

## Performance indicators and benchmarking in Australian agriculture: synthesis and perspectives

Ross H Wilson<sup>1</sup>, AA Charry<sup>2</sup>, and DR Kemp<sup>2</sup>  
Charles Sturt University, Schools of Accounting<sup>1</sup> and Rural Management<sup>2</sup>  
Orange NSW 2800 Australia  
[rwilson@orange.usyd.edu.au](mailto:rwilson@orange.usyd.edu.au)

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**Abstract:** Performance indicators and benchmarking for Australian Agriculture are diverse methods in the hands of professional farm business consultants and farm business related researchers. Integration and common grounds to standardise the techniques have not been attempted so far. This paper provides an overview of the most common whole farm physical and financial performance indicators and benchmarking practices used in Eastern Australia. The review is organised using a *whole-farm family centred approach* rather than an *enterprise oriented approach*. Available information from leading farm business consultants and related researchers has been brought together and the most commonly used physical and financial performance indicators are highlighted. Complementary comments are inserted aiming for an in-depth review of this issue; and the setting of new development proposals to strengthen farm business education, research, consultancy and extension.

**Keywords:** financial benchmarking, performance indicators

### Introduction

The use of physical and financial performance indicators and benchmarking for the financial analysis of farming businesses is a widespread practice in Australian agriculture, though its use has fluctuated over the years. Extensive use of such financial analysis tools is currently evident in the farming sector, mainly by professional farm business consultants and rural accounting firms, however it is also evident there are a multiplicity and diversity of methods and indicators used. This paper, the first in a series, reviews whole farm business performance indicators and benchmarking practices used in Eastern Australia, based upon the available literature. In this paper the authors make no value judgements of the accuracy, from an accounting point of view, of the measures and terminology used as it was not our purpose to check the methods of calculation but more to review the types of indices being derived.

Our aim is not to provide arguments for and against the practice of using performance indicators and benchmarks. We assume that the use of performance indicators and associated benchmarks in the financial analysis of farm businesses is a beneficial tool for assisting effective decision making aimed at improving business performance. Readers interested in a discussion of the issues associated with benchmarking in Australian agriculture are directed to the paper by Ronan and Cleary (2000).

Later papers in this series will focus on: an overview of enterprise performance indicators and benchmarks in use in Eastern Australia; recommending a standard set of whole farm business performance indicators and associated benchmarks, including a procedure (*'Volatility Index'*) for incorporating risk in the recommended set of standardised performance indicators; and an exploration of triple bottom line performance indicators and benchmarks for Australian agriculture.

### Definitions

The literature on Australian farm business performance indicators and benchmarking practices indicates some inconsistencies in the use of terminology. In this paper the terminology adopted is:

**Performance indicator** - A measure of physical and/or financial whole farm<sup>1</sup> or individual enterprise performance. Physical performance indicators usually relate to production outcomes or yields, physical inputs, productivity (yield per unit, and input per unit), and production efficiency with this measuring relationships between yields and inputs. Financial performance indicators usually relate to profitability or earning capacity, liquidity (*i.e.* short term financial stability) and solvency (*i.e.* long term financial stability).

**Comparative analysis** - The comparison of a performance indicator<sup>2</sup> derived for one business with the same performance indicator derived for:

- the same business in one or more previous years
- a similar business or group of businesses (*i.e.* in same district, region, *etc.*) where the performance indicator relates to the same time period and/or previous time periods, and/or
- the industry in which the business is located.

**Benchmark** - A performance indicator value that identifies a specified level of performance. Commonly used levels of performance include:

- 'best practice'
- strong/high/top,
- average/middle,
- weak/low/bottom

**Benchmarking** - Related to 'comparative analysis' in that it involves the comparison of a performance indicator derived for one business with the same performance indicator derived for one or more other businesses. However benchmarking also incorporates a focus on the production (physical and technical husbandry), ecosystem resources management, human resources and business management practices / processes used in the business. Benchmarking therefore focuses on the key variables influencing productivity, profitability, liquidity and solvency. These key variables are becoming widely known as '*drivers*'.

Through 'benchmarking' a farm business manager would:

- measure current physical, ecosystem, social and financial performance
- identify areas of performance where improvement needs to be made
- identify drivers and therefore changes which can be made to current husbandry and business management processes and practices in order to improve enterprise and/or whole farm performance.

