MINIMUM TILLAGE TO IMPROVE OPERATIONAL EFFICIENCY

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1. INTRODUCTION:

As a result of a major fall in world cotton prices, the Namoi Cotton Co-operative has been actively looking at ways of reducing costs on cotton farms.

Michael Boyce and Company, Accountants of Moree, NSW completed a survey involving 15 growers for the 1984/85 season. The average cost of production for those surveyed was $693 per acre, and the production costs for the 20% most profitable growers averaged $627 per acres. These figures agree with the information I have gained from speaking to cotton farmers in the Gwydir and Macintyre Valleys.

One particular farming operation is that of "Leigh Taylor Pty. Ltd.", owned by Dick Estens and managed by Doyle Thompson. Their production costs appear to be lower than average and can still be reduced by using minimum tillage and improving overall operational efficiency. Their total production costs for the 1984/85 crop were $593 per acre.

The following review was put together by Dick Estens, Doyle Thompson and myself to encourage growers to look hard at total efficiency involved in cotton farming.

2. BACKGROUND:

"Leigh Taylor Pty. Ltd." began cotton farming in 1981 and picked its first cotton crop in 1982, yielding 2.65 bales per acre over 475 acres. The following season proved disastrous yielding only 1.10 bales per acre due to lack of water. In 1983/84 the company was irrigating 935 acres with an average yield of 2.1 bales per acre, with over half the area requiring re-planting due to hail.

With the high price of cotton, Leigh Taylor Pty. Ltd. expanded and bought out a neighbour lifting its irrigatable acres to 1400. They also bought more equipment to cover the expanded area and almost immediately after purchasing this and the additional land, cotton prices started a marked downward trend. Hence the need for the company to look seriously at further ways of reducing costs.

The target aims for the company are:

* to better the district average by at least 0.4 bales per acre but

* not to necessarily spend heavily in order to achieve the highest yields in the district.

Todate they seem to be holding about halfway between the district average and the highest yields in the valley, but at lower production costs.

In 1985, the yield difference above the district average more than covered the interest and principle for that year.

3. MINIMUM TILLAGE:

In 1984 Thompson, Erickson and White developed the "Row Runner", in the "Beela" workshop because of continued wet weather. At this stage prospects for an early planting were dim due to continued wet soil conditions. The alternatives to a permanent seedbed seemed to be:

* Spend another $62,000 and buy a stalk puller or

* Middle bust the existing beds which would not have helped soil structure, especially due to the wet weather.

* Develop the "Row Runner".

The "Row Runner" is a low cost, efficient 4 row implement which removed the slashed stalk in a reverse rotary action, leaving the existing beds ready for gasing.

Two hundred acres of the 1984/85 crop on "Beela" and "Cockatoo" were prepared using this new concept.

Operations involved:

* Slashing
* Row Running
* Gasing with Disc Hiller (this can be incorporated in future with the Row Runner as one operation.)
* Planting (Cotoran and Stomp applied in a band behind the planter.

This programme allows soil moisture to be conserved and so obviate the need to pre-irrigate or waterup.

Experience gained from the above system includes:

(i) Make sure the slasher does not "windrow" cotton stubble (existing rotary slasher required modification to spread the material uniformally.)

(ii) Winter weeds should be sprayed as required by first week in September to minimise soil moisture loss.

(iii) Winter weeds such as Black Oats, Rye, Phalaris etc. can help soil structure. However, prevent nitrogen robbing weeds such as wireweed taking over.

(iv) Remember, with minimum tillage, avoid working the beds unnecessarily.

This system of minimum tillage in 1985/86 has reduced direct costs in the operation by $46 per acre. It has also greatly improved the overall operational efficiency by reducing the number of field operations and so, lowering the total production costs by $90 i.e. to $504/ac. in total.

Estens expects to lower this by a further $60 this coming season by expanding to eight row gear and lowering fuel costs.

4. EXPANDING ACRES TO REDUCE COSTS:

In June 1985, Estens and Thompson realised that if they were to stay in business they had to reduce costs even further. Minimum tillage released surplus equipment and manpower which could be utilized to sharefarm a further 850 acres at "Cockatoo" on top of the existing 1400 acres of cotton at "Beela". By increasing the area of irrigated cotton without increasing machinery or manpower levels, they were able to reduce their overall cost, as shown in the following table.

THE EFFECT OF ACREAGE EXPANSION ON COSTS

TABLE 1.

