



# Dairy Industry Farm Monitor Project

2009/10 Feature Article

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This report has been produced in conjunction with Dairy Australia.

**Further information regarding the Dairy Industry Farm Monitor Project and Feature Article may be obtained from:**

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# Introduction

The Dairy Industry Farm Monitor Project (DIFMP) provides a financial and comparative analysis of dairy farms from across the three key dairying regions in Victoria, Northern Victoria, South Western Victoria and Gippsland.

This is the fourth year of the project which is a joint initiative between the Department of Primary Industries (DPI) and Dairy Australia. The project provides farm level data relating to productivity gains and profitability as well as identifying the key drivers of productivity and profitability growth.

In 2009/10 the annual report found it was a tough year for the industry, with lower milk prices limiting farm income. However, the results showed that more than 80 per cent of the 71 surveyed farms still made positive earnings before interest and tax (EBIT), the same proportion as recorded in the 2008/09 report. The annual report is available on the project website at [www.dpi.vic.gov.au/dairyfarmmonitor](http://www.dpi.vic.gov.au/dairyfarmmonitor) and the summary tables may be obtained by sending an enquiry to [farm.monitor.project@dpi.vic.gov.au](mailto:farm.monitor.project@dpi.vic.gov.au).

The feature article allows further interrogation of the data to identify trends relating an issue of interest. The focus of this year's feature article is the influence calving pattern has on cost of production, milk price received and overall business profitability. This article will investigate the drivers behind adopting different calving patterns and the effect this calving pattern has on the production and profitability of the farm business.

Farms selected their calving pattern to be seasonal, split or year round. In seasonal calving herds all cows in the herd calve in a single time period each year. Seasonal calving farms also indicated the time at which they calve. Split calving herds calve in two or three distinct time periods. When there are two periods they are commonly spring and autumn. Year round herds calve for at least 10 months of the year.

Of the participants in this year's project, only four had year round calving patterns. One was from the North, one from the South West and two were from Gippsland. Because of the low numbers it is difficult to draw meaningful conclusions therefore these farms have been excluded from this feature article.

Farm productivity and financial data, and calving system information, was collected in June and July 2010 and relates to the 2009/10 financial year.

It should be noted that the findings of this feature article are drawn from a relatively small sample. Due to this sample size and the large combination of variable factors that influence farming businesses, relevance to individual farms is limited. Individual farm circumstances should always be considered before adopting or changing a certain calving pattern or any other facet of the production system.