Benchmarking is an ongoing practice aimed at continuous improvement which aligns with an increasing interest in quality assurance procedures for production, marketing and business management systems.

### **Whole-farm family performance indicators**

In a previous review Worsley and Gardner (2000) identified some 66 benchmarking programs in use in Australian agriculture across a wide range of agricultural industries. They provided a general summary of those programs and identified the limited number of measures that assess the sustainability of farming systems, but did not progress to a more exhaustive analysis. A subset of those programs will be reviewed in this paper, noting a later paper will explore areas of commonality and propose a standardised set of performance indicators and associated benchmarks.

The family farm is still very common in Australia, even though some of those farms are or have become very large businesses, while others depend upon non-farm income for survival. Analysis of this approach is typified by Clark et al. (1999) who support a whole-farm family approach to business and the utilisation of historical trends. Business comparison methodologies, SWOT (strengths, weaknesses, opportunities and threats) analysis and financial and physical benchmarks are common tools where costs of production, physical land use efficiency and enterprise indicators are central to the process.

<sup>1</sup> In this context a whole farm business is considered to consist of either a single enterprise *i.e.* production (livestock or crop) unit or a combination of 1 or more enterprises.

<sup>2</sup> The performance indicator may be a whole farm or an enterprise performance indicator.

Clark et al. (1999) state there are two key indicators associated with profitability, these being: **disposable income** to pay living expenses, tax bills and capital repayments; and **capital net worth** to ensure investment capacity for asset creation. These key indicators, their calculation and associated benchmarks (Clark et al. 1999) are as follows, noting each indicator would be divided by the number of families being supported if the number of families was greater than one.

DISPOSABLE INCOME		
Farm income	plus	Off-farm income
	minus	Operating costs (i.e. variables and overheads)
	minus	Capital costs (i.e. financial and depreciation)

Benchmarks:

Weak	< \$30 000
Average	\$ 30 000 to \$ 60 000
Strong	> \$ 60 000

NET WORTH		
Farm assets	plus	Non-farm assets
	minus	Total liabilities

Benchmarks:

Weak	< \$ 500 000
Average	\$ 500 000 to \$ 1 000 000
Strong	> \$ 1 000 000

Complementary indicators to the above are identified as follows, noting the related benchmarks are also indicated where possible.

**Production system (Farm Income/ha/100mm)**, which represents the gross value of production based on water use, and is referred to as “**\$ water use efficiency (\$WUE)**”. It enables comparison of production systems, though the benchmarks used would need to be used for comparing farms with similar resources bases and are probably now out of date.

Benchmarks: (\$WUE)	Cropping properties )	Livestock Property
Weak	< \$ 60	< \$ 30
Average	\$ 60 to \$ 70	\$ 30 to \$ 40
Strong	> \$ 70	> \$ 40

**Farm input costs (%)**, which represents an opportunity to match costs to production and expresses farm operating costs as a percentage of farm income.

Benchmarks:

Weak	> \$ 60%
Average	50% to \$ 60%
Strong	< \$ 60%

**Off-farm income**, which is defined as the net farm income received from non-paddock related activities.

Benchmarks:

Weak	< \$ 5 000
Average	\$ 5 000 to \$ 15 000
Strong	> \$15 000

**Effective land value (\$) per family**, which measures the value of the business's effective hectares (not infrastructure)

Benchmarks:

Weak	< \$ 400 000
Average	\$ 400 000 to \$ 800 000
Strong	> \$ 800 000

**Debt servicing (%)** which expresses financing costs as a percentage of total income (on farm and off farm). Financing costs include interest on loans, bank fees and government charges, machinery lease and lease of land.

Benchmarks:

Weak	> 15%
Average	7% to 15%
Strong	< 7%

**Machinery depreciation** which expresses the clearing sale value of machinery, vehicles and equipment as a ratio to farm income.

Benchmarks:

Weak	> 1.2
Average	0.8 to 1.2
Strong	< 0.8

Clark et al. (1999) also use the following **resource use indicators**:

**Land productivity (%)**, which enables decisions to be made regarding land values, share farming or leasing. The indicator is calculated by measuring operating surplus divided by the land value. The measure assumes land values reflect production potential and not other externalities.

