

## Innovations in Agriculture

John Norman, Norman Farming, delivered at the 2009 Macintyre Valley Cotton Field Day  
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Thank you very much Charlie and could I also say a big thank you for all the work that has gone into the field day from the committee led capably by Dave Kelly. Sponsors and representatives - your presence here is very much appreciated.

Also to everyone who has taken the time out of your busy work program to attend - thank you and welcome from the team at Norman Farming.

I was reading a book the other day about a true agricultural pioneering family - the Duracks and one quote really hit me.

“Success in Australia depended largely on one’s talent for quick adaptability and rapid summing up of the implications of a changing time.” This was from the journal of Patsy Durack in 1855.



This really hit me because after more than 150 years it applies across ag industries as much today as it did then.

In our little part of Australia we have had to adapt quickly from Net \$ margin per ha to Net \$ per megalitre. Our limited resources currently are peoples time and water.

Soon no doubt we will have to adapt back but growing as much produce as possible off as little water as we have through the droughts has been as important as nailing the big crops in the better seasons. This has been our Challenge.

The hardest thing in Duracks time was to keep realistic, positive and survive the drought and not much has changed in that regard.

If we thought it was tough here in the last few years imagine turning up on your wagon south of a future place called Quilpie in the 1860’s in full blown drought with people throwing spears at you. We have got it so easy in comparison!

The other night the cycle changed in a matter of 1 hr from not enough water for next yr to enough water to start next yr but too much now. 1 hr!!

I believe we need to focus on our most limited resources, Water & Time, to make the best use of what we have and be careful not to lust after what we don’t have. You only had to drive past the Cotton on your way in to see what too much water can do. You also can look down some rows on the farm to see the earlier drought wasn’t wonderful either. It is obvious though from looking down these rows in W11 that you can get a lot of Cotton from one well timed irrigation in a below average rainfall season.

We have achieved this from closely studying Hodgsons 48 kg/ ha / day of lint loss through water logging to 4 – 19 kg/ ha/ days Hearn & Constable loss through water stress. This has driven our system to focusing on the most productive tipping point of water application.

We try to balance impending weather, crop stage & yield potential by water on hand and when we should make the \$300 per ha passes (1.5 mls \* \$200 ml) - Or cut out our Cotton. We cost water in our sums at \$200 meg (probably should be higher) as it allows us a base to compare our options realistically and frees us from the burden of swapping or even losing real dollars at the end of the year.

It is interesting this is only exceeded by Ginning in cost per ha and we often agonise over whether to spray by ground or aerial - much more than we do our ginning which is sometimes 100 times dearer @ \$600 ha vs the \$6 spraying saving. We have tried to apply more time to where it benefits us most.

We spend quite a bit of time viewing experts ever changing climate models and use a cost benefit analysis, this is better described by Dave McCrae in his email which I believe was attached to the booklet. I firmly believe that it has grown us a lot of Cotton. We think a lot of Cotton has been lost by not taking into account the climatic changes that develop by the hr. This certainly takes micro management but it is worth it as we are dealing with such a valuable pass that effects the crop so much. This is well illustrated by the deathly flat line on the probes when a rainfall event corresponds with an Irrigation - it is also well represented in the lint loss numbers I have just quoted.

Having the confidence that we get it right 7/8 times out of 10 helps enormously. We may pull up a \$300 ha irrigation in the afternoon only to turn around the next morning as the weather change has weakened - but this is done as we know more often than not we have made Cotton from doing so.

I have attached nearly all the weather sites I view into your booklet. We firmly believe getting the latest info on weather models promptly is vital to our operation. Tony and I use Blackberries for viewing the web page weather info as well as other info. The peak workload that is exerted when we do get the intense 1 hr of rainfall like the other night is only just possible through hard work and some helpful tools - the modern manager has plenty to choose from. I like the Blackberry as we can pull the strobing radar from Elders out of our pocket to see which pumps to start first. We can send emails or get sent an email and voice to text messages that I receive in poor phone range - which is mostly all we have. We can view a fax as well. We can take photos to confirm or remember things. We can also quickly synchronise our data so we have the paddock data and previous sprays and the office in our pocket when we are putting the all-important footsteps in the paddock. It keeps people where they would prefer to be out and about rather than waiting for an email or fax at the office.

