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Cattle



UNIVERSITY OF EXETER

Agricultural Economics Unit

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# THE DISPOSAL OF DAIRY COWS

## In England and Wales 1972-73

V. H. Beynon and  
K. S. Howe

July 1974  
Price 40p

THE DISPOSAL OF DAIRY COWS  
In England and Wales 1972-73

by

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Agricultural Economics Unit

St. German's Road

EXETER

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## Contents

	Page
Acknowledgements	(i)
List of Tables	(iii)
List of Appendix Tables	(iv)
I INTRODUCTION	1
II THE PATTERN OF DAIRY COW DISPOSALS	4
Analysis of replacement rates	4
Reasons for disposal of dairy cows	9
Destination of dairy cow disposals	11
III THE ECONOMICS OF DAIRY COW DISPOSALS	13
Net receipts	13
Depreciation	16
Veterinary fees and medicines	19
IV IMPLICATIONS OF THE SURVEY RESULTS	20
Factors affecting lactation structure	20
Economies of resource use	24
V SUMMARY	26
Statistical Note	28
Appendices	29

List of Tables

Table	Page
1 Distribution of herds by breed, England and Wales, 1972-73	3
2 Dairy cow replacement rates, England and Wales, 1972-73	5
3 Dairy cow replacement rates, England and Wales, 1972-73 By province	5
4 Dairy cow replacement rates, England and Wales, 1972-73 By yield group	6
5 Dairy cow replacement rates, England and Wales, 1972-73 By size of herd	6
6 Dairy cow replacement rates, England and Wales, 1972-73 By breed of herd	7
7 Monthly distribution of cow disposals, England and Wales, 1972-73	7
8 Monthly distribution of cow disposals, Eastern regions, 1972-73	8
9 Monthly distribution of cow disposals, Western regions, 1972-73	8
10 Main reasons for the disposal of dairy cows, England and Wales, 1972-73	9
11 Destination of dairy cows by main reasons for disposal, England and Wales, 1972-73 - All cows	11
12 Destination of dairy cows by main reasons for disposal, England and Wales, 1972-73 - Friesians only	11
13 Net receipts per cow, England and Wales, 1972-73	16
14 Estimates of depreciation on dairy cows, England and Wales, 1972-73	17
15 Lactation structure of the dairy herd, England and Wales, 1972-73	20
16 The theoretical lactation structure of the national dairy herd, England and Wales, 1972-73	21
17 Lactation structures of the national dairy herd, England and Wales, 1972-73	22
18 The impact on resource requirements of increasing the effective life of dairy cows, England and Wales	24

List of Appendix Tables

Table	Page
I Size distribution of dairy herds in the cow disposals survey, England and Wales, 1972-73	30
II Reasons for disposal of dairy cows in relation to destination, England and Wales, 1972-73 - All cows	31
III Reasons for disposal of dairy cows in relation to destination, England and Wales, 1972-73 - Friesians only	32
IV Factors influencing the main reasons for disposal of dairy cows, England and Wales, 1972-73	33
V Average net receipts for dairy cow disposals in relation to destination and reason for disposal, England and Wales, 1972-73	34
VI Reasons for disposal of dairy cows sent to knackers or kennels, England and Wales, 1972-73	35
VII Factors associated with average depreciation per cow per herd, England and Wales, 1972-73	36
VIII Factors associated with veterinary fees and medicinal expenditure on dairy cows, England and Wales, 1972-73	37

## I INTRODUCTION

Since the immediate post-war period the average productive life of dairy cows in England and Wales has increased. In the mid-1940's it was between three and four years. The summary of the Milk Costs Investigation in England and Wales for 1968-69\* contains estimates ranging from four years four months to five years five months, which are almost identical with those for 1965-66.

Replacement rates are influenced by several factors such as costs of dairy heifer replacements, the costs of the main variable inputs used in milk production, cull cow prices, and the overall profitability of dairying relative to other farm enterprises. Normally producers have some choice in the time of disposal, allowing them to delay the decision to sell certain cows until cull cow prices improve. However, the onset of disease or a spate of accidents may force farmers to sell immediately and accept the ruling market prices. Such a position might result in inflated depreciation costs.