Benchmarks:

Weak	< 8 %
Average	8 % to 15 %
Strong	> 15 %

**Labour**, which measures effectiveness of farmers as managers. The calculation involves dividing farm income by the number of labour units, where one labour unit is equivalent to 2000 hours of labour per year.

Benchmarks:

Weak	< \$100 000
Average	\$100 000 to \$150 000
Strong	> \$150 000

**Return on capital (%)**, which measures the financial return achieved relative to the value of all the farm's resources.

Benchmarks:

Weak	< 2 %
Average	2 % to 6 %
Strong	> 6 %

The family farm centred approach has much relevance to typical farm business operations but because the productivity of the farm is not clearly separated from off-farm income, nor all the enterprises are analysed separately, it is then difficult to adequately assess the use of farm resources and the wider sustainability of on-farm practices.

### Comparative analysis grouping

Whole farm and enterprise indicators for benchmarking agriculture using comparative analysis groupings are advocated by Boyce (2000). Regional producers are allocated to benchmarking cells and indicators are determined on an annual basis where farmers can evaluate their performance

using discrete benchmarks that define an average performer and a top 20% performer in the cell. Boyce (2000) consider that the more relevant factors driving profitability are scale of the farm business, land productivity, labour productivity, crop / livestock productivity and marketing relationships. The whole farm indicators are grouped as follows, and the related benchmarks are taken from the analysis of a group of producers at Goulburn NSW:

The key performance indicator used by Boyce (2000) is **Total Farm Profit** which is calculated as follows:

TOTAL FARM PROFIT	equals	Total Farm Income
	less	Operating and Overhead expenses
	equals:	NET FARM PROFIT
	less	Finance costs (or 15.4%)
	plus	Owner wages (brought back from operating costs

Complementary indicators used by Boyce (2000) are as follows, noting the average and top 20% benchmarks are also identified:

	Average	Top 20%
Return on total assets	5.61%	24.4%
Combined profit per ha.	\$ 48	\$ 129
Combined profit per ha per 100 mm rainfall	\$ 6.5	\$ 17.1
Combined profit as a % of gross income	19.5%	48.5%
Profit per family	\$61 053	\$161 000

Other related whole farm indicators utilised by Boyce (2000) are grouped as:

Scale Indicators:

Benchmarks	Average	Top 20%
• Total area (ha)	1 561	1 998
• Total DSE	13 177	22 381
• Rainfall (annual & long term)	770 mm	769 mm
• \$ plant per ha	\$ 93	\$ 67
• \$ plant per DSE	\$ 10	\$ 5

Debt and Equity:

• Debt as a % of gross income	133%	56%
• Debt as a % of total assets	15%	19.7%
• Debt per DSE	\$ 29	\$ 13.5
• Equity	85%	80%

### Combined approaches to evaluate farm performance

A family farm centred approach is often then combined with comparative analysis methods to try and capture the useful aspects of both methods. Hassall & Associates (1997, 1999) use the whole-farm approach utilising both whole farm and enterprise performance indicators, as well as comparative and trend analyses. The key whole farm performance indicator is **Operating Return** which is complemented by a number of other performance indicators. The comparative analysis is based on 3 benchmark groups: the bottom 20%, average and top 20%, with these three groups determined on the basis of the return earned by capital (calculated as Operating Return / Assets and expressed as a %). Hassall & Associates also incorporate a 10 year trend analysis based on the many of the performance indicators identified below.

The key whole-farm indicator, **Operating Return** is calculated as follows:

OPERATING RETURN	equals	Total Farm Income
	less	Direct Costs
	equals	Total Farm Gross Margin
	less	Fixed Costs and Depreciation
	equals	OPERATING RETURN
	less	Finance Costs

Complementary indicators are categorised into **Earning Capacity, Financial Summary, Financial Efficiency and Personal**, as follows, (noting the bottom 20%, average and top 20% benchmarks are also identified):