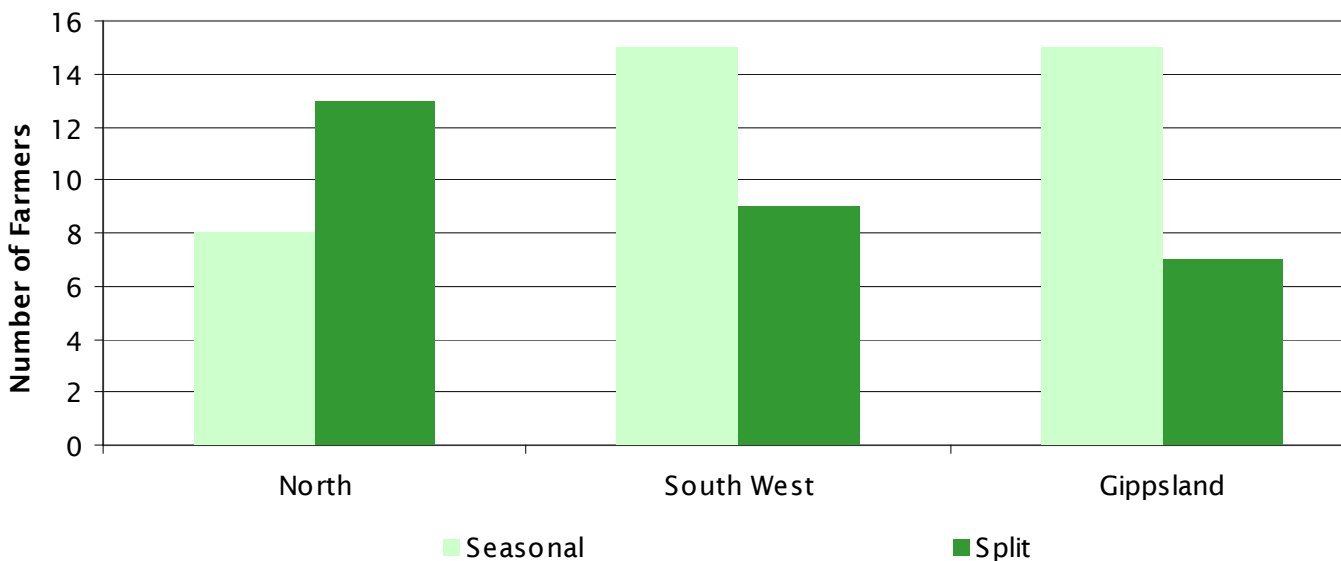
# Calving pattern

The dominance of seasonal calving patterns in the high rainfall zones of the South West and Gippsland is shown in figure 1.

In these regions, seasonal calving farms account for 15 farms each or 60%. In the South West all 15 seasonal calving systems calve in autumn. The month of seasonal calving in Gippsland is split between eight farms calving in autumn and seven farms calving in spring.

In the North the most popular calving pattern is split calving, accounting for 13 out of 22 farms. Of the eight farms in the North that have seasonal calving, four calve in autumn and four calve in spring. Four farms located in the north east, within the northern Victoria region, have autumn seasonal calving confirming the notion that dairy farms in high rainfall zones favour seasonal calving patterns.

**Figure 1. The calving patterns of farms in the three dairying regions of Victoria**



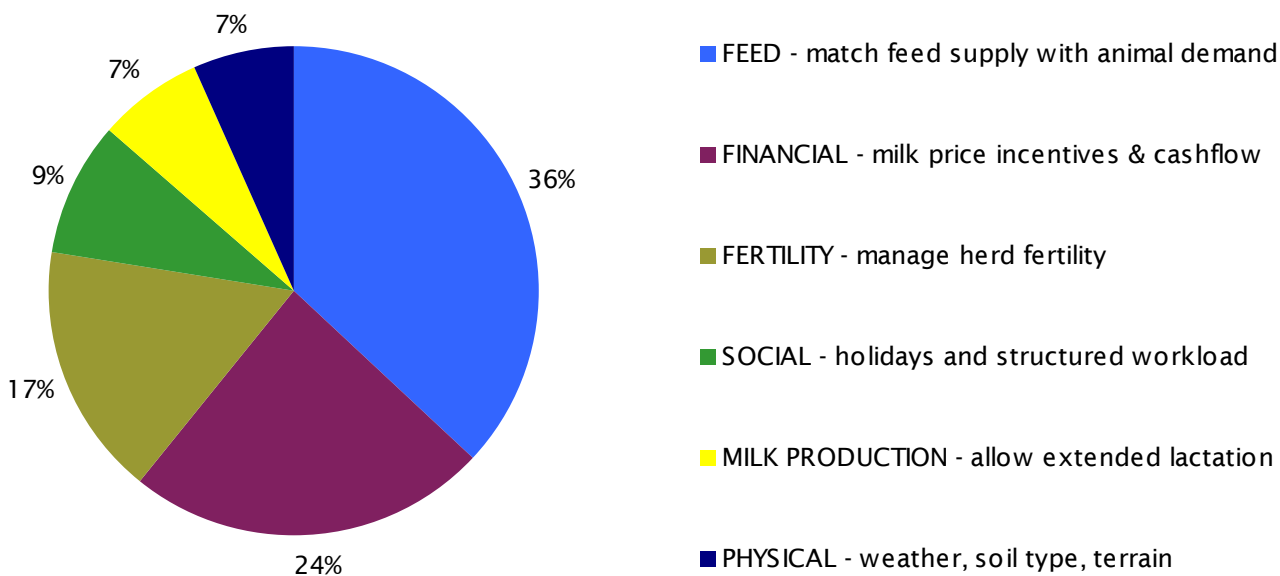
## Motivations for calving systems

The motivations of farmers to adopt a particular calving pattern varied from production, financial and social factors. Across the state matching feed supply with animal demand and receiving milk price incentives were the major factors that influenced farm calving patterns (figure 2).