PARTICULARS	COMMENTS	1985 Crop 1400 Acs $ per Ac	1986 Crop 2225 Acs $ per Ac	1987 Crop Est. 3100 Acs $ per Ac
Wages	3 Men + Casuals	57.14	43.96	38.77
Fuel/ Electricity	Conventional Year Ripped 1200 acres Minimum Tillage 200 ac	60.71		
	Sharefarm Gravity Watera. No pumping costs on Sharefarming		31.46	22.58
R & M	Total Plant & Vehicles + River Pumps	38.29	35.05	29.03
Contractors	Mainly Grader Hire	4.59	2.42	1.00
Freight Hire	Module Freight + Local Freight	16.25	18.32	16.13
Chipping		16.26	15.46	14.84
Growing Costs	Fertilizer,Insect Herbicide,Aeroplane Defoliation,Channels Interest on Crop Terms	175.00	196.85	182.00
WRC & Rates	1400 Ac.(Only on Beela)	8.57	5.52	4.84
Siratsc & Agronomy	Reduces with scale	10.25	12.58	8.00
Insurance	Workers Comp & Machinery	8.57	7.59	5.48
Accountant		2.86	1.79	1.29
Administration	Phone, Rego's, Sundries	7.43	4.85	3.48
Depreciation	- 6 Row Plant & Pickers $800,000 x 20% Dep.	114.29	71.91	
	- $800,000 + $50,000 for 8 row equipment x 20% Dep.			54.84
Wages	Proprietor) Manager)	48.57	30.56	21.94
Seed		10.00	10.00	10.00
Hail Insurance		10.00	11.00	11.00
Tarps & Rope		5.00	5.00	5.00
Extra 9940 & Module Builder				12.90
Totals:		593.78	504.32	443.12

By sharefarming the additional 850 acres, the overall yield of 2.92 bales per acre was reduced to 2.70, i.e. the total amount given away to the Landowner on an operational basis, was equivalent to 0.22 bales per acre. By increasing the sharefarming to 1700 acres in 1987 and budgeting on 2.5 bales per acre, the total yield given away would be 0.28 bales per acre.

TABLE 2.

PRODUCTION COSTS COMPARED TO ACREAGE INCREASE
INCLUDES LANDLORD SHARE

A. 1985 Crop - 1400 Acres.

Actual Gross Income 3.1 b/a x $280 p/b	= $868.00 p/acre.
Production Costs (Table 1)	= $593.78 p/acre.
Total Costs	= $593.78 p/acre.
Farm Operating Profit	$274.22 p/acre.

B. 1986 Crop 2225 Acres.

Actual Gross Income 2.92 b/a x $240 p/b	= $700.00 p/acre
However, after paying Landlord 20%,	= $648.00 p/acre
Production Costs (Table 1)	= $504.32 p/acre
Plus amount given to Landlord	= $ 52.00 p/acre
Total costs	= $556.32 p/acre
Farm Operating profit	$143.68 p/acre

C. 1987 Budget - 3100 acres

Budget Gross Income 2.5 b/a x $220 p/b	= $550.00 p/acre
However, after paying Landlord 20%,	
Yield Share is 2.22 x $220	= $488.00 p/acre
Production Costs (Table 1)	= $443.12 p/acre
Plus amount given to Landlord	= $ 62.00 p/acre
Total Cost	= $505.12 p/acre
Farm Operating profit	$ 44.88 p/acre

From Table 2, if principle and interest repayments on existing property are $150,000 divide this by the three different acreages and the overall committment level per acre reduces significantly. This applies to all other fixed costs i.e. hire purchases and leases on machinery etc.

e.g. 150,000 - 1400 $107.14 p/acre
150,000 - 2225 $ 66.67 p/acre
150,000 - 3100 $ 48.39 p/acre

Dick said "we proved in our operation the working capital to farm the increased area (i.e. 2225 acres), did not increase a lot overall, due to minimum tillage." He will increase the 1987 crop to 3100 acres, with only a small increase in working capital due to extending to 8 row equipment and the lowering of fuel prices.

5/ EFFICIENCY OF MAN AND MACHINE:

With the heavy committment of minimum tillage, Estens and Thompson would like to see permanent beds for 2 to 3 seasons. At this stage the ideal rotation for 2000 acres appears to be 1500 acres prepared under minimum tillage and the remainder 500 acres being ripped. With these parameters table 3 is a good guide to machinery and staff requirements.