Comparative Analysis Benchmarks	Bottom 20%	Average	Top 20%
<b>Earning Capacity</b>			
• operating return/assets (%)	-0.1	6.3	14.6
• business return/equity (%)	-2.3	5.6	15.5
• equity (%)	76.8	80.0	80.5
• change in equity (%)	9.8	10.8	23.2
• change in assets (%)	8.1	6.7	12.6
• change in liabilities (%)	-9.2	-13.3	-18.6
<b>Financial Summary</b>			
• earning ratios (%)	2.4	33.4	16.4
• peak overdraft ratio (%)	0.1	14.8	0.0
• debt ratio	1.3	1.0	0.9
• plant ratio	1.9	2.8	4.5
<b>Financial Efficiency</b>			
• asset turnover ratio (%)	14.9	21.3	26.7
• gross margin ratio (%)	3.7	10.6	16.8
• profit margin ratio (%)	-19.5	17.1	45.7
• direct cost ratio (%)	64.3	46.4	34.9
• overhead ratio (%)	46.5	28.0	10.8
• interest ratio (%)	11.5	8.9	8.6
<b>Personal</b>			
•personal drawings/gross income (%)	4.0	10.0	7.0
•personal drawings/business return (%)	53.0	51.0	12.0

Other whole farm/business performance indicators utilised by Hassall & Associates (1999) are summarised into the three groups: Physical Records, Financial Summary, and Overheads & Labour, as follows. It should be noted that the three comparative analysis benchmarking groups indicated above are also utilised with each of the following groups.

#### **Physical records**

- Details of holding- identifying total area owned, total area leased, percentage of natural pasture and improved pasture, and percentage of cropped area.
- Cropping area (ha) - encompassing a discrete description of areas for each existing crop enterprise, e.g. wheat, barley, winter oilseeds, winter pulse, faba-beans, irrigated summer, sorghum, summer forages and other crops.

- *Stock (total numbers)* - includes a description of inventory for Merino sheep, prime lambs and other sheep; beef breeding, beef trading and other beef.
- *Stocking rate* - includes total DSE per holding, DSE to the hectare, and DSE to the hectare per every 100 mm rainfall.

### **Financial summary**

- *Land business-net worth* listing total assets, total liabilities, equity (\$), equity (%) and capital gain (%).
- *Crop business – gross margin* listing wheat, oats, barley, winter oilseeds, winter pulse, faba beans, irrigated summer crops, sorghum, summer forage and other crops. A subtraction of cropping overheads creates an 'enterprise contribution' indicator.
- *Stock business – gross margins* lists merino sheep, prime lambs, other sheep, beef breeding, beef trading and other beef. The subtraction of stock overheads creates an 'enterprise contribution' indicator.
- *Total farm gross margin* - the summation of gross margins from all cropping and livestock enterprises.
- *Operating return &/or loss* – determined by the addition of *miscellaneous income* to and the subtraction of *overheads* from total farm gross margin.
- *Business return &/or loss* – determined by subtracting *finance costs* from the operating return/loss.
- *Opportunity cost of farm assets* - determined as 5% of the total value of the farm assets.

### **Overheads & labour**

- *Crop division overhead costs* - lists labour, depreciation, interest and lease expenses for a total crop overhead cost value.
- *Stock division overhead costs* - lists labour, depreciation, interest and lease expenses for a total stock division overhead cost value.
- *Unallocated overheads* - lists administration, rates, rents, vehicle registration, other overheads, unallocated operating, machinery lease costs, land lease costs, depreciation and wages.
- *Labour analysis* - includes area per man, man months per cropped 100 ha; man months per 1000 DSE sheep; man months per 1000 DSE cattle; man months to overheads; and man months to capital. The summation of these concepts reports a total man months indicator.

The analyses done using this comprehensive approach can provide much data and some information, but it may prove too much for many farmers. As with other systems, there is limited ranking of measures in terms of importance as a driver of farm productivity, profitability or sustainability.

### **Teasing out the enterprises**

The whole farm approach adopted by Holmes Sackett & Associates (1997) and Behrendt (1998) incorporates whole farm performance indicators combined with a comparative analysis. This approach differs from those considered above in that farm businesses are segregated into grazing dominant farms and mixed farms, noting that the latter refers to those farms which earn more than 15% of gross farm income from cropping activities. They also seek to investigate how the profitability of individual farm enterprises are driven by biophysical and financial parameters.