Farms that adopted seasonal calving patterns were motivated by feed and social factors with 65% and 69% of responses respectively. An average of two factors was chosen by all farms.

Of the farms that split calve, 61% said they adopted this for herd fertility management and 90% said they chose it to allow extended lactation.

**Figure 2. The drivers of calving patterns for farms across the state**



# Feed consumption

The estimated home grown feed production per hectare for each calving pattern by region is shown in figure 3. Home grown pasture is estimated using an Energetics method which is total energy requirements for the farm minus energy imported onto the farm. Numerous factors will determine the amount of home grown feed production with fertiliser rates and grazing management being central.

In the North and Gippsland those farms that consume the most amount of home grown feed per hectare also achieve the greatest profit. These farms are seasonal in the North and split calving in Gippsland. In the South West there was little difference between home grown feed for seasonal, 6.70 t DM/ha, compared to 6.66 t DM/ha for split calving.

Farms in the North, on average, consumed the least amount of home grown feed per hectare of all the regions, a reflection of low water allocations. Gippsland farms produced the greatest amount of home grown feed per hectare of all the regions.

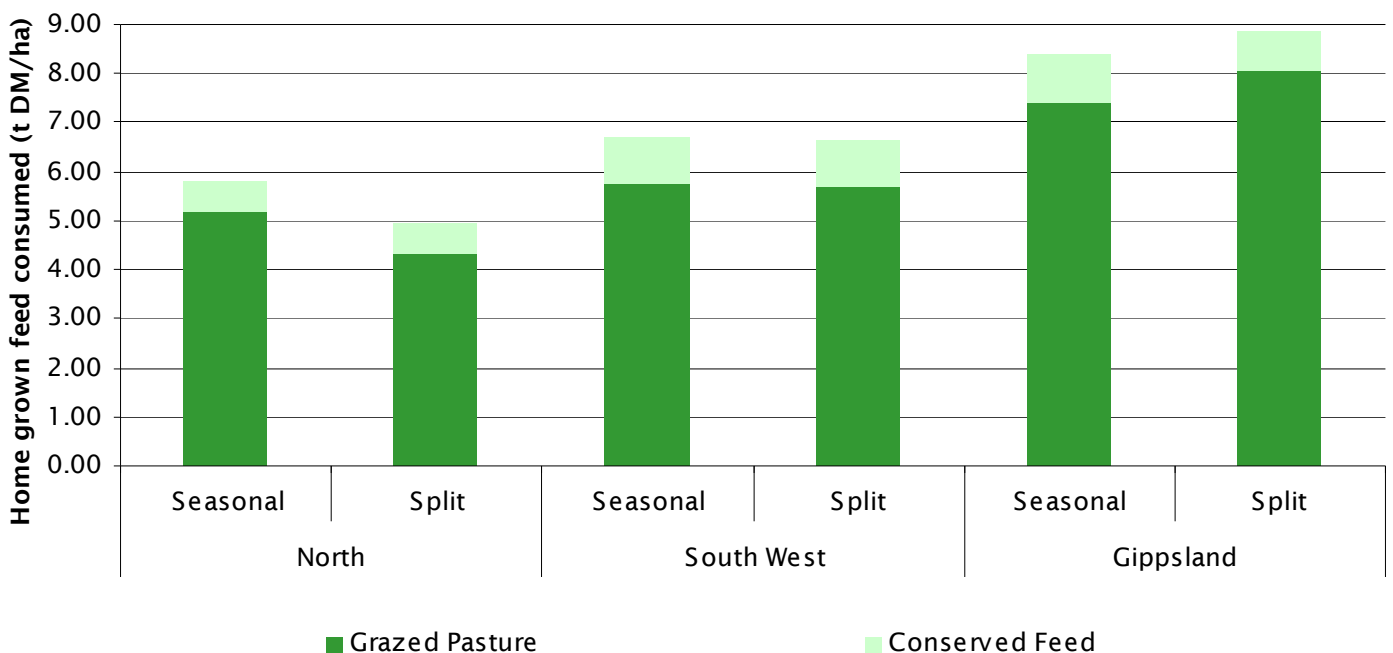
The proportion of home grown feed as a percentage of metabolisable energy (ME) consumed indicates the reliance on pasture compared to the demand for supplements in the diet. Seasonal calving farms utilised more home grown feed as a proportion of the ME consumed than split calving in all regions.