In general, it is in the interests of dairy farmers to prolong the effective productive life of their dairy cows. By doing so, depreciation charges are spread over the maximum number of gallons and productive years. These depreciation charges depend on the extent to which resources incorporated in dairy cows at the beginning of their productive lives are recovered at the end. The eventual realisation prices are largely determined by the current state of the market for beef, but normally depreciation is influenced by three major factors. These are the incidence and nature of disease, the impact of accidents, and the general wear and tear which afflicts animals and machines alike. The methods used in the 1968-69 Milk Costs Investigation resulted in a depreciation of £8.12 per cow and 0.98p per gallon. These figures were equivalent to 6.7 per cent of total costs, a trivial item compared with feed and labour.

The relative unimportance of depreciation in total costs should not be allowed to induce a sense of complacency. The reduction of depreciation implies a general increase in the efficiency with which resources are deployed. For this reason in particular this report sets out to examine closely the reasons for disposal of dairy cows. There have been previous informative regional reports published on the subject. The attraction of the present investigation is its comprehensive coverage - it relates to the whole of England and Wales - and the fact that the information refers to a random sample of

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\* "Costs and Efficiency in Milk Production", M.A.F.F., 1972, p.59.



dairy farms. These features should provide a reliable picture of the disposal of dairy cows in England and Wales during the year ended 31st March 1973. Past Milk Costs Investigations have provided figures of replacement rates without explanation of the principal factors which influence them. The 1972-73 Investigation was designed to rectify this situation and provides information on the following aspects of disposal of dairy cows:-

- (a) gross and net replacement rates for dairy cows
- (b) reasons for disposal of dairy cows
- (c) purposes for which dairy cows are disposed
- (d) net receipts for each dairy cow disposal
- (e) average depreciation per cow for each herd
- (f) average charges incurred in veterinary fees and medicine per cow for each herd
- (g) lactation structure of the national dairy herd

The report sets out to establish the impact of such factors as breed, herd size and general herd performance (measured in terms of average yield per cow), on the general area of dairy cow disposals.

The herds in the subsequent analyses accounted for most of the dairy farms examined as part of the national investigation. The sample is designed to meet the principal objective of the Investigation, which is to yield representative information on the costs of producing milk. For 1972-73, a random sample of 500 dairy farms was selected to reflect variations both in herd size and in the regional distribution of milk production. Inevitably, the number of completed records differs from the number originally requested. Changes in policy, accidents, retirements and deaths, all take their toll. Also, as far as the cow disposals information is concerned, some of the co-operators in the scheme failed to provide the necessary information and had to be excluded. Although data for 470 herds were ultimately obtained, the cow disposals sample is very close to, although not identical with, the final sample relating to the milk costings.

The information contained in this report relates in the main to the cows disposed of from the 470 herds containing 25,000 dairy cows of various breeds. The outstanding importance of Friesian herds accounting for nearly 78 per cent of all herds is illustrated in Table 1. It explains why some analyses have been carried out for both the Friesian breed and all other breeds in total.

Details of the sample distribution by herd size and province are given in Appendix Table I.

Table 1 Distribution of herds by breed, England and Wales, 1972-73

Breeds	Herds	
	Number	Per cent
Friesian	366	77.9
Ayrshire	17	3.6
Jersey	17	3.6
Guernsey	15	3.2
Other	55	11.7
Total	470	100.0

## II THE PATTERN OF DAIRY COW DISPOSALS

Published information on the rates of replacement of breeding animals must be interpreted with care. These statistics often vary quite widely because of the methods used in calculation. Animals disposed of may be related to the opening or closing or some annual average inventory of the breeding stock. In periods of stability it does not matter which inventory is used, but increasing or decreasing numbers over the study period may have an impact on the magnitude of the estimated replacement rates. For instance, replacement rates defined as livestock disposals in relation to the opening inventory in a period of increasing population are influenced both by the fewer numbers at the beginning of the year and by possible delay in replacing certain cows over the expansion period. It is important therefore to ensure that the calculated rates are not influenced unduly by changing numbers of livestock. Over the year 1972-73 the numbers of dairy cows included in the investigation increased markedly. Hence it was considered advisable to relate cow disposals to an average annual inventory.\*

