A DIAGNOSTIC PROCEDURE FOR FARM BUSINESS MANAGEMENT ANALYSIS

M WHEELER

South African Cane Growers' Association, PO Box 1278, Durban, 4000

Abstract

The analysis of the state of a farm business is a process that many embark on and few conclude. The reasons for this include the lack of meaningful farm records, unclear business goals, conflicting measures of success and a lack of understanding of the linkages between 'financial' and 'physical' performance. In order to accurately comment on the state of a farm business, a comprehensive diagnostic procedure that accurately evaluates farm business performance is needed. This paper outlines such a procedure developed in the Midlands over the past five years.

Introduction

There are many accepted measures of the state of the farm business. These include physical measures such as yields as well as financial measures such as balance sheet ratios. As most farm businesses are family concerns with the emphasis on practical farming, these measures may be overlooked and result in erroneous or meaningless conclusions. The following procedure attempts to outline a simple yet comprehensive diagnostic procedure for evaluating farm business management.

The diagnostic procedure – a hypothetical case study

"We have just finished the cane season and our overdraft is worse than when we started – we are worried about our profitability for the coming season and do not know what we are doing wrong." Quote – A. Farmer, February 1998.

Presenting recorded data for analytical purposes

There are a number of ways of presenting and analysing information. Balance sheets and income statements are merely two of an extensive range of possibilities dealing with different aspects of a business entity. Table 1 represents a summarised budget layout that lends itself to profitability analysis of a farm business.

From the data in Table 1, the following important observations can be made:

- The farm business incurred a loss of ±R200 000 during the 1997-98 season.
- The cane and vegetable enterprise net margins were positive.
- The dairy and beef enterprise net margins were negative.
- The total enterprise net margin was positive but not sufficient to cover loan repayments, capital expenditure and non-farm expenses.

Table 1. Actual physical and financial data recorded by A. Farmer during the 1997-98 season.

Client: A. FARMER	Date: FEBRUARY 1998				
Dryland area	150				
Irrigated area	0				
Harvest area	70				
Replant area	20				
New establishment area	10				
Ratoon area	50				
Tons cane	6 300				
Sucrose %	13,5				
Tons sucrose	851				
A Pool sucrose	700				
B Pool sucrose	151				
A Pool price	948				
B Pool price	770				
	Total	**Dairy**	**Beef**	**Veges**	**Cane**
Gross Income	**1 159 485**	**100 000**	**80 000**	**200 000**	**779 485**
Consumables	13 500	5 000	1 000	4 000	3 500
Seed	27 000	1 000	1 000	25 000	0
Packing Materials	30 000	10 000	0	20 000	0
Livestock	70 000	40 000	30 000	0	0
Chemicals	59 000	4 000	0	15 000	40 000
Fertiliser	155 000	20 000	20 000	20 000	95 000
Fuel and Lube	55 000	5 000	2 000	8 000	40 000
Mech Maintenance	150 000	10 000	4 000	16 000	120 000
Contract Work/Plant Hire	0	0	0	0	0
Transport	75 000	0	10 000	5 000	60 000
Crop Insurance	13 000	0	0	10 000	3 000
Levies	8 500	3 000	2 000	2 000	1 500
Labour Costs	255 000	30 000	10 000	15 000	200 000
Other	0	0	0	0	0
Variable Costs	**911 000**	**128 000**	**8 000**	**140 000**	**563 000**
Gross Margin	**248 485**	**-28 000**	**0**	**60 000**	**216 485**
Salaries	0	0	0	0	0
Fixture Maintenance	26 000	6 000	0	0	20 000
Electricity/Coal	27 000	10 000	0	10 000	7 000
Water/Rates	0	0	0	0	0
Administration	15 000	0	0	0	15 000
Short Term Insurance	30 000	0	0	0	30 000
Licences	3 000	0	0	0	3 000
Lease	0	0	0	0	0
Rent	0	0	0	0	0
Fixed Costa	**101 000**	**16 000**	**0**	**10000**	**75 000**
Total Costs	**1 012 000**	**144 000**	**80 000**	**150 000**	**638 000**
Enterprise Margin	**147 485**	**-44 000**	**0**	**50 000**	**141 485**
Add Capital Income	0				0
Less Loan & HP Paymnts	150 000				150 000
Less Investmnts & Assets	20 000				20 000
Less Non-Farm Expenses	180 000				180 000
Surplus/Deficit	**-202 515**	**-44 000**	**0**	**50 000**	**-208 515**

The following recommendations may be made from these observations:

- The dairy and beef enterprises need to be analysed individually. If a long term projection does not show that they can make positive enterprise net margin, they should be discontinued.
- The cane enterprise should be individually analysed, as a positive net margin does not adequately indicate the performance of this major enterprise.
- Loan repayments and non-farm expenses need to be further investigated within the context of the cane enterprise.