When the four seasonal calving farms located in the North East are isolated, their average home grown feed consumption accounts for 71% of ME consumed highlighting their location in the high rainfall zone. This area has more favourable pasture growing conditions enabling increased home grown feed production compared to those farms in the northern irrigation region. Three of these farms from the North East were in the top 25% according to earnings before interest and tax per hectare for the region indicating that home grown feed is a driver of profitability.

In the South West seasonal calving farms recorded home grown feed to be 74% of the ME consumed compared to 66% for split calving farms. The difference in Gippsland was smaller with 73% for seasonal and 71% for split calving systems.

Concentrates account for the greatest amount of supplements in the diet and is the greatest feed cost to the business. The calving systems that fed the least amount of concentrates also have the lowest feed costs and derive the most amount of home grown feed as a percentage of ME consumed. These calving patterns were seasonal in all regions. Split calving systems fed the greatest amounts of concentrates, have the highest milk production, but not necessarily the highest profits.

**Figure 3. Estimated tonnes of home grown feed consumed per hectare**



# Farm profitability

## Cost of production

Total costs incurred in the farming business include variable and overhead cost categories. Variable costs fluctuate in relation to the size of the enterprise and include herd, shed and feed costs. Overhead costs are costs that are not directly related to an output of an activity as they are expenses incurred through general operation of the business.

Farms have greater expenditure on variable costs than overhead costs (figure 4). The range of expenditure on variable costs is also greater than the range spent on overhead costs. Variable costs range from \$2.21/kg MS to \$3.26/kg MS, which is greater than the range of overhead costs; \$1.50/kg MS to \$2.21/kg MS.

As can be seen in figure 4 below split calving systems in all regions have greater variable costs than seasonal calving systems. This difference is largely due to feed costs between the two calving systems.

It is worth noting that the additional feed costs incurred by split calving systems are compensated for by lower overhead costs. The reduction in overhead costs is enabled by the spreading of costs over greater production, as seen in the Appendix. Hence split calving farms have an overall lower cost of production and are more profitable.

## Feed costs

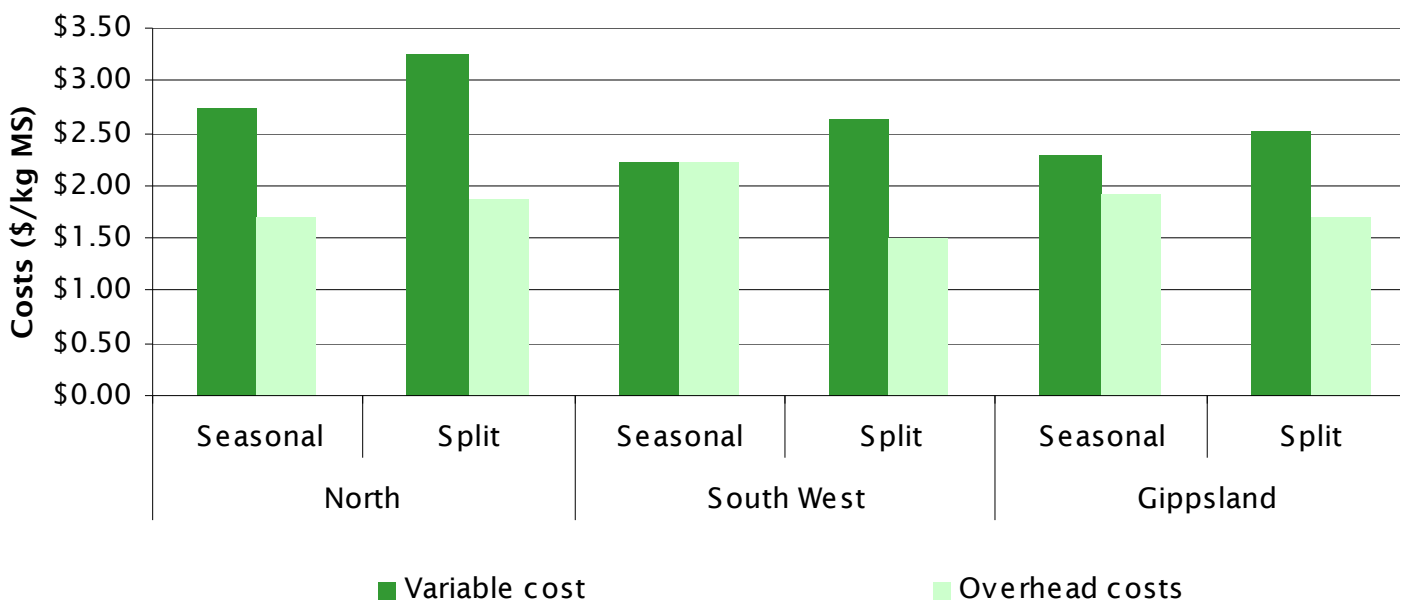
Feed costs include all home grown costs such as fertiliser, irrigation, fodder production, fuel and oil as well as grain and fodder purchases and agistment costs.