### Analysis of replacement rates

It is important to establish whether replacement rates are gross or net. The essential difference between the two is the inclusion of all cow disposals in the former, irrespective of whether they die, are slaughtered or enter other units for further breeding. The net replacement rate excludes those animals which are retained in the national herd. Dairy cows may be sold to other farmers for milk production. This net figure may be further refined by deduction of cows transferred out of the milking herd. In most cases it is probable that animals transferred to beef enterprises as suckler cows will not return to the dairy herd. It is important that such practices are appreciated in calculating and interpreting the different rates of replacing breeding animals. These gross and net replacement rates for dairy cows in England and Wales are set out in Table 2.

In total 4,349 cows were disposed of in the entire sample, of which 424 were sold for further milk production and a further 138 transferred out. In relation to the 25,012 cows, the gross and net replacement rates for England and Wales in 1972-73 are 17.4 per cent and 15.7 per cent respectively. These indicate an effective herd life of 5.7 and 6.4 years respectively. Allowing

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\* Defined as the simple average of the opening, mid-point and closing inventories.

for dairy cows transferred out of the herd - such cows could be reintroduced into the milking herd - then the effective life is raised to over 6.6 years.

Table 2 Dairy cow replacement rates, England and Wales, 1972-73

Replacement rates	Average number of cows in sample herds	Disposals	
		Number	Per cent of average
Gross	25012	4349	17.4
Net	25012	3925	15.7
Net less transfers out	25012	3787	15.1

The information in Table 3 shows that there are marked regional variations in replacement rates. However, care should be taken in imputing any significance to these because of the movement of dairy cows between provinces. It should be noted that the replacement rates are highest in the Cambridge province and lowest in Exeter and Leeds. The greatest differences between gross

Table 3 Dairy cow replacement rates, England and Wales, 1972-73

By province

Province	Replacement rates		
	Gross	Net	Net less transfers out
	per cent		
Newcastle	17.4	15.2	14.1
Leeds	15.2	12.4	10.7
Manchester	19.1	16.1	15.8
Nottingham	19.1	17.8	17.8
Cambridge	20.4	19.8	19.8
Wye	17.3	16.9	16.8
Reading	18.6	17.1	15.8
Bristol	16.9	15.4	14.9
Exeter	13.8	13.2	13.0
Wales	17.3	14.6	13.5
Total	17.4	15.7	15.1

and net replacement rates occur in the Manchester, Leeds, Wales and Newcastle provinces which suggests a significant trade in dairy cows. Unfortunately the

information readily available does not throw light on whether such trade is predominantly intra-regional, inter-regional, or both.

The data have been analysed on the basis of average herd yields in Table 4. A reasonable expectation is that there is a greater replacement rate in high yielding herds on the assumption that such herds are maintained partly at least by culling lower yielding cows. However, there is very little in Table 4 to indicate that this is so.

Table 4 Dairy cow replacement rates, England and Wales, 1972-73  
By yield group

Replacement rates	Yield (galls)	Less than 700	700-799	800-899	900-999	1000 and over	All groups
	per cent						
Gross		17.5	17.1	16.5	18.4	17.2	17.4
Net		15.6	15.1	14.9	16.7	15.6	15.7
Net less transfers out		14.7	14.0	14.5	16.0	15.4	15.1

Replacement rates by size of herd are set out in Table 5. Here again, apart from the higher replacement rates within herds of less than 20 cows, there was little to suggest that size is influencing replacement rates. In this

Table 5 Dairy cow replacement rates, England and Wales, 1972-73  
By size of herd

Replacement rates	Herd size (cows)	6-19.9	20-39.9	40-59.9	60-79.9	80-99.9	100 and over	All herds
	per cent							
Gross		26.2	16.9	17.3	17.1	17.3	16.8	17.4
Net		21.4	14.4	15.3	15.7	15.8	15.9	15.7
Net less transfers out		18.5	13.7	14.8	15.2	15.6	15.6	15.1

sample of dairy farms the lowest net replacement rates were found within herds having 20 to 60 cows, and the highest in those herds with less than 20. The pattern is not unexpected, given that farmers with the smallest herds are known

to be leaving milk production while most of the remaining farmers have steadily increased herd size in post-war years.

