Financial and Production Performance Analysis of Beef Cattle

Financial records and records of herd performance are of vital importance to the beef producer. Analysing past seasons assists in planning a new one. "Managing performance requires measuring performance". With a standardized procedure, a producer can assess his efficiency by comparing his figures across years and to those of other farmers. The following is a suggested template of recording basic information which generates useful results. A producer can use these figures for planning and budgeting. Anonymised figures can be sent into a central collection point and averages for a group can be calculated. A producer can then compare/benchmark his figures to the average.

Production (numbers)

Monthly livestock returns/inventories are relatively simple to maintain and when kept in spreadsheet format on computer can easily be used to generate a cumulative annual livestock return. An example is included in Appendix 1. The physical number of animals are multiplied by a factor (e.g., 1.3 for a bull) to generate an Animal Unit figure. The table below accounts for different categories of cattle on the basis of metabolic weight (live weight to the power of 0.75 divided by 450 kg to the power of 0.75) to arrive at a factor (1 AU is approximately equivalent to a 450 kg dry cow in terms of its nutritional requirements). Smaller cattle eat more than larger cattle per kg live weight.

Animal Units:	Wt	AU
Bulls Snr	638	1.3
Bulls Over 2	390	0.9
Bulls U/2	306	0.75
Cows	450	1
Calves	133	0.4
Weaners	203	0.55
Yearlings	280	0.7
Over 2's	362	0.85
Over 3's	450	1

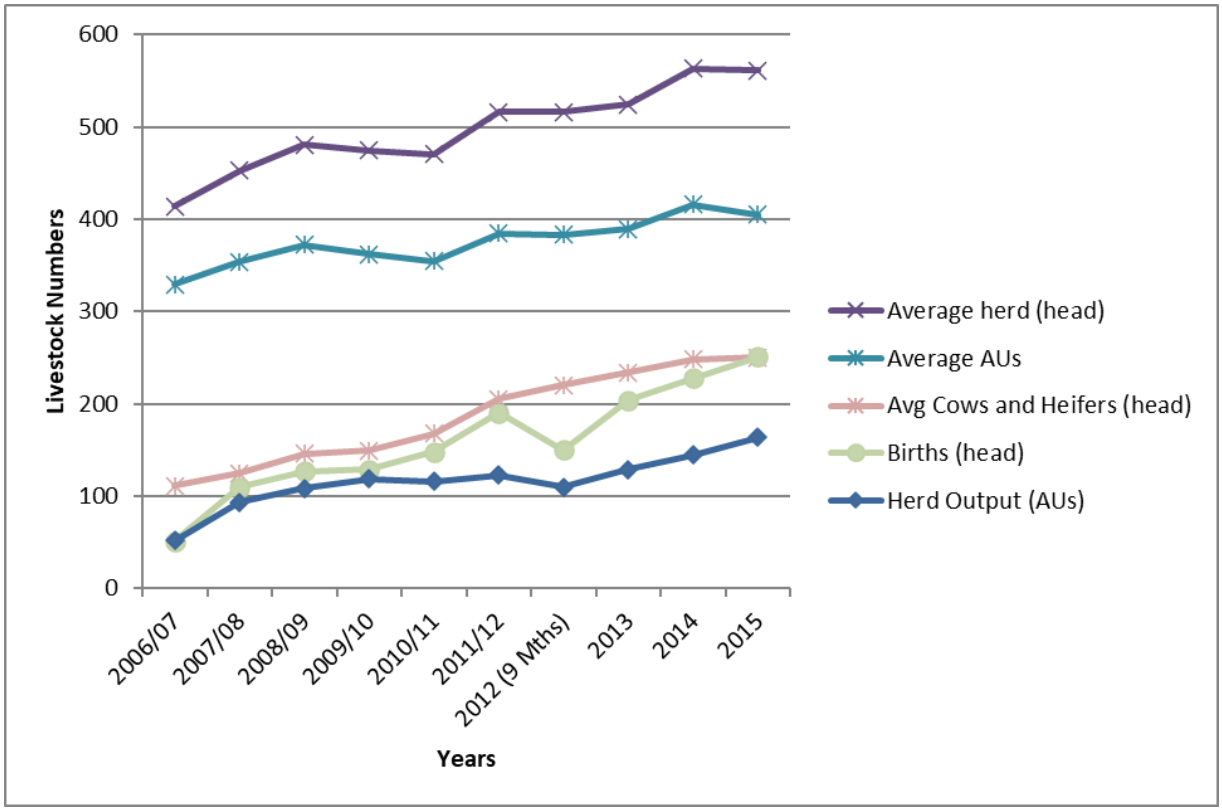
Multiplying these AU factors by numbers for the different classes of cattle enables average Animal Unit figures to be derived at that can be used in Financial Analysis. In addition, useful livestock statistics can be generated and when years are compared, trends can be observed.