In future travelling back to a pump to simply check it is working correctly will be as simple as clicking on a webpage on the Blackberry. We believe this will cut servicing of pumps to once a day and immediate notification of problems will be more timely than just whenever the pump running cycle is on. I must apologise for not having our pump controls in my Blackberry but this has been delayed and will be ably explained by the newly appointed Observant dealer in Goondiwindi PIVOT Irrigation through Mark Schmitt after my speech. He has experience in the operation of other Pump telemetry as does Charlie Mccfarlane, so soon we will be able to check & operate our pumps with our phone as well!

It is obvious that communication is hard on a farm with poor mobile range but having the right tools and a well placed high gain antenna helps enormously in our operation where time is so valuable.

Having the right information & being able to communicate well and maintain strong working relationships is vital. Dad & I benefited remarkably from taking the time to focus on our relationship, which was greatly assisted by attending Jabiru's 3 day course on Human Resource Management studying Myers Briggs type indicators with Rod Strachan. I found out Dad was actually an Introvert - among other things, and that I believed it was important for people to have a clear job description. After this experience Dad treated me a lot differently, as did I with Dad and we changed things about our job descriptions and how we were operating the farm as they were incompatible with both our personalities - and the Benchmarking we had been doing with Boyce.

My experience working for and with my mother and father has been deeply empowering and enjoyable as they have let me set goals that are compatible with theirs and get on with the job of achieving them in a team environment that suits our personality and abilities. Prior to spending time on our relationship we were in a typical farming father-son relationship that was not working as well as it eventually did. It is always interesting to me that Mum had been benefiting from studying our personalities through Myers Briggs for yrs prior to us doing the course which we were silly enough to initially dismiss as poppycock.

The use of a lot more contractors was the result with an on farm Agronomist employed to oversee the operation's ever-changing program, deliver the contractors their job instructions along with other tasks, and ensure timeliness. This has resulted in a lot less Chinese whispers and removed some burdensome layers of middle management. This has let the Farm Manager / Agronomist drive the crop from what is the best use of time at an hr by hr basis. It has also allowed us to work together on sharing the responsibilities of the bigger decisions by talking them through with sound crop science as our backbone and the crop's welfare as our central discussion point.

Job descriptions were really important to me as there is inevitably some crossover on the family farm. I note Cotton Australia's new web page has examples of these that I wish I had when I first tried to piece ours together. The other thing the webpage is going to have is further steps to make BMP implementation easier.

Cotton Australia's Bec Smith has just helped us through the process of having our farm recognised as BMP compliant. I must say we have been involved with BMP back to when John Woods was working for Cotton Australia in the early 90's and have built our farm around its ideals & manuals. In the past we hadn't gone the extra step of being BMP accredited due to a range of factors that are unimportant now. It is now so quick to do so.

Tony & I have also become certified as BMP Farm Managers with 3 others around Toobeah. We are soon to receive a Diploma through this program.

I am a full sign bearer for BMP now as its cost benefit ratio is so high. When we do new things on the farm they are quicker, safer and legal without wasted time & money spent on things that aren't required or rules that are out of date. They also allow us to be more farm proud and allow us access to copying best practice off what other people have done to get compliant more cheaply. The copying allows us to have better, stronger, safer farm systems to work with. It is also more efficient to put up a safety sign with a map on the back than to tell people where to go in the middle of a busy plant or pick. Gundy Signs have done a great job with this and again Bec has provided us with some excellent imagery to do some great maps with. I urge you to re examine what BMP could achieve for your farm.

Another task that we hadn't done that cost us dearly in the 90's was not having our dams properly surveyed and gauged. This has helped us do a realistic water budget at any date along with Farm Hydrology. Our applications of water onto the fields are more accurately measured. We don't use .75 ml from a quick flush as I had hoped. Unfortunately it is not unusual for dam sizes to be out by 20% on the wrong side. Add the 2 problems together and combined with other myths/ rules of thumb and there is no wonder we used to run out of water. If we are going to bet on getting x amount of rain or inflow by y- time to get through or cut crop out we need to know exactly how much water is available because there is no turning back once we have put on the water.