Although the sample is dominated by Friesian herds the information has also been analysed by Ayrshire and all other breeds. The results are set out in Table 6. There is some indication that net replacement rates less transfers out are greater in the non-Friesian herds. This may reflect the trend towards progressively more Friesian herds rather than real breed differences.

Table 6 Dairy cow replacement rates, England and Wales, 1972-73  
By breed of herd

Replacement rates	Breeds			
	Friesian	Ayrshire	All others	All breeds
	per cent			
Gross	17.4	18.2	17.1	17.4
Net	15.6	16.0	16.1	15.7
Net less transfers out	14.9	15.0	15.9	15.1

The timing of cow disposals during the year 1972-73 is set out in Tables 7 to 9. Nearly 42 per cent of the disposals in England and Wales took place during the summer six months.

Table 7 Monthly distribution of cow disposals, England and Wales, 1972-73

Summer			Winter		
Month	Number	Per cent	Month	Number	Per cent
April	292	6.7	October	420	9.7
May	301	6.9	November	532	12.2
June	340	7.8	December	334	7.7
July	219	5.0	January	505	11.6
August	296	6.8	February	391	9.0
September	373	8.6	March	346	8.0
Sub-total	1821	41.8	Sub-total	2528	58.2
Total annual disposals = 4349					

Table 8 Monthly distribution of cow disposals, Eastern Regions, 1972-73

Summer			Winter		
Month	Number	Per cent	Month	Number	Per cent
April	112	6.5	October	180	10.4
May	122	7.1	November	218	12.6
June	151	8.7	December	126	7.3
July	52	3.0	January	238	13.7
August	119	6.9	February	150	8.7
September	154	8.9	March	107	6.2
Sub-total	710	41.1	Sub-total	1019	58.9
Total annual disposals = 1729					

Table 9 Monthly distribution of cow disposals, Western Regions\*, 1972-73

Summer			Winter		
Month	Number	Per cent	Month	Number	Per cent
April	180	6.9	October	240	9.2
May	179	6.8	November	314	12.0
June	189	7.2	December	208	7.9
July	167	6.4	January	267	10.2
August	177	6.8	February	241	9.2
September	219	8.3	March	239	9.1
Sub-total	1111	42.4	Sub-total	1509	57.6
Total annual disposals = 2620					

\* including Newcastle province

It is noticeable that the analyses for the wetter, grassier western regions and for the drier eastern regions exhibit little variation from the overall pattern. The three tables show that peak disposals occurred in November 1972 and January 1973.

Reasons for disposal of dairy cows

There is considerable difficulty involved in obtaining comprehensive data on the reasons why dairy farmers dispose of cows. The last investigation of this area related to the years 1957-58 and 1958-59 and was conducted by members of the veterinary profession. The subsequent report\* contained estimates of the importance of various diseases in the dairy herd in Great Britain. The study was backed by professional diagnoses and as such has advantages over surveys based on comments from farmers. Quite frequently, however, farmers included in the Milk Costs Investigation would have obtained diagnoses from veterinary officers.

The classification of the various reasons for disposing of dairy cows has proved difficult and the major categories set out in Table 10 below must not be regarded as exhaustive.\*\* For instance, many disposals entered under other reasons could very well be more precisely classified if professional diagnoses

Table 10 Main reasons for the disposal of dairy cows,  
England and Wales, 1972-73

Main reasons	Friesians		All cows	
	Number	Per cent	Number	Per cent
Reproductive problems	1232	35.3	1525	35.1
Infectious diseases	419	12.0	491	11.3
Non-infectious diseases	315	9.0	405	9.3
Other reasons	1527	43.7	1928	44.3
Total	3493	100.0	4349	100.0

were available. Nevertheless, it is hoped that the data highlight major areas where additional attention is necessary from both farmers and members of the veterinary profession. Although the major category - other reasons - contained some 44 per cent of disposals, it must be emphasised that cows sold because of old age, poor yields and as surplus stock were included here. Together, these three groups accounted for over 31 per cent of the total. If these animals are ignored then the most important diseases afflicting dairy cows are those under the general heading of reproductive problems. The most common reason

\* Animal Disease Surveys. Report No. 3. H.M.S.O. 1964.