It is not within the scope of this paper to further analyse the dairy and beef enterprises. Analysis of the cane enterprise is outlined below.

The cane enterprise

In order to further analyse the cane enterprise, it is necessary to generate a reliable standard. Given that the SACGA cost compilation figures (actual recorded data) for the 1997-98 season are not available as yet, it is not possible to compare A. Farmer's business performance with an actual average. However, a reasonable estimate of this average was produced by taking cost data for seven years from the most recent available SACGA cost compilation surveys. These data were inflated to 1997-98 levels using appropriate indices. Adjustments were made in some instances, as averages were not appropriate, i.e. levies and transport. Table 2 shows these estimated 1997-98 level costs per area under cane (AUC), together with the associated average physical information.

As the historical average physical information will not be equal to the average for the 1997-98 season, data in Table 2 needed to be extrapolated according to estimates of the average physical information for the 1997-98 season. In order to do this the costs in Table 2 were first allocated to broad operation categories that would have been carried out on the farms from which the data was taken. The results are shown in Table 3.

With an estimate of the individual costs allocated to various operations, extrapolation according to average physical data for the 1997-98 season was possible. This is shown in the column headed 'Extrapolated average for 1997-98' in Table 4, together with the associated variation. As A. Farmer's physical data for 1997-98 differed from this average, an estimate of the average cost structure for a farm performing the same operations as A. Farmer was generated in the same way. This is shown as the column headed 'Cost comparable average' in Table 4, together with the associated variation. Significant variations are indicted by *****.

Significant observations from Table 4, together with relevant comments, are summarised in Table 5.

A. Farmer now has a comprehensive diagnostic analysis of his farm business for the 1997-98 season. Each category identified by this procedure can be analysed against an appropriate set of standards and specific remedial action recommended.

Conclusion

The diagnostic procedure outlined in this paper can be used effectively to identify and quantify areas of concern in a farm business context. It remains to prescribe sensible remedial measures and to manage the effective implementation of these measures within the parameters of the farm business.

Table 2. Average physical and cost data for one hectare under cane in the south Midlands (cost data inflated and adjusted for 1997-98 season).

Physical information	Physical data per AUC
Total dryland area	1
Harvest area	0,5
Replant area	0,1
Ratoon area	0,4
Tons cane	43,48
Sucrose %	13,50
Tons sucrose	5,87
Cost item	**Total costs per AUC**
Consumables	24
Seed	28
Chemicals	198
Fertiliser	577
Transport	450
Fuel and Lube	267
Mech Maintenance	531
Tractors	*231*
Implements	*65*
Labour Costs	1 134
Wages	*801*
Rations	*273*
Fixed Costs	
Electricity/Coal	75
Water/Rates	2
Administration	121
Short Term Insurance	115
Licences	12
Lease	33
Rent	0
Contract Work/Plant Hire	0
Total Costs	**3 733**

Table 3. Estimated operation costs in the south Midlands (inflated and adjusted for 1997-98 season).

Cost	Fixed cost per AUC	Harvest costs per ton cane	Transport costs per ton cane	Planting costs per ton cane	Ratoon costs per hectare ratooned
Consumables		0,55			
Seed				282	
Chemicals				396	396
Fertiliser				1 270	1 125
Transport			10,35		
Fuel & Lube	53	2,64		455	134
Mech Maintenance	106	4,89		956	292
Crop Insurance		0,43			
Levies		0,18			
Labour Costs	283	11,21		1 020	652
Other	41				
Salaries	8				
Fixture Maintenance	90				
Electricity/Coal	75				
Water/Rates	2				
Administration	121				
Short Term Insurance	115				
Licences	12				
Lease	33				
Rent	0				
Contract Work/Plant Hire	0				
Total Costs	**939**	**20**	**10**	**4 380**	**2 600**

Table 4. Comparison of A. Farmer's data with actual and extrapolated averages for 1997-98.

