PLANTING CONSIDERATIONS FOR RAINFED COTTON

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Australian Rainfed Cotton has been grown with startling results over the last 10 - 15 years. We have had some growers in the more favoured areas averaging over 2 bales/ acre while growers in more marginal areas have left the industry due to unprofitability.

As the bulk of our crop has always been irrigated, the largest part of the research dollar has been spent on irrigated cotton. Rainfed cottongrowers have largely taken this data and used it directly on their farms. In more marginal situations this would appear to have some drawbacks.

In these marginal areas we often have to break the golden rule of "1m. of moisture or no planting" and risk planting with somewhat less than ideal reserves. Growers have financial commitments, crop rotations, and cotton sale contracts to meet, and have little choice but to plant. In the last few years this has been coupled with exteuded periods between rainfall events. It is under these conditions and on soils without high moisture holding capacity that skip row cotton is of most benefit. We have been in a quandary lately as to what is the best row configuration. We started growing cotton on double skip coufiguration and originally enjoyed a couple of good seasons. Under these conditions we felt that we were loosing yield potential and we were having trouble managing spray application on very large bushes at times - on fresh country growth can be very hard to control. Growth regulants are a very effective tool but are difficult to use in a dryland situation where there may only be several days between actively growing and moisture stress with no idea of when the next watering is coming, if at all. We then tried some solid cotton in a year with good subsoil reserves but little in season rainfall until near the end. The late rain set extra fruit on our double skip but none on the solid , although it would be reasonable to expect that fruit size was enhanced. Both crops yielded the same at about 1 bale/acre. Had we not received the late rain, the solid

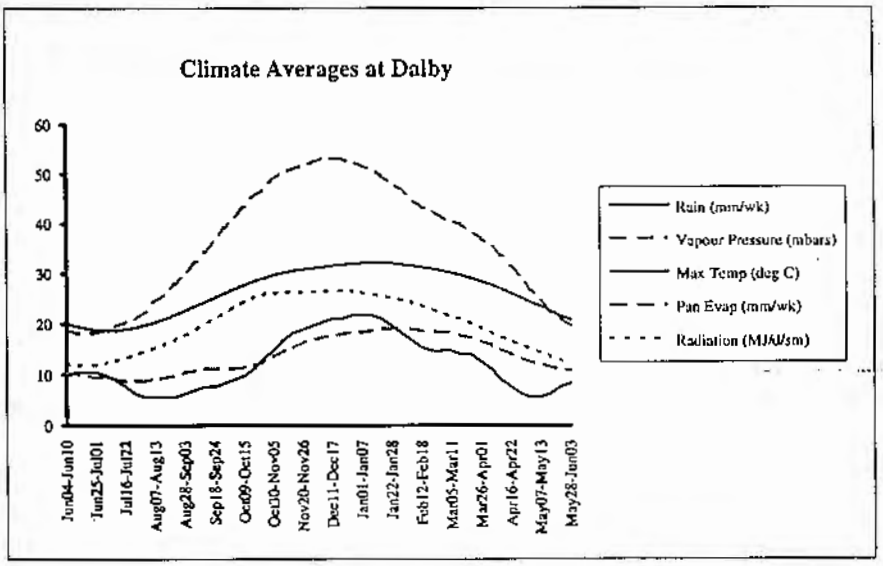
would have outperformed the double skip. With such a small crop we had little problem applying all our sprays with ground rig.

In the light of this we decided that single skip appeared a sensible compromise. It allows us to keep bush size down for easier spray application and lets us straddle the row throughout the season for scuffling and spraying operations. We are able to use 8 row gear with small cultivating or marker extensions and an 18 metre boomspray which covers 2 planter widths. We can use four row pickers efficiently be disconnecting one head which allows us good picking distances. This subject is being covered comprehensively elsewhere and by and large I agree with Bruce Pyke's papers. However, if we were planting early onto less than full moisture I would consider double skip, and later planting would always be single skip. However double skip can lead to wind and water erosion problems if stubble cover has not been maintained. In the light of this our intention is to be flexible in future.