They are the greatest cost to the dairy business accounting for 55% of total costs in the North, 48% in South West and 46% in Gippsland. The feed costs are driven largely by purchased grain which accounts for roughly 20% of total costs in all regions.

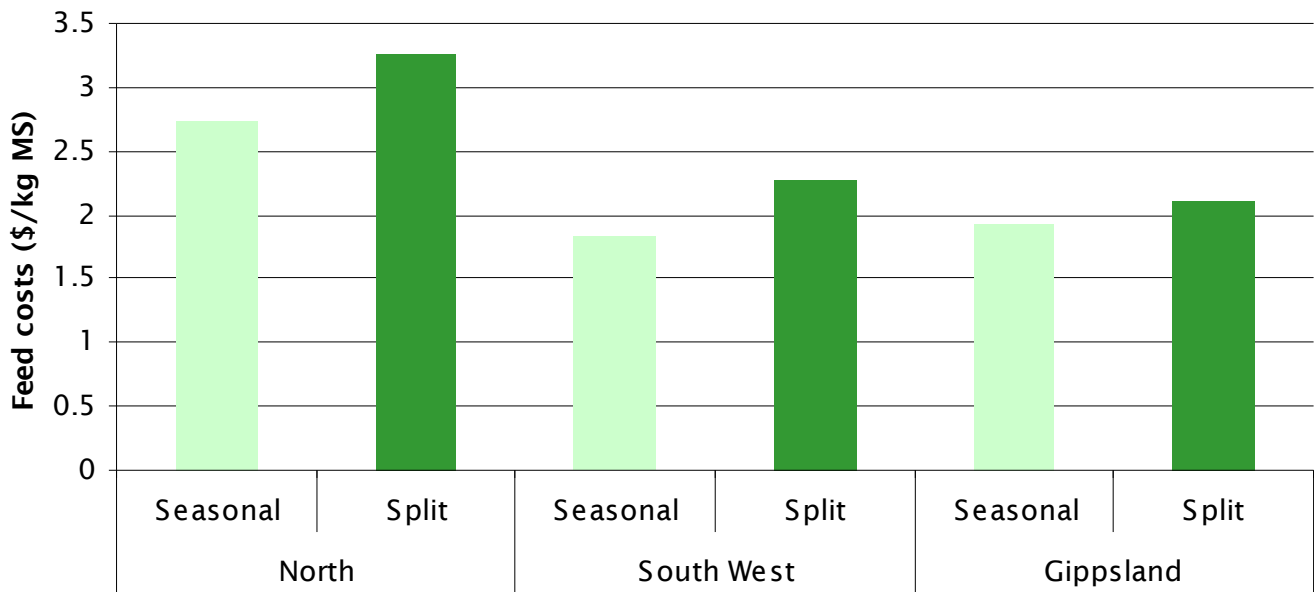
Split calving herds have higher feed costs than seasonal calving herds (figure 5). The cost of home grown feed, such as irrigation, and purchased feed costs are the main reasons for the increased spending on split calving farms as compared with seasonal calving farms.

The relationship between greater amount of grazed pasture fed and lower feed costs is evident for seasonal calving farms (figures 3 and 5). In general, it appears that seasonal calving farms consume more home grown feed, and less concentrates, than split calving farms enabling these farms to lower their feed costs.