The use of contractors has helped us improve our timing & quality of operations while decreasing our Overheads. Our overhead cost per bale or ton is the biggest pain in the guts during the drought and a core driver of under-performance. So reducing this cost to a per ha per pass cost is so important to us as we can budget effectively for this. We have also kept some excellent long term experience in the form of Ron & Darby Hohn in the tractor seats telling us where we are going wrong in each paddock. The benefit of experience cannot be underestimated. There was never a truer comment than that one which is in the Boyce comparative analysis most years: "Top-class results cannot be produced without having a top-class team who are efficient, focused, motivated and stable". This is something we continue to work on a daily basis.

This year we based our crop decision on what had happened in similar production years on my own model of the climatic circumstances for a rapidly rising soi back to 1883. We also did an example on average rainfall for our circumstances. There were 21 yrs in this soi type. With some of them below average rainfall and we would have never missed and when the below average season eventuated we didn't. However if we had gone through and planted some of our fields with low starting moisture we would have missed.

We balance the comparative fallow go forward costs of around \$70 ha for 1 in 1 out. The soil moisture is a moving target but worth at least \$300 ha for Cotton. The dynamic that will make us plough out the crop come January would have also evaporated soil moisture as has been demonstrated to us through the software "how wet". If ploughed out relatively early which would happen under the low rainfall dynamic the little plant would not have used that much moisture or Nutrient and be able to have a go again next yr given a fullish bucket.

We get no more benefit from more than an approx 1 yr full fallow achieving a full bucket. We can't plant as profitable crop after the 30<sup>th</sup> of November in most areas in most price years. A full profile will get us to break even in Cotton with no further water in all but the cruelest years. As you will see or have seen in Tony's presentation the upside is nice as well if viewed over a longer term cropping cycle of 8 wins and 1-2 losses. You can plough out Cotton in these years and not be stung by residuals or Monsanto.

We are aiming for flexibility and to do what is profitable most often. We want to be on fine Cotton just like the insiders were, only we want to be growing it purely legitimately!

The inside rail is where CSD have allowed us to be with the excellent assistance of David Kelly and James Quinn. The variety comparison tool is a cracker. We could work out from reliable trial data that we were better to plant Sicot 70BRF than take the free seed option that we were initially keen on. Also the many different tools and information that is on their web page is very factual and scientific. Given what we learnt on the comparison tool about Sicot 70BRF we planted a good deal more of it earlier in the piece than we would have. This performed on average around a bale to the hectare better than it nearest rival in our previous solid plant yr. That bale certainly has been handy in the last few years. Dave has put a skip row trial out here that has got smashed in both this year and last year by various things but the contact and seed from CSD have made me a better grower.

Our own trials of 1 in 1 out, also seeing last yrs crop grown from nothing at Christmas time has strengthened our belief in the system. It's a great way to limit the downside to not much if planted on good moisture as the ability of the 1 in 1 out plant to access moisture during an average summer is exceptional. It also opens up the season to let you have a go at some profit. It also will allow more Cotton to be grown in Australia as we can make the decision to proceed later in the summer by cutting out or leaving to grow rather than the traditional plant 'only what you have water for' @ sowing. It does take more discipline however is a vital tool for Monsanto and us.

Another couple of cost control mechanisms that we use are the Hohns GRA with GPS. This allows us to have good straight rows to plant into moisture. This allows more even application of water as no wide narrow guess rows. This allows us to partially pull fields down for spot lasering if required an example will be this W16 field where we have a hole in it which we will just pull down that section and spot laser it.

The swath control by Jason Campbells John Deere Greenstar has lowered our application rates in all fields. The ones that are uneven have more than 8% saving and when you are fitted with Greenstar already shows a good cost benefit.

We have also used PCD maps to pull parts of field out due to uneconomic plant stand and be specific about where to. It has also shown us what problems we have had and how to fix them as well as how to place our probes properly with assistance from an EM Survey as well as what dams to empty first.

What does all this mean for us? Based on Boll numbers we should harvest around 7000 bales off a starting position of 1000 megalitres, Double cropped from Sorghum and Corn. We will achieve a far greater crop profit from a season where rainfall & stream inflows were again below average.