Actual data for 1997-98 season			Extrapolated averages			Cost comparable averages		
	A. Farmer total	A. Farmer per AUC	Average per AUC	Variation		Average per ha	Variation per AUC	
Dryland area	150	100%	100%	0%		100%	0%	
Irrigated area	0	0%	0%	0%		0%	0%	
Harvest area	70	47%	50%	-3%	*****	47%	0%	
Replant area	20	13%	10%	3%	*****	13%	0%	
New establishment area	10	7%	0%	7%	*****	7%	0%	
Ratoon area	50	33%	40%	-7%	*****	33%	0%	
Tons cane	6 300	42,00	45,0	-3,0	*****	42,0	0	
Sucrose %	13,5	13,5%	13,2%	0,3%		13,5%	0%	
Tons sucrose	851	5,67	5,94	-0,27	*****	5,67	0	
A Pool sucrose	700	4,67	5,05	-0,38	*****	4,67	0	
B Pool sucrose	151	1,00	0,89	0,11	*****	1,00	0	
A Pool price	948	948	948	0		948	0	
B Pool price	770	770	770	0		770	0	
	Cane							
Gross Income	**779 485**	**5 197**	**5 473**	**-276**	*****	**5 197**	**0**	
Consumables	3 500	23	25	1		23	0	
Seed	0	0	28	28		56	56	
Packing Materials	0	0						
Livestock	0	0						
Chemicals	40 000	267	198	-68	*****	211	-55	*****
Fertiliser	95 000	633	577	-56	*****	629	-4	
Fuel and Lube	40 000	267	271	5		300	33	
Mech Maintenance	120 000	800	539	-261	*****	600	-200	*****

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Contract Work/Plant Hire	0	0	0	0		0	0	
Transport	60 000	400	466	66		435	35	
Crop Insurance	3 000	20	19	-1		18	-2	
Levies	1 500	10	8	-2		7	-3	
Labour Costs	200 000	1 333	1 151	-183	*****	1 176	-158	*****
Other	0	0	41	41		41	41	
Variable Costs	**563 000**	**3 753**	**3 324**	**-430**	*****	**3 497**	**-256**	*****
Enterprise Gross Margin	**216 485**	**1 443**	**2 149**	**-706**	*****	**1 699**	**-256**	*****
Salaries	0	0	8	8		8	8	
Fixture Maintenance	20 000	133	90	-44		90	-44	
Electricity/Coal	7 000	47	75	28		75	28	
Water/Rates	0	0	2	2		2	2	
Administration	15 000	100	121	21		121	21	
Short Term Insurance	30 000	200	115	-85	*****	115	-85	*****
Licences	3 000	20	12	-8		12	-8	
Lease	0	0	33	33		33	33	
Rent	0	0	0	0		0	0	
Fixed Costs	**75 000**	**500**	**455**	**-45**	*****	**455**	**-45**	*****
Total Costs	**638 000**	**4 253**	**3 779**	**-475**		**3 952**	**-301**	
Enterprise Net Margin	**141 485**	**943**	**1 694**	**-751**	*****	**1 244**	**-301**	*****
Less Loan and HP Payments	150 000	1 000			*****			*****
Less Investments and Assets	20 000	133						
Less Non-Farm Expenses	180 000	1 200			*****			*****
Surplus/Deficit	**-208 515**	**-1 390**						

Table 5. Summary of observations from Table 4.

	A. Farmer's deviation from extrapolated average	A. Farmer's deviation from cost comparative average	Ratio to A. Farmer's cane net margin	Comments
Cane enterprise net margin	-751	-301	n/a	Even if A. Farmer performed exactly the same operations as average, his cane enterprise would be significantly less profitable
Gross income	-276	n/a	n/a	Lower than average, needs to be investigated
Physical performance				
Harvest %	-3%	n/a	n/a	Harvested lower proportion than average
Replant %	3%	n/a	n/a	Replanted greater proportion than average
Establishment %	7%	n/a	n/a	Established greater proportion than average
Ratoon %	-7%	n/a	n/a	Ratooned a lower proportion than average
Tons cane per AUC	-3	n/a	n/a	Lower yield than average per AUC
Tons cane per ha harvest	0	n/a	n/a	Same yield as average per ha harvested
Sucrose %	0,30%			Higher sucrose perecntage than average
Conclusion: Low gross income per AUC is related to nature of physical operations performed during the 1997-98 season, not to production problems				
Variable costs	-430	-256	n/a	Even if A. Farmer performed exactly the same operations as average, his variable costs would be significantly greater than average
Chemicals	-68	-55	n/a	Overspent: needs investigation
Fertiliser	-56	-4	n/a	No further investigation
Mech maintenance	-261	-200	n/a	Overspent: needs investigation
Labour	-183	-158	n/a	Overspent: needs investigation
Fixed costs	-45	n/a	n/a	Not significantly overspent
Short term insurance	-85	n/a	n/a	Overspent: short term policies need investigation
Loan repayments	n/a	n/a	106%	Overspent: debt asset ratio and loan structure needs investigation
Capital expenditure	n/a	n/a	14%	Not overspent
Non-farm expenses	n/a	n/a	127%	Overspent: tax structure, drawings, and life insurance need investigation