By recording simple monthly cattle figures such as births, purchases, sales, deaths and reclassification in an excel template (supplied), then annual production statistics can be summarised (see **Appendix 1: Example of cumulative livestock return)**.

The following statistics are then generated which can be compared between years and producers:

Livestock statistic measures calculated from livestock returns (Rossal Farm Chatsworth)

	2011/12	2012 (9 Mths)	2013	2014	2015
Opening AUs	376.55	402.25	416.8	417.65	440.95
Herd change % (AU)	6.84%	3.56%	0.20%	7.12%	4.50%
Average herd (head)	516	516	525	563	561
Average AUs	385	383	389	416	405
Average A.U. Carried	0.75	0.74	0.74	0.74	0.72
Mortality %	-4.65%	-2.71%	-3.05%	-3.20%	-1.96%
Sales % (AU)	25.26%	-24.88%	-32.88%	-27.56%	-37.60%
Purchases % (AU)	0.00%	0.00%	0.00%	0.00%	0.00%
Sales - Purchases (AU)	25.26%	-24.88%	-32.88%	-27.56%	-37.60%
Herd Output (AUs)	123	110	129	144	163
Herd Output (AUs/Avg AUs)	31.96%	28.68%	33.10%	34.72%	39.08%
Herd Output (AU)/Opening AUs	32.64%	27.30%	30.91%	34.56%	37.02%
Avg Cows and Heifers (head)	205	220	234	248	250
Cows & Heifers Breeding (Opening)			207	226	240
Births (head)	190	150	204	228	251
Weaned	152		145	203	220
Births % of Cows & Heifers Breeding (Opening)			98.55%	100.88%	103.33%
Wean%				98.07%	97.35%



Herd Output (AU)/Opening AUs (percentage), is perhaps the most meaningful overall measure of efficiency calculated. Herd Output = Closing Cattle Numbers – Opening Cattle Numbers + Sales – Purchases + Transfer (-) – Transfer (+).

The above statistics can provide meaningful information on production and is simple to derive as it merely requires the recording of monthly cattle numbers and does not require weights. This can perhaps be the start for comparisons between years and producers. The average Animal Unit figures derived from these returns can also be used for more in-depth calculations on profit per AU.

Some performance measures such as weaning percentage (the number of calves weaned divided by the number of females exposed x 100) require accounting for culls, sales, transfers and purchases. This can get complicated. It is suggested that these statistics generated from a spreadsheet-based Livestock Return that base calves weaned on, for example, average Cows and Heifers carried in the previous year to be a simpler alternative to traditional methods that does not require separate calculation and is not open to "interpretation". Another simple measure to use is Births % of Opening Breeding Cows and Heifers.

A spreadsheet (MLSR demo c) is supplied, the first sheet "Proc." describes the procedures needed to follow for entering data on the next sheet LSR "year". On the LSR "year" sheet figures for each month are entered on the left most "returns", there are one for each month, therefore 12 of them. The return on the right is a calculated cumulative return, again there are twelve of them. At the right most bottom of the sheet is the total cumulative return for the year, this summarises statistics as outlined in the Table above. Below the generated livestock statistics in the spread sheet is a table that specifies weight and price per kg for the different categories of cattle, this calculates total opening and closing values and using the Average AUs figure calculates an Average AU value ($) figure. The final sheet "Send" summarises statistics as percentages without including actual animal number figures which may be sensitive information. This final sheet can be copied and sent to a central collection point for aggregation. Results can then be compared to an average. The following table summarises the non-sensitive "percentage" statistics and Average AU value ($) figure.

