

MOST PROFITABLE TIMES OF CALVING FOR WESTERN AUSTRALIAN DAIRY FARMS

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Calving pattern, or the proportion of cows calving in each period throughout the year, has a large effect on milk production at different times of the year, the cost of providing feed for the cows and profit. Determining the most profitable calving pattern is complex as it has implications for many aspects of management. The Western Australian Dairy Farm Model (WADFM) determines the most profitable whole farm management and the likely change in profit with changes in management (Olney and Kirk 1989). All runs with the WADFM for farms in Western Australia (WA) have selected a predominance of summer calving, with either Jan/Feb (JF) or Nov/Dec (ND) as the major calving group. Sometimes cows were also selected to calve in July/Aug (JA) or Sept/Oct (SO), but no May/June (MJ) or March/April (MA) calvers were ever selected. Concentrated calving over a few summer months imposes practical problems for farmers and also involves risk if there are changes in the seasonal prices for milk.

The WADFM was used to determine the most profitable calving patterns and the change in predicted profit with various fixed calving patterns for herds on non-irrigated farms in WA.

Runs with the WADFM were carried out for a standard non-irrigated dairy farm with 150 ha of pasture that could be grazed by milking cows. Nine combinations of additional run-off areas of 0, 75 and 150 ha where non-milkers could graze and allowing up to 0, 100 and 200 t of hay to be purchased were compared. It was assumed 6.1 t/ha DM of pasture could be utilised and up to 50% of the area of pasture could be conserved as hay or silage, with an upper limit of 33% for each. Manufacturing milk prices applying in WA in 1993/94, ranging from about 14 c/L at the farm gate in spring to about 29 c/L in autumn, were used. It was assumed there was no market milk quota as this would require a minimum quantity of milk to be produced throughout the year.

The changes in predicted profit and the selected calving pattern were determined with increasing and decreasing milk prices by 5 and 10 c/L throughout the year and individually for the 2 month periods. Alternative calving patterns were then compared with the optimum to help determine calving patterns which would be practical for farmers to adopt and avoid risk caused by changes in seasonal prices for milk. The proportion of cows allowed to calve in each period for the fixed calving patterns compared were:

- C1 JF = twice JA = twice SO = ND, no MA or MJ included
- C2 JF = JA = SO = ND, no MA or MJ included
- C3 JF = twice MA = twice MJ = twice JA = twice SO = ND
- C4 even throughout year, ie. JF = MA = MJ = JA = SO = ND

All cows were selected to calve in JF when there was no run-off area or purchased hay. When a run-off area was included or hay could be purchased ND cows progressively replaced JF cows. Some JA or SO cows were included with the run-off area of 150 ha, this number increasing with purchased hay.

Increasing milk prices throughout the year increased ND and reducing milk prices usually increased JF. Changing the milk prices in specific periods resulted in minor adjustments to the selected calving pattern, however JF remained the major group when the seasonal bonuses currently operating from December to May were reduced, and no MJ or MA cows were selected for any of the milk price scenarios examined.

The average reduction in profit below the optimum selected by the model for the 9 combinations of run-off area and purchased hay for calving options C1, C2, C3 and C4 was \$6,200, \$9,900, \$22,800 and \$30,400 respectively. The ranking in profit reduction was the same in all cases. Profit is always greatly reduced when MJ and MA cows are included. This is because they are calving too late to produce milk when the higher seasonal prices are received, but still incur high costs of feeding as little pasture is available until these cows are in mid lactation.

Calving options similar to C1 and C2 give close to the maximum profit without the risk of calving all cows in a short period. These options, which exclude MA and MJ cows, would also have a similar profit to the optimum calving pattern with any likely changes in the price for milk. Western Australian farmers have increased the proportion of their herds calving in summer in the last 4 years, but profit could be further increased by avoiding having any cows calving during MJ in particular, but also MA.

OLNEY, G.R. and KIRK, G.J. (1989). *Agric.Syst.* 31: 367-80.