TABLE 3:

IRRIGATED ACRES

500 Acres	1000 Acres	1500 Acres	2500 Acres	3000 Acres
1 or 2 Tractors	2 Tractors	2 Tractors	2 Tractors	4 Tractors
1 x 6 Row Farming Plant	1 x 6 Row Farming Plant	1 x 8 Row Farming Plant	1 x 12 Row Farming Plant	2 x 8 Row Farming Plant
1 Proprietor or 1 man plus Casual at Pixkinf	1 Proprietor or 1 Manager + 1 man & casual at Picking	1 Proprietor or 1 Manager + 2 men & casual at Picking	1 Proprietor or 1 Manager + 2 men or 3 Tractors 2 x 8 Row F/P 3 men & casual. at picking.	1 Proprietor or 1 Manager + 4 men & casual at Picking
+Row Runner	+ Row Runner	+ Row Runner	+ Row Runner	+ Row Runner

6. IMPROVING EFFICIENCY OF PICKING

This is the hardest area to reduce costs. Experience on "Beela" this year has shown that "Siokra" can be picked 7 to 10 days ahead of DP90. Combined with an early planting growers in the Gwydir Valley should be planning to pick cotton between the 1st and 2nd week of April.

Historically, by the end of April winter sets in and dew occurs a lot earlier and takes longer to lift with picking rarely commencing before 10.00 a.m. This year "Leigh Taylor Pty. Ltd." picked 24 hours per day for the first two weeks. There was no drop-off in grade or turnout. The company owns and operates 2 x 9910 and 1 x 9940 John Deere cotton pickers. For the first two weeks of picking these machines averaged 100 acres per 24 hour period. Since the 5th May, 1986 after 70 mm of rain, the machines averaged 65 acres per day.

It is very important to pick as long as possible in these early weeks of warm weather, otherwise extra pickers may be required and this will reduce cash flow. With pickers going 24 hours a day, servicing was carried out on the run - twice a day. The downtime was only about one hour per machine. It is very important that pickers be justified. The operation described has averaged 500 hours per machine per season.

7. BUDGET CONTROL

To maintain high operational efficiency and bankers confidence, good finance control is a must. This can be achieved easily with the following system (time required - 1 hour per week).

Requirements:
(a) Cash Sheet
(b) Budget Sheet
(c) Budget to Actual Sheet

A. Example

Cash Book - July to June

Date	Partic.	Chq.N. No,	Total	Wages	Fuel	R&M	R&M Cont. Nos.	Frt.
2/5	J.Brown	065	225.20	225.20				
3/6	Fuel	066	1500.00		1500.00			
4/6	Chester field	067	2000.00			2000.00		
4/6	Fuel	068	2000.00		2000.00			
End of month.								
Monthly Total			5725.20	225.20	3500.00	2000.00		
Cumulative				225.20	3500.00	2000.00	Keep adding previous month	

Above Cash Book compiled off Cheque Book.

* Remember $1 saved can be 100% Nett Profit.

Budget Sheet 2 Years (June till June).

Particulars	June	July	Aug	Sept	Oct.
Wages	5000	5000	5000	5000	5000
Fuel	4000	4000	4000	4000	4000
R & M	2500	2500	2500	2500	2500
R & M Contract		1500			1500
Freight	20000		5000		
Monthly Total	31500	13000	16500	11500	13000
Cumulative Total	31500	44500	60100	72500	85500
Income 1985 Crop		4000			
Income 1986 Crop	50000	50000	10000		5000
Total	50000	54000	10000		5000
Cum.Total	50000	104000	114000	114000	119000
Cash Flow	+18500	+59500	+53000	+41500	+33500

C.

BUDGET TO ACTUAL SHEET

Budget (June till June)

Particulars	June	June	July	July	Aug	Aug.
Wages	5000	Fill	5000		5000	
Fuel	4000	in	4000		4000	
R & M	2500	Blank	2500		2500	
R&MContractors		Spaces	1500			
Freight	20000	from Cash Book at the end of each month			5000	
Monthly Total:	31500		13000		16500	
Cum. Total:	31500		45000		60100	
Income 1985			4000			
Income 1986	50000		50000		10000	
Month Total	50000		54000		10000	
Cum. Total	50000		104000		114000	
Cash Flow	+18500		+ 59500		+ 53000	

Note: Farmers in these hard times should always plan to gross in income per year their total debt load. A positive cashflow of 15% can usually be obtained to cover interest.

CONCLUSIONS:

According to Estens and Thompson, for the Australian cotton farmer to survive the next two years, he must become more efficient and reduce his costs - costs can always be reduced and efficiency improved as the Australian farmer has proved in the past. Minimum tillage can greatly reduce costs, however, it needs to be adopted by more growers in the industry.

ACKNOWLEDGEMENT:

Special thanks to both Dick Estens and Doyle Thompson for their assistance in the preparation of this article.