Figure 4. Whole farm variable and overhead costs per kilogram of milk solids



**Figure 5. Feed costs for seasonal and split calving systems**



## Milk price

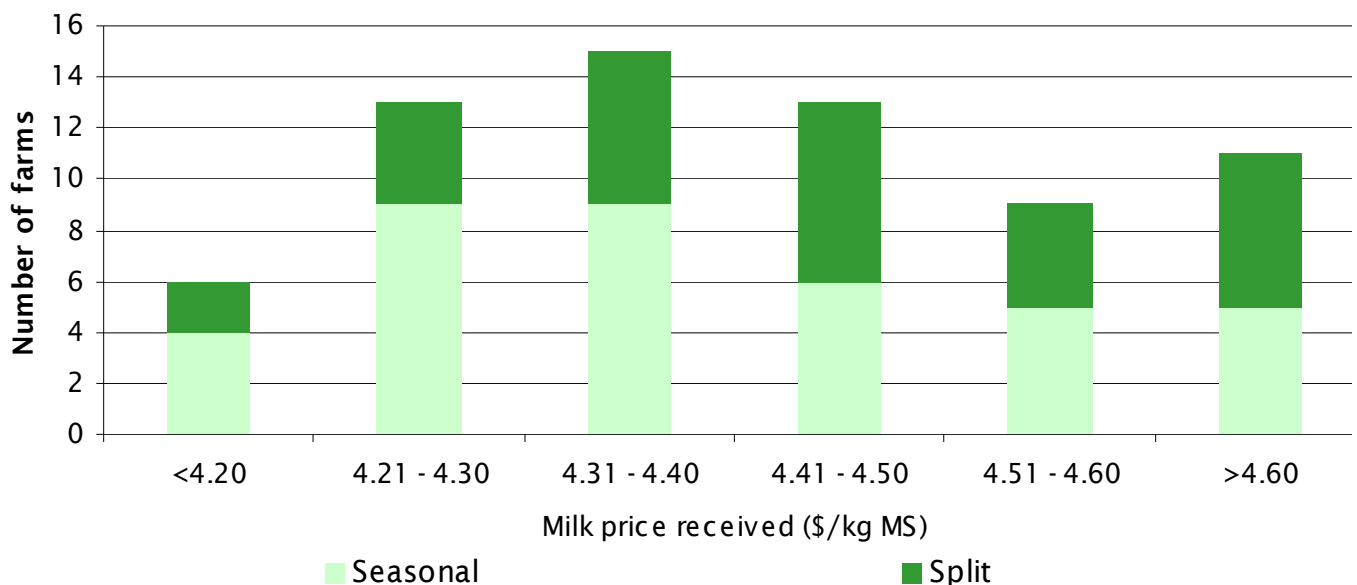
The majority of farmers received a milk price in the range of \$4.31 to \$4.40/kg MS (figure 6). Across the state the lowest recorded milk price was \$3.99/kg MS and the highest was \$5.78/kg MS.

Within this dataset milk supplier has little effect influencing the milk price received as almost 80% of farms in the dataset supply the export market and these farms recorded a milk price in each distribution range in figure 7.

At the top end of milk price received, as shown by 'greater than \$4.60/kg MS' in figure 6, milk supplier has a more pronounced effect. Of the 11 farms in this range, six supplied the export market and five supplied the domestic market and all of these four farms recorded a milk price over \$5.00/kg MS supplied a domestic milk company.

Split calving farms receive a slightly higher milk price than seasonal calving farms. The majority of split calving farms record a milk price in the range of \$4.41 to \$4.50/kg MS. Of the 29 split calving farms in the project, 17 or 59% record a milk price greater than \$4.41/kg MS. For the 38 seasonal calving farms, 22 or 58% record a milk price of less than \$4.40/kg MS. Whilst split calving farms record a higher milk price, all farms receive a range of milk prices which could be related to factors beyond calving pattern such as incentives from their respective milk company.