\*\* More detailed analyses for "All cows" and Friesians alone are given in Appendix Tables II and III.



given for selling cows was "failure to breed", and there is obviously an urgent need to investigate this category further so that the root causes of such failures can be ascertained.

In spite of the tremendous strides taken in controlling mastitis, Appendix Tables II and III show that there are still large numbers of dairy cows which suffer from the disease. About 10 per cent of sample disposals were sold for this reason. Most of the cows were sold for slaughter but it is disquieting to find that some were sold for further milk production. It should be noted that the figure of just over one per cent for deaths will be an underestimate, because some dead animals sent to kennels or knackers were not recorded as such.

It would be generally acknowledged that the analyses of reasons for disposal of dairy cows are in themselves valuable to all concerned with milk production. They would be even more valuable if they could identify factors having an impact on disease and influencing herd longevity. For example, it is reasonable to assume that there could be associations between effective milking life and both herd size and milk yield. Furthermore, only a relatively small proportion of cows in the national herd achieve more than three or four lactations, and this position needs to be examined further.

An attempt has been made in Appendix Table IV to highlight the various factors which might be associated with different reasons for disposal. It has already been emphasised that the general category of breeding problems constitutes the main reason for disposing of dairy cows. This is followed by low yields and udder conditions, the three categories together accounting for nearly 70 per cent of cow disposals in England and Wales. Dairy cows in the larger herds, high yielding cows, and those in their third or subsequent lactations appear more likely to suffer from reproductive problems. The impact of herd size on udder problems is not obvious, but cows in higher yielding herds seem to be more prone to mastitis and other udder conditions.

A notable feature of the analysis by lactation is the importance of low yields as a reason for culling cows in their first, second and third lactations. Together with reproductive problems these are the main reasons why so many dairy cows are culled from individual herds. "Low yield" is of course a relative term and it is noteworthy that the highest proportions of cows disposed of for reasons of low yield were found in herds with over 100 cows and in herds with average yields in excess of 1,000 gallons. It is not clear whether low yields are associated with disease but the fact that nearly one in five cows was culled because of this needs very careful scrutiny.

Destination of dairy cow disposals

Tables 11 and 12 show the destination of cow disposals in relation to main reasons for disposal. These tables are derived from the detailed analyses in

Table 11 Destination of dairy cows by main reasons for disposal,England and Wales 1972-73

All cows

Main reasons	Destination					Total	Per cent of all disposals
	Further milk	Beef	Knack-ers	Trans-fers out	Not known		
	per cent						
Reproductive problems	0.1	94.2	4.5	1.2	0.0	100.0	35.1
Infectious diseases	0.8	91.4	4.3	3.5	0.0	100.0	11.3
Non-infectious diseases	1.7	42.7	52.7	2.7	0.2	100.0	9.3
Other reasons	21.3	67.2	4.3	4.8	2.4	100.0	44.3
Total	9.7	77.1	8.9	3.2	1.1	100.0	100.0

Table 12 Destination of dairy cows by main reasons for disposal,England and Wales 1972-73

Friesians only

Main reasons	Destination					Total	Per cent of all disposals
	Further milk	Beef	Knack-ers	Trans-fers out	Not known		
	per cent						
Reproductive problems	0.2	94.8	3.7	1.3	0.0	100.0	35.3
Infectious diseases	0.9	91.4	4.1	3.6	0.0	100.0	12.0
Non-infectious diseases	1.6	43.9	51.7	2.5	0.3	100.0	9.0
Other reasons	22.5	67.9	3.6	5.4	0.6	100.0	43.7
Total	10.1	78.1	8.0	3.5	0.3	100.0	100.0

Appendix Tables II and III. Although results for both "All cows" and "Friesians" are given, the dominance of Friesians in the national dairy herd is underlined by the very close resemblance of one table to the other.

