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College of Agriculture, Food & Rural Enterprise

DAIRY HERD FERTILITY
CHALLENGE NOTE B - The Cost of Replacing Cows Culled Not-in-Calf

The cost associated with replacing dairy cows that have to be culled as a result of not being in calf is the single biggest cost of poor dairy herd fertility (see Challenge Note A: Extra Profit From Improved Dairy Herd Fertility). This Challenge Note outlines the cost of replacing cows culled as a result of not being in calf.

Contents

Rearing dairy heifer replacements is expensive. In the past when calculating heifer rearing costs, many calculations have ignored some significant costs that should have been included, e.g. costs of producing and feeding forage. Table 1 lists expenses that are incurred in rearing dairy heifers and gives an indication of the associated costs. The figures are based on data taken from the Farm Business Data Handbook, Greenmount Campus, College of Agriculture Food and Rural Enterprise accounts and Benchmarking data from commercial dairy farms throughout Northern Ireland.

Table 1: Cost of 2-year old dairy heifer replacements entering the dairy herd.

	Cost (£/animal)
Calf value(1)	105
Variable costs:	
Rearing to 3 months	57
Forage	78
Concentrate	98
AI, vet, medicine and misc.	47
Total variable costs	**280**
Fixed costs(2)	320
Land opportunity cost(3)	125
Total cost	**830**

(1) Assumes a 2% mortality allowance and 5% of heifers reared not in calf

(2) Fixed costs are taken from benchmarking data and are allocated on a stocking rate basis. They include machinery repairs and maintenance, property repairs, electricity, rates, phone, contracting, depreciation, labour, finance and miscellaneous.

(3) Land opportunity cost calculated assuming a charge of £250 per hectare at a stocking rate of 2.05 cow equivalents per hectare.

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First lactation heifers will on average produce about 80% of the milk yield of the average cow in the herd. Therefore each extra heifer introduced to replace a cow culled not in calf will add an additional cost of about £170 to an 8000 litre herd (based on a milk price of 18 pence per litre, a quota leasing cost of 3 ppl and concentrate costing £150/tonne fed at a rate of 0.30 kg per litre). If the value of the cull cow is £270, then the total cost of replacing a cow culled not in calf is approximately £730.

The average value of cull cows in Northern Ireland over the last 5 years, including the slaughter premium, is shown in Table 2.

Reducing the Cost of Rearing Heifers

The final cost of heifer rearing can be affected by many factors. One of the main factors is age at calving. For example, if the age at calving were reduced so that heifers calved at 2 rather than 3 years, savings through reduced forage costs and land rental costs of up to £5000 per year for a 100 cow dairy herd are possible. This equates to a saving of £150-200 per heifer reared. Moving from 3 to 2 year calving and using the land and buildings released to carry additional cows has the potential to allow the same dairy farmer to increase profits by up to £10,000 even after additional feed costs and quota leasing charges.

Reasons for Culling Cows

The cost of culling cows outlined above is a major cost on Northern Ireland dairy farms. The reasons for culling cows have been assessed on numerous occasions. Table 3 outlines the reasons for culling as identified by two recent studies conducted by the Agricultural Research Institute of Northern Ireland and the University of Reading.

The findings of these studies indicate that the three most prevalent reasons for culling cows are infertility, lameness and mastitis. The proportions culled for infertility appear to be lower in Northern Ireland. However, this may be due to a greater proportion of the herds involved in the study selling cows as breeding stock as indicated by the higher proportion of cows culled for 'management reasons'. In England, a large number of cows were culled over the period of the study from 1990 to 1992 as a result of BSE. The average culling rates from the Hillsborough and Reading studies were 28% and 24% respectively.

The University of Reading found that over 50% of cows are culled by the end of the third lactation. Infertility accounted for a higher proportion of cows culled in the early lactations while mastitis and lameness accounted for an increasing proportion of culls in later lactations.

Table 2: Value of cull cows.

	1998	1999	2000	2001	2002
Carcass price (£/kg dwt)	116	112	104	108	109
Carcass weight (kg)	216	218	230	243	240
Slaughter premium (£/head)	-	-	17	33	50
Cull cow value (£/head)	251	244	256	296	311

Table 3: Reasons for culling dairy cows.

Reason for culling	% of cows culled	
	Northern Ireland	England
Infertility	27	37
Lameness	15	11
Mastitis	10	10
Disease	7	12
Management reasons (including stock sales)	20	12
Poor yield, temperament etc	14	11
Unknown	7	7

Source: ARINI and University of Reading

The target replacement rate for a dairy herd has been calculated to be 18-20% and takes account of the cost of heifer rearing, the value of culls, genetic improvement, mastitis and age. This target is achievable for commercial farmers as indicated by the University or Reading study, where the average culling rate for the best 25% of farmers involved in the study was 17.5% over a 3-year period. Achieving a culling rate of 20% in Northern Ireland would represent a potential annual saving of £5200 for the average sized dairy herd.

Summary

- The biggest cost of infertility in dairy cows is the culling of cows not-in-calf.
- Each cow culled for infertility costs £730 and this cost is increased if the cost of replacements exceeds £830.
- Avoid culling valuable cows to maintain a short calving index, and decide if seasonal calving is a viable option worth if it requires high culling rates.