The comparative analysis involves grouping farms into three groups namely: top 20%, average, and bottom 20%. In respect to grazing properties the grouping is based on **Net Profit per DSE** whilst for the mixed farms, the grouping is based on Net Profit per Hectare.

The key performance indicator used by Holmes Sackett & Associates (1997) is **Net Farm Profit**, which is determined as follows, noting 1998/99 comparative analysis benchmarks are incorporated:

NET FARM PROFIT	equals	Total Farm Income
	less	Operating Expenses
	equals	Net Farm Profit
	less	Interest or Lease Expenses
	equals	Net Farm Profit After Interest

Benchmarks:

	GRAZING FARMS			MIXED FARMS		
	BOTTOM 20%	AVERAGE	TOP 20%	BOTTOM 20%	AVERAGE	TOP 20%
<b>Total Farm Income</b>	\$177 297	\$328 708	\$514 468	\$420 647	\$532 068	\$934 096
Operating Expenses	*204 021	257 330	308 176	451 601	419 213	615 219
<b>NET FARM PROFIT</b>	- 26 752	71 377	206 292	- 30 953	112 854	318 878
Interest/lease expenses	15 808	27 863	40 493	27 902	44 848	96 596
<b>Profit After Interest</b>	- 42 532	43 514	165 800	- 58 855	68 006	222 282

(\* The operating expenses include an allowance for the owner's wage)

Complementary performance indicators are categorised into **Physical, Assets, Liabilities**, and **Financial** groups as follows noting the comparative analysis benchmarks are again for the 1998/99 year.

	Grazing farms			Mixed farms		
	Bottom 20%	AVG	Top 20%	Bottom 20%	AVG	Top 20%
<b>Physical</b>						
Year rainfall (mm)	805	790	774	590	692	670
Long term rain-mm	740	731	747	614	607	584
Winter crop growing season rainfall - mm	n/a	n/a	n/a	401	548	457
Effective area – ha	14251	419	1445	1425	1419	1445
Lease land – ha	61	61	41	1	155	407
Sharefarmed land	n/a	n/a	n/a	12	71	225
Native pastures %	27*	16*	4*	22	14	9
Pastures sown this year %	3*	2*	4*	n/a	n/a	n/a
Improved pasture %	58*	76*	90*	52	47	35
Lucerne %	n/a	n/a	n/a	3	5	4
Winter cropped / wastage %	n/a	n/a	n/a	23	35	51



Kg phosphorus / ha	9.4	8.9	11.7	8.9	9.7	11.0
Mid-winter stocking rate – DSE/ha	7.4	9.9	12.1	8.4	9.9	11.9
<b>Assets</b>						
Land value - \$/ha	1688	1619	1613	1341	1424	1450
Land value - \$/DSE	203	154	124	176	156	144
Plant&Equipm \$/ha	78	98	86	134	166	180
Livestock / Wool - \$/ha	223	302	424	147	149	129
Store fodder/grain - \$/ha	2	3	3	15	17	21
Cash/pools/WI & Graincorp shares - \$/ha	50	58	82	23	66	73
Total assets \$/ha	2041	2080	2209	1662	1822	1849
<b>Liabilities</b>						
Total liabilities \$/ha	227	248	300	244	215	175
AVG Equity - \$/ha	1813	1831	1909	1418	1608	1674
AVG Equity - %	89	87	86	86	87	88
Interest/Land lease - \$/ha	15	21	30	23	25	34
<b>Financial</b>						
Return to assets managed - \$/ha	-1.2	2.4	6.8	-1.2	3.7	8.1
Return to equity owned - %	-3.1	-0.4	6.4	-3.1	3.1	8.6
Profit % of gross income	-18.0	15.0	40.0	10.0	8.0	34.0
Debt to Equity - %	n/a	n/a	n/a	18.0	16.0	11.0
Profit - \$/ha	-20	52	146	-23	64	136
Profit per ha - \$/100 mm rainfall	-2.60	7.12	20.70	-3.97	9.17	20.27
Fixed costs - \$/ha	76	91	95	108	102	94
Fixed costs as % of total costs	47	50	44	48	42	37

The methods employed by Holmes and Sackett (1997) also include graphical analyses of trends and production functions. These acknowledge the fact that most performance indicators are continuous, often non-linear distributions and simply lumping them into categories can result in the loss of useful information.

