cm, verified by many years of experiments in Australian conditions. The below graph is a summary of CSD's irrigated and raingrown trials showing the relative yield of differing plant populations.



There are some situations where growers should target the upper or lower end of this range. See page 86 of the 2015 [Australian Cotton Production Manual](#) for more.

Planting rate:

The key considerations when determining how much seed you need is your desired plant stand, the seed size and seed quality for the variety you are growing, and how many seeds survive. On average, there are about 11,000 seeds/kg, however there will be slight differences between varieties. The average seeds/kg for each variety is printed on the bag and available via the [CSD website](#).

Seedling survival:

Seeding survival is rarely 100 per cent, so you can never bank on seeds/ha and plant/ha being the same. Key considerations:

- **Bed condition:** uneven or cloddy beds can result in uneven seed depth and seed/moisture contact, resulting in staggered germination and gaps. Stubble can act as a physical barrier to seedling planting or emergence and hinder the uptake of moisture by the seed.
- **Soil temperature:** Ideal soil temperatures for cotton establishment are 16°C-28°C. Temperatures below this result in slow emergence and increased chance of soil diseases.
- **Soil insects:** particularly wireworm, can attack young seedlings. Seed treatment insecticides will control them but because the insect needs to feed on the plant before it dies, some plant loss can still occur.
- **Seedling diseases:** such as rhizoctonia, pythium and fusarium can kill young plants during and after emergence. This will be more prevalent at low temperatures, where there are high levels of crop residues and in fields with a history of disease.

Many of these factors are unavoidable and the best and easiest way to manage them is to increase the seeding rate. Plant population trials carried out over numerous seasons have shown there are more disadvantages in having a plant population that is too low than there are to having one too high.

Planter setup:

Ensure your planter is well serviced and operational well before planting time because breakdowns in the field can rob you of time and allow surface soil moisture to further dry away. [This video, featuring Andrew Whitby, a precision farming technician with the David Evans Group, talks through pre-season planter maintenance.](#)



Planting depth:

The depth you want your seed depends on the establishment method and soil and seed bed conditions you are intending to establish your crop. If you're planting into moisture (rain or pre-irrigation), the ideal depth is 2.5 to 4.5cm. If you're planting dry and watering up, the ideal depth is 2.5cm. For important considerations re these two establishment methods, see page 88 of the 2015 [Australian Cotton Production Manual](#).

Planting time:

The ideal planting time will vary between seasons and districts.

- **Start time:** Planting should not occur until minimum soil temperatures at seed depth are maintained at 14°C or more for three days and rising. Planting at temperatures below this will diminish seedling and root growth, reduce water and nutrient uptake and the plants are much more susceptible to seedling diseases and insect pests.
- **End time:** Agronomically, the end date is more important in short season areas where early crop maturity is essential. This is evident by the comparison of ideal planting times for northern, central and southern regions (see page 89 of the 2015 [Australian Cotton Production Manual](#)).

Where season length allows, planting slightly later has a lot of advantages.

For more information?

- Read the 2015 [Australian Cotton Production Manual](#) chapter on crop establishment.
- Talk to your local [CSD E&D team member](#), or your local [CottonInfo RDO](#).
- Watch [this video on planting tips](#) featuring CSD's John Marshall.

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John Marshall, CSD

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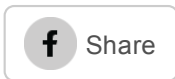
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