	2023
Herd change %	
Herd change % (AU)	
Mortality %	
Sales %	
Sales % (AU)	
Transfer %	
Purchases %	
Purchases % (AU)	
Herd Output (AU)/Average A.U.s	
Herd Output (AU)/Opening AUs	
Births % of Opening Breeding Cows and Heifers	
Average AU value ($)	

Financial Analysis

Financial records expressed as $ per average animal unit (AU) can be useful comparative measures. An example template for conducting Gross Margin analysis is set out in the table below. Enterprise Output is the total value of production and includes the value of sales plus (or minus) any increase (or decrease) in livestock valuation, less the cost of livestock purchases.

The Gross Margin system is useful for analysis of livestock enterprises as it requires a minimum of recording and provides useful management information which can be used for future planning. The information required can largely be derived from the income statement/profit and loss account and livestock inventories.

Gross Margin Analysis on $ Per Avg. AU basis and on % of Avg. AU value

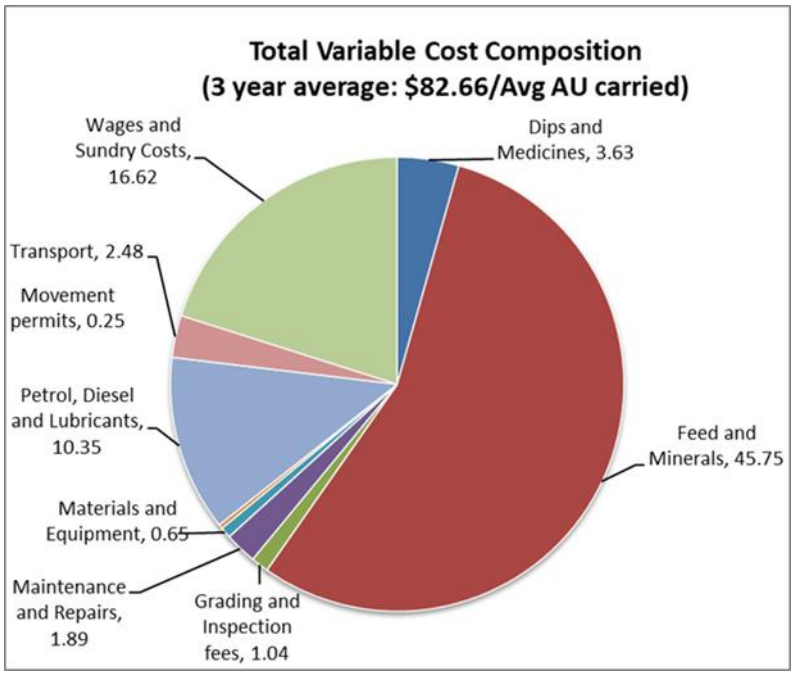
Rossal Farm Chatsworth

			Apr 09 to Mar 12	
		Average	$ Per	% of Avg
		$	Avg. AU	Value
				$648
			367.16	237,889
Enterprise Output				
	Sales	95,550.48	260.24	40%
	Livestock Opening Stock	237,128.00	646.60	
	Livestock Closing Stock (-)	-238,649.00	-650.26	
	Livestock Valuation Change	1,521.00	3.66	
	Livestock Purchases	-460.00	-1.20	
(A)	Total Enterprise Output	96,918.15	263.50	41%
Allocated Variable Costs				
	Dips and Medicines	1,339.12	3.63	
	Feed and Minerals	16,886.49	45.75	
	Grading and Inspection fees	383.33	1.04	
	Maintenance and Repairs	705.63	1.89	
	Materials and Equipment	236.63	0.65	
	Movement permits	91.00	0.25	
	Petrol, Diesel and Lubricants	3,802.58	10.35	
	Transport	920.17	2.48	
	Wages and Sundry Costs	6,125.93	16.62	
(B)	Total Allocated Variable Costs	30,490.89	82.66	13%
Gross Margin		66,427.26	180.84	28%

Also supplied is a Gross Margin Analysis Template (GM Analysis Template) in spreadsheet format, where your Average AU, Average Head and Opening Stock and Closing Stock values from the cumulative livestock return spreadsheet are entered. In addition, annual Sales, Purchases and Variable Cost figures from your income statement/profit and loss account are entered. $ Per Avg AU figures and % of Avg value figures are calculated. The “Send” sheet on the Gross Margin Analysis Template includes only the $ per Avg AU and % of Avg Value figures and leaves out the sensitive

Total figures to be sent to a central collection point/database where once again averages can be calculated, giving the producer the ability to compare his figures against the average.