**Figure 6. The distribution of milk price received**





## Profitability

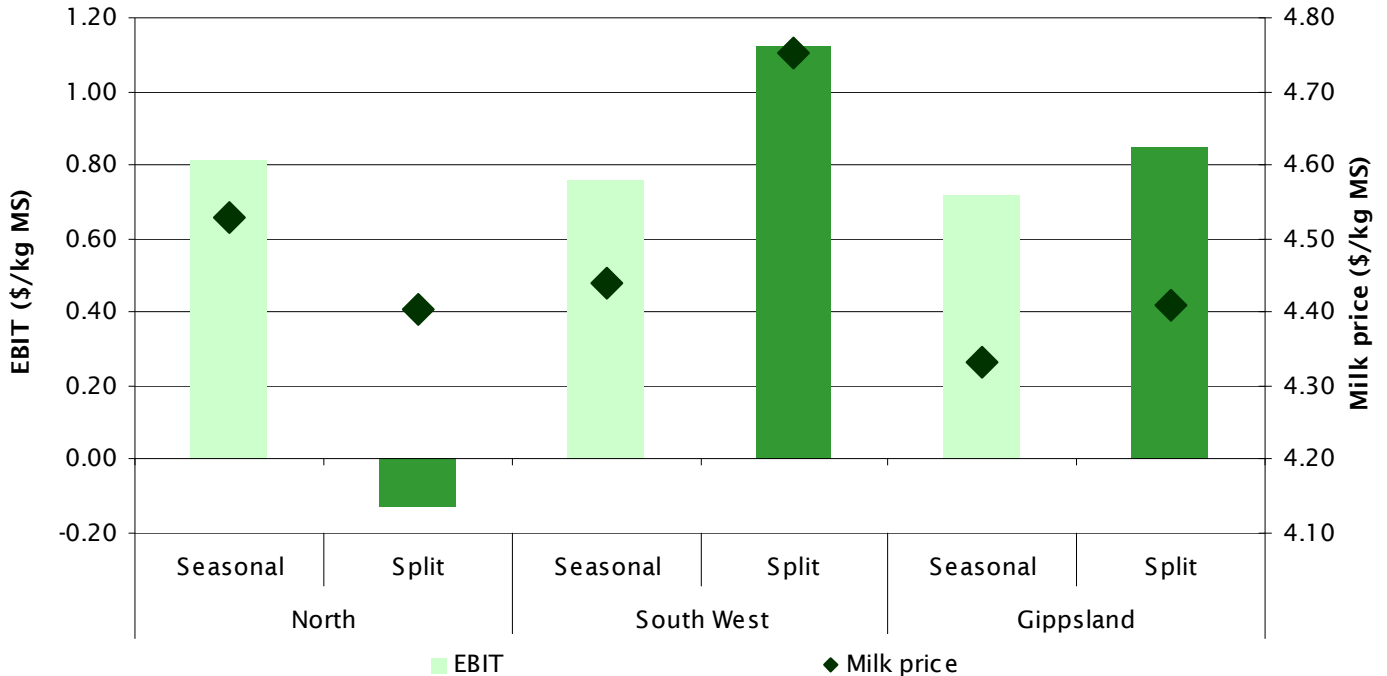
Within this analysis the most profitable calving systems are also those that receive the highest milk price (figure 7). These farms are seasonal in the North and split in the South West and Gippsland. Profitability is measured by earnings before interest and tax (EBIT).

In the North the most profitable calving pattern, seasonal, on average, record earnings before interest and tax (EBIT) of \$0.81/kg MS. These farms feed the greatest amount of home grown feed and supplements per cow, and have the lowest feed costs. Split calving farms on average record an EBIT of minus \$0.13/kg MS which is due to their higher cost of production and lower milk price received.

In the South West the most profitable calving system is split calving, recording an EBIT of \$1.12 /kg MS. These farms have higher feed costs but are able to generate greater milk production of 712 kg MS/ha compared to 605 kg MS/ha. Seasonal calving herds recorded an EBIT of \$0.76 kg MS and also receive a lower milk price.

In Gippsland the highest EBIT is achieved by split calving which record \$0.85/kg MS compared to \$0.72/kg MS for seasonal calving farms. The greater milk production of the split calving farms of 859 kg MS/ha compared to 797 kg MS/ha is the driver of profits in this region.

**Figure 7. Farm profit and milk price received per kilogram milk solids**



# Labour

## People productivity

Labour efficiency is another consideration in adopting a particular calving pattern. Of the 12 farms which stated that social aspects were important for deciding their calving pattern, seven specifically stated that having holidays and a break were motivations for their calving pattern; these were seasonal calving farms. This highlights that labour efficiencies are important social reasons for some farms.