The fact that well over 75 per cent of disposals were sold for beef is evidence of the importance of the dairy herd as a source of meat. Beef comes from the dairy herd directly as well as indirectly through provision of beef type calves. In relation to an estimated 497 thousand dairy cow disposals in England and Wales (see Table 14), this represents about 385,000 dairy cows slaughtered for beef. This is about 13.5 per cent of the national dairy herd in 1972-73. The fact that the next most important destination, sales for further milk production, accounted for only about 10 per cent of all disposals leaves no doubt as to the dominance of slaughter for beef as the outlet for disposals.

A detailed examination of the sample results shows, not unexpectedly, that over 90 per cent of disposals because of reproductive problems and infectious diseases were slaughtered for beef. As will be seen later, there has been a strong incentive to dispose of diseased cows through this channel because of the high prices received. In contrast, only about 44 per cent of disposals because of non-infectious diseases were slaughtered for beef, while nearly 52 per cent went to knackers or kennels. Non-infectious diseases include metabolic disorders such as milk fever and hypomagnesaemia, alimentary disorders such as bloat, and heart trouble. Cows suffering from these ailments would commonly be in very poor condition, or else too sick to withstand transport to the abattoir. Although the fact was unrecorded, some would have died on the farm. Whatever the specific reason for disposal, often there would be no alternative to sending cows to the knackers.

Sales for further milk production only assume importance in the "other reasons" category because sales of surplus stock and low yielding cows are entered here. Surplus stock are an exception to other disposals, because the reason for disposal stems from an economic incentive rather than because of disease. To some extent this may be true of low yielders, although it is always difficult to ascertain exactly why a cow is a poor milker. Whether cows are surplus to requirements or just low yielders, it would be expected that the numbers sold for further milk production in any period will be greatly influenced by the current profitability of dairying.

### III THE ECONOMICS OF DAIRY COW DISPOSALS

It is useful to examine the economics of cow disposals on the basis of both the net receipts per cow disposal and the average depreciation incurred per cow. The analysis of the former shows how sensitive these are to different reasons for disposal as well as to the purposes for which cows are sold. Depreciation per cow is the difference between the value of resources used to produce an animal up to the point of entry into the herd and its eventual realisation price. Total depreciation is the value of resources invested in dairy cows but not recovered at the end of production.

#### Net receipts

The impact on net receipts of both the reasons for disposal of cows and their destination is shown in Appendix Table V. Net receipts should be considered in relation to an average valuation of £153 each for all dairy cows. This figure is based on opening and closing valuations for the sample herds. Normally this reflects the average cost of all resources incorporated in dairy cows. The net receipts for all cows disposed of averaged £117 each, giving a depreciation of £36 per cow.

The analysis relating to reason for disposal shows that the average net receipts for cows sold because of reproductive problems, udder troubles and test failures were remarkably similar at about £120 each. "Test failure" here refers exclusively to cows reacting to brucellosis tests and most of these were slaughtered for beef, while the 0.6 per cent allegedly sold for further milk production probably reflect the very small proportion transferred between dairy herds. The similarity in net receipts under these three headings is evident because none of the conditions would materially affect the carcass value of an otherwise healthy animal.

The animals sold because of low yields averaged £135 each. This is higher than the average realisation figure because of the significant proportion, 19 per cent, sold for further milk production together with the 78 per cent that were presumably in good condition and slaughtered for beef. It must be remembered that information set out in Appendix Table IV indicates that the "low yield" category assumed greatest importance in those herds with over 100 cows and in those with average annual yields in excess of 1,000 gallons. It would seem therefore that "low yield" is a relative rather than an absolute term and could well apply to animals with yields significantly above the national average. The same comment applies to "old age", although most cows would

have given seven or more lactations. This category only averaged £108 per cow despite the fact that over 90 per cent were slaughtered for beef, but it must be realised that most of the old cows would yield low quality beef.

Cows sold because of "other disease conditions" realised an average of only £44 per cow, a figure which disguises the extreme values found in the category. Nearly 56 per cent of the animals went to knackers or kennels and hence earned negligible receipts, while virtually all of the remainder were slaughtered for beef and often earned in excess of £100. The wide dispersion of receipts reflects the condition which led to an individual cow being culled. For example, cows which were emaciated or even dead because of severe metabolic disorders went to knackers. Others less severely affected by disease were usually slaughtered for beef, although the degree to which a cow had lost condition would determine the proportion of the carcass which could be salvaged. The level of receipts indicates the proportion of a carcass which can be used.

