

Row Configuration Considerations in semi-irrigated situations.

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Skip row configurations have been successfully used as a management tool in dryland and semi-irrigated cotton. Skipped row works on the principle of increasing the volume of soil that the roots of cotton plants have to explore thus increasing the reservoir of available moisture. This increases the time before a crop will come under moisture stress, should rainfall not be forthcoming and allows for better use of in-crop rainfall.

Will Skip Rows Work for Me?

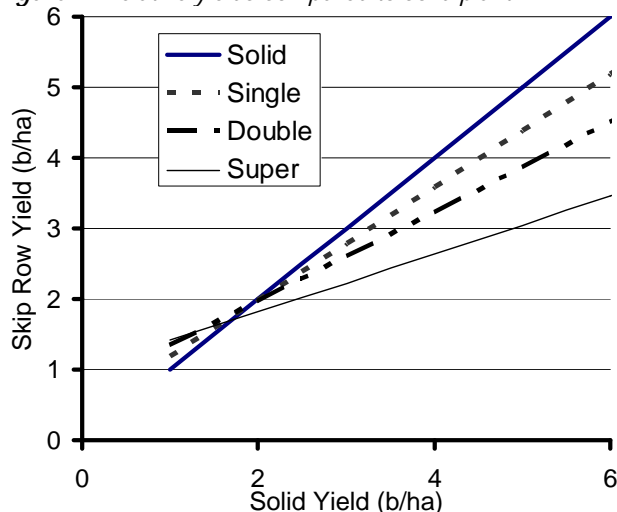
For skipped rows to work effectively, cotton roots need to be able to move easily into the skip row areas. Anything that inhibits this will decrease the advantages of the 'skip' concept. For example, tighter, hard setting soils will restrict root growth into the skip thus negating the benefit. In these situation less skipped rows should be considered.

What Configuration to Use?

Selecting a row configuration is similar to considering any other cropping situation, assessing both the returns and associated costs.

Many experiments, conducted over more than a decade by many involved in the industry have compared row configurations and under both dryland and semi-irrigated situations, and hence over a wide range of yields. The collated data from all these experiments gives a good guide of yield differences at various yield levels (Figure 1). For instance single skip may be 19% lower yielding than solid plant while double skip may be 34%; a difference more pronounced at higher yield levels.

Figure 1: Relative yields compared to solid plant.

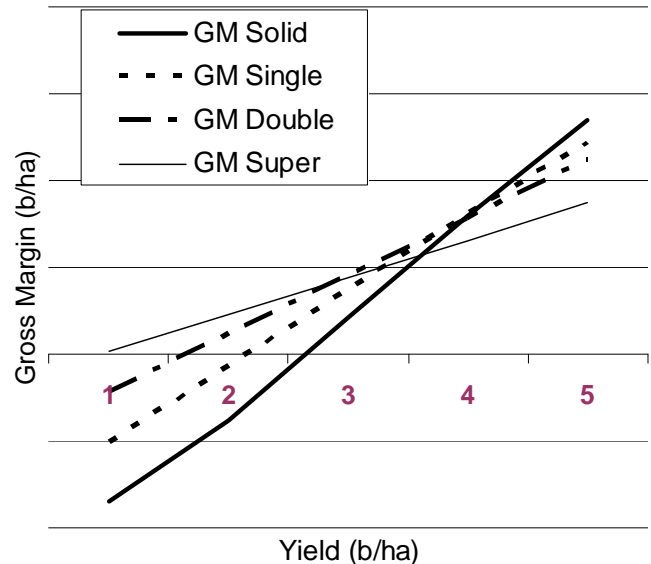


Other advantages of skip row configurations can be:

- Fewer fibre discounts, particularly for length in situations where water is limiting around flowering.
- Lower costs per ha resulting from less license fees, less seed, lower picking and insect control costs.

For these additional reasons, the trend in gross margins can be very different (Figure 2).

Figure 2: Relative gross margins compared to solid plant.



Using an analysis such as this, a grower can get an indication of which configuration may be most appropriate. A potential yield figure can be identified from personal experience or someone else's, the amount of stored soil moisture, average rainfall for the area and the seasonal forecast.

What about planting solid and removing some area later?

In some seasons, growers have planted solid with the option to convert some country to skip row by ploughing out the alternate rows. Not all experiences with this option have been positive.

The benefits of converting some area of cotton to skip row will obviously vary greatly, depending on rain or increased allocation for the rest of the season. Bruce Pyke (now with CRDC) did a number of experiments with this at Biloela in the early 1990s, with the following observations:

- The advantages of skip row are that, should there be little or no rain for the rest of the season, it may buy some time in which to benefit from rainfall and there may be a yield and fibre quality benefit.
- If the soil profile is relatively dry or the crop is in stress when the skip rows are removed then the roots of the plants may not reach out into the skip row and there will be no potential advantage gained.
- If there was an increase in allocation after the skip row was imposed, irrigations intervals may be greater but each irrigation may use as much water as solid plant. Skip row will limit yield potential in this situation.
- Skip row tends to have more benefits in heavier, cracking soils than lighter or hard setting soils, both in the ability of the roots to move through the profile and the capacity to capture moisture from rainfall events.

Note: If growers decide to abandon or skip row Bollgard II® cotton, consideration needs to be given to the impact that this will have on their refuge requirements.