The most labour efficient calving systems are seasonal in the North, and split in the South West and Gippsland (table 1). These farms are also the most profitable. Seasonal calving farms have fewer labour units but are not always the most labour efficient.

Employed and imputed people costs combined represent 26% of total costs to the dairy business. Table 1 shows that employed people costs are less than imputed people costs. Imputed costs are calculated as \$20/hour of the owner/operator and family members or \$400 per cow less employed labour, dependent upon which is greater. Split calving farms in the South West have the lowest people costs by \$0.14/kg MS and are the most labour efficient farms across the state. Those farms that have the lowest people costs are also the most profitable.

**Table 1. Labour efficiency cost of seasonal and split calving systems**

	North		South West		Gippsland	
	Seasonal	Split	Seasonal	Seasonal	Split	Seasonal
<i>Labour efficiency</i>						
No. of labour units	3.04	3.17	3.28	4.13	2.48	3.60
Cows/labour unit	95	91	89	109	91	108
Hectare/labour unit	72	66	71	91	61	62
kg MS/labour unit	48,123	46,948	41,256	59,471	43,035	52,085
<i>Labour cost</i>						
Employed people cost (\$/kg MS)	\$0.31	\$0.34	\$0.36	\$0.39	\$0.28	\$0.45
Imputed people cost (\$/kg MS)	\$0.73	\$0.80	\$1.06	\$0.50	\$0.95	\$0.58

## Conclusion

The majority of participants in the DIFMP employ a seasonal calving pattern. The drivers for adopting a particular pattern are largely driven by matching feed supply with animal demand and receiving milk price incentives. It also appears that farms in the high rainfall zone adopt seasonal calving systems.

The most profitable farms are seasonal in the North, and split calving in the South West and Gippsland. In comparison to the other calving system in their respective region, these farms achieve the highest milk price, lower costs; variable, overhead and people costs, and are the most labour efficient.

Feed costs are the biggest cost to the dairy business, particularly concentrates, but decreasing expenditure on feed costs does not directly translate to higher profit. In the South West and Gippsland split calving herds are larger and have greater milk production per hectare, compared to seasonal calving herds. This amounts to higher feed costs but generates overall increase in farm profit.

This analysis shows that calving pattern can influence overall business profitability in a particular region via milk price and costs relative to production. However individual farm analysis indicates that healthy farm returns can be generated by either seasonal or split calving patterns, given appropriate management.

# Appendix

**Table 1. Indicators for seasonal and split calving systems for the three dairying regions of Victoria**

Indicator	North		South West		Gippsland	
	Seasonal	Split	Seasonal	Split	Seasonal	Split
Total usable area (ha)	224	225	240	408	161	216
Herd size	276	293	303	456	230	388
Stocking rate (hd/ha)	1.37	1.48	1.31	1.30	1.68	1.77
Grazed pasture (t DM/ha)	5.20	4.32	5.77	5.69	7.40	8.06
Conserved pasture (t DM/ha)	0.60	0.63	0.93	0.97	0.99	0.81
Total Supplements (t DM/cow)	3.37	4.80	2.69	3.61	2.68	2.57
Home grown feed as a % of ME consumed	61%	46%	74%	66%	73%	71%
Milk production (kg MS total)	137,943	154,918	142,916	248,385	109,004	184,153
Milk production (kg MS/ha)	700	775	605	712	797	859
Milk price (\$/kg MS)	\$4.53	\$4.40	\$4.44	\$4.75	\$4.33	\$4.41
Feed costs (\$/kg MS)	\$2.73	\$3.26	\$1.83	\$2.28	\$1.92	\$2.12
Total variable costs (\$/kg MS)	\$2.73	\$3.26	\$2.21	\$2.64	\$2.30	\$2.50
Total overhead costs (\$/kg MS)	\$1.71	\$1.88	\$2.21	\$1.50	\$1.92	\$1.69
Total costs (\$/kg MS)	\$4.44	\$5.14	\$4.42	\$4.14	\$4.22	\$4.19
Earnings before interest and tax (\$/kg MS)	\$0.81	-\$0.13	\$0.76	\$1.12	\$0.72	\$0.85