### Other schemes

Farm Management 500 (RIRDC 1997) utilises ten (10) whole farm '*on-farm indicators*' dealing with business profit, farm productivity and efficient use of resources. They also provide benchmark guides for most of these indicators, noting the guides reported in RIRDC (1997) have been sourced from Farm Management 500, FAST, BIZCHECK, and H Alexander.

The key financial performance indicator used by Farm Management 500 and their measure of financial sustainability is **Disposable Income per Household**. It identifies the amount available to the individual farm household to meet taxes, family living costs, capital improvements and/or principal debt reduction, asset creation and retirement funding. It is calculated as follows:

Disposable Income per Household =	Farm Income
	Minus Farm Operating Costs
Equals	Farm Operating Surplus
	Minus Depreciation
	Minus Financial Costs
	Plus Non farm Income
Divided by	No. of Households per farm

Benchmarks:

Weak:	< \$ 30 000	(treading water or unsustainable)
Average:	\$ 30 000 - \$ 60 000	(may still be struggling)
Strong:	> \$ 60 000	(sustainable, more choice)

(Source: FAST & BIZCHECK in RIRDC 1997)

Complementary indicators to the above key indicator are as follows:

Non-farm income, which includes income '... from sources other than the paddock and includes farm related activities such as contract services, intensive livestock enterprises (piggeries, feedlots) as well as off farm activities including salaries and investment returns. It is considered an important indicator of financial health and family lifestyle assurance.

Benchmarks:

Weak:	< \$ 5 000
Average:	\$ 5 000 - \$ 15 000
Strong:	> \$ 15 000

(Source: FAST & BIZCHECK in RIRDC 1997)

Farm operating surplus as a percentage of land value per Ha - reflects what the farm business has earned prior to it paying for financing costs, machinery replacement, capital improvements, principal debt reductions and tax. It can be expressed on a per business, per household, per hectare basis or relative to land value. When expressed as a % of land value, one obtains an indication of how effectively land is being used.

Benchmarks:

Weak:	< 8%
Average:	8 – 15%
Strong:	> 15%

(Source: FAST & BIZCHECK in RIRDC 1997)

Dollar water use efficiency (\$WUE) - representing the income per hectare per 100 mm of actual growing seasonal rainfall, and it is used as a comparative measure of different farming systems. This measure is determined as follows:

$$\$WUE = \frac{\text{Farm income}}{\text{Actual growing season rainfall (mm)} \times \text{Total effective hectare}} \times 100$$

Farm Management 500 recognises that growing season rainfall is measured differently in different states. For example in NSW growing season rainfall is considered to be the rainfall occurring from April to October as well as 30% of the rainfall from November to March. In contrast, growing season rainfall in Victoria is considered to be the rainfall occurring between April and October.

Benchmarks for \$WUE:

Enterprise	Weak	Average	Strong	Potential
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Grazing	< \$35	\$ 35 – 55	> \$55	\$ 60
Grazing/Some Crops	< \$50	\$ 50 – 70	> \$70	\$ 80
Mixed Farming	< \$55	\$ 55 – 80	> \$ 80	\$ 90
Intensive Cropping	< \$65	\$ 65 – 100	> \$100	\$110

(Source: FAST in RIRDC 1997)

Farm operating costs as a percentage of farm income indicates whether the business has a high or low cost structure. The objective over a period of years would be to have a declining trend. The measure involves expressing farm operating costs as a percentage of farm income. It should be noted that depreciation costs, financial costs and allowances to management, are not included in the operating costs.

Benchmarks:

Weak:	>60%
Average	50 – 60%
Strong:	<50%

(Source: FM500, FAST, BIZCHECK & Alexander in RIRDC 1997)

Land value per household provides a measure of farm scale. The measure includes owned and leased land as well as the operator's share of share farmed land. Land is assumed to be valued at values that reflect productivity

Benchmarks:

Weak:	<\$ 400 000	(small land capital base)
Average	\$ 400 000 - \$ 800 000	
Strong:	>\$ 800 000	(sizeable land capital base)

(Source: FAST in RIRDC 1997)

Plant value as a percentage of farm income is a guide to whether the farm business is over or under capitalised. In this case 'plant' includes all items of machinery and equipment associated with the running of the business

Benchmarks:

Weak:	>120%	(implies possible low income or surplus plant)
Average	80 – 120%	
Strong:	<80%	(implies possible high income or run down plant)

(Source: FM500, FAST, BIZCHECK & Alexander in RIRDC 1997)

Farm income per farm labour unit indicates the amount which each labour unit earns for the business. One labour unit is assumed to be 2000 hours per year and the indicator includes paid as well as unpaid labour.