The following pie chart illustrates the composition of the variable costs/Avg AU carried from the table above.



Summary

Statistics derived from standardised livestock returns can be a useful starting point for comparison either between years for a producer or between producers. Average Animal Unit figures from here can be used to specify financial figures on a per animal unit basis for further analysis, budgeting and modelling. Ultimately, recorded financial figures can be expressed on a per animal unit basis to give a Gross Margin per Animal Unit which is a useful comparison measure. Actual numbers and figures need not be sent into a central database, percentages, $ per Avg. AU and percentage of Avg. AU value figures can be sent to a central database so that a producers can compare their figures to averages.

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Appendix 1: Example of cumulative livestock return

Cumulative livestock Return					01/04/11-31/03/12															
Section:	Rossal																			
A.U.s	1.3	1.3	0.8	1	1	1	0.7	0.85	1	0.4	0.4	0.55	0.55	0.6	0.7	0.85	1.1			
	BULLS			**COWS & HEIFERS**						**CALVES**		**WEANERS**			**STEERS**					
	Senior	Culls	Yearlings	Breeding Cows& Heifs	Cows Winter Pregnant	Cows Winter Bulled	Heifer Yearlings	Heifers Over 2	Cull Cows	Calves Winter	Calves Summer	Steers	Heifers	Bulls	Yearling	Over 2	Over 3	**TOTAL CATTLE**	**Total AU**	
On Hand end of Period	14		7	196			55			1	87	17	18	14	59	17		485	377	
Born +										74	116							190	76	
Purchased +																				
Deaths/Losses -				-1			-1			-5	-10	-4		-2	-1			-24	-12	
Sold -	-5			-32			-2								-56	-20	-1	-116	-97	
Slaughtered -											-1							-1	0	
Transferred +																	1	1	1	
Transferred -																				
Reclassified +	7		4	55	26		56		34		2	86	39	1	68	5	1	384	289	
Reclassified -	-5		-7	-60			-55			-69	-83	-67	-23	-13	-1	-1		-384	-230	
Adj (office use)															-2			-2	-1	
On Hand end of Period	11		4	158	26		53		34	1	111	32	34		67	1	1	533	402	
Actual	11		4	158	26		53		34	1	111	32	34		67	1	1	533	402	
Missing																				

Annual Livestock Statistics Calculations:	
A.U.s	402.3
Herd change %	**9.90%**
Herd change % (AU)	**6.84%**
Average herd	**516.083**
Average A.U.s	384.583
Mortality %	**-4.65%**
Sales %	**22.48%**
Sales % (AU)	**25.26%**
Transfer %	**0.19%**
Purchases %	
Purchases % (AU)	
Weaned	152
Herd Output (AU)	122.9
Herd Output (AU)/Average A.U.s	31.96%
Herd Output (AU)/Opening AUs	32.64%
Cows & Heifers Breeding (Opening)	196
Births (head)	190
Births % of Opening Breeding Cows and Heifers	96.94%

Opening and Closing Livestock Valuation Calculations:																			
Weight (Kg)	500	500	300	400	300	300	300		400	50	100	210	190	220	275	365	455		
Price/kg	1.5	1.5	1.8	1.5	1.8	1.8	1.8		1.5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8		
Wt* Price	750	750	540	600	540	540	540		600	90	180	378	342	396	495	657	819		Avg AU ($)
Opening	10500		3780	1E+05			29700			90	15660	6426	6156	5544	29205	11169		235830	627.35
Closing	8250		2160	94800	14040		28620		20400	90	19980	12096	11628		33165	657	819	246705	