Because rain grown cotton has ridden on the shirt tails of irrigated we have believed that earliness was important. It appears to me that earliness is regularly a distinct disadvantage in the hotter drier rain grown areas. Every year for the last 4 years we have seen October or even late September planted crops reaching peak fruit load in mid January coinciding with severe heat and moisture stress, shedding up to 2/3 of their fruit and receiving rain in late January or early February to be picked in March or early April. In these situations double skip is obviously the better choice of row configuration.

However, if we are confident of receiving planting rain, an even better approach on a percentage of our crop would appear to be to delay planting till early/mid November. By this time we have had an early germination of weeds, the thrips and wire worms are generally gone and the crop emerges and grows very quickly. It then reaches peak fruiting about late January in much more favourable weather conditions and having received an average for our area of an extra 50mm of in crop rainfall plus an extra 50mm of fallow rain before the later planting (1month). Delaying planting by 4 weeks from early October till early November

seems to delay peak flowering by only about 2 weeks, although, with the cooler finishing conditions, harvest is often delayed by 4 weeks.



DALBYAC3.XLS 11/6/94 Source: J.F. Clewett - Austclim Data Page 1

The above chart shows climate averages for Dalby. Although our rainfall peaks from mid December to mid January, our pan evaporation also peaks through this period at a much higher rate. Our vapour pressure is at a maximum at the end of January and I believe this is the best time for a crop to reach maximum moisture use. Obviously, it is in years of low SOI figures that this approach will work the best. Figures for Dalby show that for years when the SOI for August, September, October is -5 or less there is an average 18% more pan evaporation and 21% less rainfall than years of +5 or more SOI. Obviously, if we have no confidence in climatic forecasting then we will have trouble using this data - however it is of value in my opinion. In seasons where we have full subsoil reserves and when the SOI for August, September and October is +5 or greater or appears to be heading that way, then early planting in single skip would be our preferred option. In seasons where the SOI is -5 or less

or heading that way, and when subsoil reserves are not full, then double skip or later planting would seem to be the logical option.

We have always been led to believe that raingrown crops mustn't be planted late because of the high cost of stage 3 insecticides. The early crops generally require 1 or 2 stage 3 insecticides and these mid November crops about 2 more - an extra 0.06 bale/acre cost , not withstanding the fact that these crops generally avoid any thrip, mirid or wireworm control and, because they grow so fast, often get be with few if any Stage 1 sprays - with the resistance pressure on Endosulthan and Pyrethroids and the disadvantages of using O.P's early, this may be a distinct advantage. Because of the slightly reduced time to set fruit, and because of the improved growing conditions, I believe that single skip is an obvious choice for later planted crops. Obviously, in our conditions, we prefer a longer season indeterminent crop for our early plant. An alternative to this on a portion of our crop which may be worth consideration, may be to use low rates of chemical (possibly Prep, Pix or Glyphospate) to keep the young plants dormant until later in the season. This would allow us all the benefits of later planting without running the risk of not receiving planting rain when we want it. With the crop not actively growing it may not be so attractive to insects and should require little control throughout this dormancy period - however weeds would still be a problem. We intend to trial this approach this year, and would appreciate hearing of any other work that may have been done on this, or other ideas that may be of value. In our area, there have been numerous instances of crops that have been damaged by chemicals yielding in excess of undamaged crops. It appears to me that the future of raingrown cotton depends to a large extent on whether we can develop systems that allow us to grow profitable crops without high inputs in unfavourable years, while still leaving us the potential to maximise returns should the season turn around. Gettting our crops to reach peak moisture usage in this more favourable time (late January) is the key to acceptable yields in unfavourable years.

More research on climate forecasting to improve it's accuracy and usefullness will clearly have massive benefits for raingrown cotton in our area.