Unclassified disposals averaged £94 per cow, which must be treated with caution since this is essentially a residual category. The fact that 15 per cent of these cows were transferred out of the dairy herd, 31 per cent went to knackers, 34 per cent were slaughtered for beef and 9 per cent were sold for further milk production indicates the diverse quality of the animals. The remainder had no recorded destination. The explanation for the spread over all destinations is found in the reasons for disposal. Farmers sometimes gave the reason in terms which were unclear, or the reason could be other than morbidity. An example of an unclear reason is that of cows described as being of unsuitable type, which could mean that a specific cow was a low yielder relative to her contemporaries, too beefy, or perhaps not up to pedigree conformation. Examples of cows disposed of for reasons other than morbidity were kickers, those of bad temperament and even electric fence jumpers.

Finally, cows sold as surplus stock averaged £160. In relation to the average valuation this represents an appreciation of £7 per cow. The 86 per cent of cows sold for further milk production would have averaged well over £160 per head, whereas the 11 per cent slaughtered realised a commensurately lower price. It is unlikely that those slaughtered for beef were strictly surplus stock. In practice they would be unsatisfactory for further milk production but this was not revealed by the data. The cows sold for further milk production were disposed of for two main reasons. Firstly, some producers have a definite policy of selling cows which fail to reach target performance for the herd or have achieved a certain number of lactations. Secondly, some producers mentioned the buoyant market in 1972-73 which did provide an exceptional

incentive to sell apparently healthy cows. Sometimes a producer feels that a high cash remuneration in the short run is preferable to the less assured flow of returns over the lifetime of an animal in milk production. In particular this would be the case on farms where high-potential heifers are ready to prove their worth as replacements for existing members of the milking herd. There is no way of knowing what proportions of the surplus stock were either animals suffering from some disease conditions, or genuine surplus cows.

With regard to the destination of cows leaving the herd it is interesting to examine the net receipts for cows sent to the knackers. At £12 per cow the financial penalty of having to dispose of cows in this way is clearly very severe. Little is known about the detailed pattern of receipts from knackers, and Appendix Table VI is an attempt to rectify this situation. In some categories of reasons for disposal there are a negligible number of observations. In others the numbers are larger but the wide dispersion of net receipts, for example for deaths, means that the average figures should be treated with caution. The average figures tend to be extremely low but there is a fairly considerable degree of variation. Some very high values attributable to large insurance payments were discovered. At the other extreme a few dead cows had no salvage value. Some of these were taken by knackers, and others were given to kennels.\*

The foregoing analyses are concerned only with annual averages of net receipts. They do not provide any assessment of how net receipts are influenced by month of disposal. Data set out in Table 13 provide some indication of the movement of prices of cows destined for further milk production and those slaughtered for beef.

During 1972-73 prices for cows for further milk production were remarkably steady ranging from an index of 96 in July to 114 in January. By comparison those slaughtered for beef ranged from a low of 100 in April to a high of 157 in January. The ratio of net receipts is an index of the attraction of selling cows for slaughter compared with selling them for further milk production. At no stage during the survey year did slaughter for beef become the

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\* The explanation for the relatively high average price of £56 per cow for poisoning is accounted for by the fact that three cows were recorded as having realised £110 per head. Since details of any insurance claims were not specified they have been included at total value. The information in Appendix VI is therefore influenced by the inclusion of insurance payments but their complete exclusion would still leave the overall average net receipts from knackers at about £12 per cow.

more attractive proposition and only in January 1973, with an index of 93, was the position of near parity achieved. This is in marked contrast to the most

Table 13 Net receipts per cow, England and Wales, 1972-73

Month	Cows sold for				Relative prices $\frac{\text{Col 3}}{\text{Col 1}} \times 100$
	Further milk production		Beef		
	Actual (£) (1)	Index (2)	Actual (£) (3)	Index (4)	
April	164.6	100	110.4	100	67
May	173.1	105	114.4	104	66
June	168.6	102	112.7	102	67
July	157.3	96	117.4	106	75
August	161.4	98	114.9	104	71
September	163.3	99	116.8	106	71
October	163.1	99	115.3	104	71
November	175.4	107	122.8	111	70
December	166.5	101	129.7	117	78
January	186.9	114	173.3	157	93
February	180.9	110	158.4	143	88
March	184.6	112	155.0	140	84

adverse position, when in May 1972 average net receipts for beef were barely two-thirds of the figure obtained for cows sold for further milk production.