Benchmarks:

Weak:	<\$ 100 000
Average	\$ 100 000 - \$ 150 000
Strong:	>\$ 150 000

(Source: FM500, FAST, BIZCHECK & Alexander in RIRDC 1997)

Financing costs as a percentage of income assesses the extent to which income is used to cover financing costs. Financing costs include bank interest, bank charges, and the cash costs associated with assets (i.e. land rental, machinery lease). If a relatively high percentage of income is being used to cover financing costs little remains to finance property developments and improvements thus impacting on the business's ability to increase future productivity.

Benchmarks

Weak:	>15%
Average	7% - 15%
Strong:	<7%

(Source: FM500, FAST, BIZCHECK & Alexander in RIRDC 1997)

Return on capital (ROC) is used to compare potential alternative uses of the family's capital with their investment in the farming business. The indicator is based on average capital which is the average of the beginning of year and end of year capital values. Capital includes land, plant, livestock and cash/investments to be used in the business. Return on capital is calculated as follows:

$$\text{ROC} = \frac{\text{Net Farm Income before Interest and Tax}}{\text{Average value of total farm capital}}$$

where net farm income before interest and tax = farm income – farm costs – depreciation – household (or management) allowance.

Benchmarks for ROC:

Weak:	<2%
Average	2% - 8%
Strong:	>8%

(Source: FAST in RIRDC 1997)

## Conclusions

This review of the whole farm performance indicators and benchmark practices indicates that providers utilise a measure of profitability as the key whole farm performance indicator. This measure in general relates to the net profit earned by the business and as such identifies the net income available to satisfy living expenses, taxation requirements, capital repayments and also to facilitate future investment opportunities. If this measure of profitability is requested as a percentage value then the net farm profit should be divided by the total value of the business (i.e. total farm assets) to work out the annual rate of return to business capital. Not all providers incorporate non-farm income or an allowance for a manager's wage in their measurement of this performance indicator.

The exclusion of non-farm income can enable a better analysis of farm performance and especially the longer-term sustainability and resource use of the farm system, however in those cases it is then important to ensure the analysis does not become confounded.

Common complementary performance indicators tend to focus on measures associated with:

**Physical scale and performance**, for example: total areas, grazed area, cropped area, improved pasture area, stocking rate, and rainfall. These indices are clearly focused on the production system and may not provide much information on the longer-term farm sustainability.

**Profitability**, for example: farm input costs as a % of income, debt servicing costs as a % of farm income, net income per 100 mm of rainfall, net income per hectare, net income per labour unit, and return to capital (net income over total assets). These measures often seem to proliferate without any clear guidelines as to which parameters are more critical for farm performance *i.e.* a ranking of impacts.

**Solvency**, for example: total land value, land value per family, total assets, total assets per family, equity as a % of total assets, and debt as a % of total assets.

Interestingly, very few providers appear to provide any significant focus on **performance indicators related to liquidity**, that is, the business's ability to meet its short term financial commitments.

Although a degree of commonality is apparent between providers of farm business performance indicator and benchmark services, some differences are evident. Also apparent is some inconsistency in the terminology used. The need for a consistent approach in deriving indices is clear when one tries to compare data from different providers. In some cases the differences are small and of no major consequence, but others, *e.g.* where operator wage or non farm income may or may not be included, can differ markedly. All the indices currently being derived focus on the financial performance of farm businesses and enterprises and the underlying biophysical production system. Few have attempted to measure the longer-term sustainability in terms of economics, ecological, environmental and social components, nor of how each of those categories are integrated. This is clearly an area that is only just developing and an attempt should be made to develop a minimal series of indicators for the above described areas in an integrated manner.

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