### Depreciation

In the absence of precise information the average valuation of all cows in the sample is accepted as an approximation of the cost of resources used to produce dairy cows, because in a perfect world the valuation should relate to the cost of resources. However, the real world is neither perfect nor moving towards some static equilibrium. Fluctuations in supply and demand cause fluctuations in valuations of dairy stock, contributed to in some cases by sporadic outbreaks of disease and as a result valuations may not fairly reflect resource costs. These factors could obscure any concept of long-run equilibrium values. With these reservations in mind, the approach adopted provides what is believed to be the best possible estimate of depreciation.

Estimates of total depreciation for both the sample and England and Wales

### Veterinary fees and medicines

In common with depreciation per cow, the ideal approach to evaluating the relationship between productivity and veterinary fees and medicines would be based on individual cow data. The individual approach would allow a distinction between preventive and curative treatment and enable veterinary services to be evaluated in terms of their impact on yields, longevity and food conversion. Unfortunately only herd data are available and therefore it is not known whether all cows receive some small veterinary attention or whether services are concentrated on a few cows.

The data on veterinary fees and medicines are presented in Appendix Table VIII according to herd size, yield and turnover. It has been calculated that the average expenditure was £2.73 per cow and that 56 per cent of all dairy farmers in the sample spent between £1 and £3 per cow. In general, the larger herds showed higher costs of veterinary fees and medicines per cow. A third of all herds with more than 100 cows incurred a charge of more than £4 per cow. It is likely that owners of large herds are more concerned with disease prevention since an outbreak of disease would involve tremendous losses. In addition, larger herds may well be subjected to routine pregnancy tests which would further increase costs.

The pattern of expenditure in relation to yield group is similar to that for herd size. Veterinary fees and medicine accounted for less than £1 per cow in about 26 per cent of herds averaging less than 700 gallons and in less than 3 per cent of herds averaging over 1,000 gallons. Although less dramatic, the opposite pattern is seen for expenditures of over £4 per cow. In this case 10 per cent of the lowest yielding herds were in this category, compared with 21 per cent of the highest yielding group.

The most interesting aspect of expenditure in relation to herd turnover occurs in the group spending over £4 per cow. The greater the turnover, the larger the proportion of herds in any group incurring these high veterinary and medicinal outlays. Admittedly there is a fall in the group with more than 40 per cent turnover, but this may be attributable to two main factors. Firstly, the high turnover may be a reflection of some herds having ceased milk production for reasons other than disease problems. Secondly this sub-sample of only 20 herds is too small to expect reliable results.

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#### IV IMPLICATIONS OF THE SURVEY RESULTS

The analyses of the physical and economic data on cow disposals have implications which are relevant both to the interpretation of present results and to the design of future surveys. Areas which demand particular attention include the lactation structure of the national dairy herd, the impact of the economic environment, and the scope for economies in resource use.

##### Factors affecting lactation structure

A large proportion of dairy cows fail to complete more than three lactations, whereas some complete ten or more. Unfortunately it is not known whether a particular number of lactations optimises resource use. This would require accurate information on a great many factors such as the distribution of milk yield between different lactations, the depreciation incurred on each individual cow, and the alternative use of farm resources. Although such information is not available from this survey the data has enabled a theoretical distribution of the national dairy herd by lactation to be calculated. This can be compared with the lactation distribution obtained directly from the Milk Costs Investigation.

The actual lactation structure of all sample herds obtained for March 1973 is given in Table 15, which shows that younger cows dominate the national herd,

Table 15 Lactation structure of the dairy herd, England and Wales,  
1972-73

Lactation	Per cent of all cows
First	20.3
Second	20.1
Third	18.5
Fourth	16.2
Fifth and over	24.9
Total	100.0

with 20.3 per cent of all cows in the first lactation, falling to 16.2 per cent in the fourth. The residual category of five lactations and over includes nearly 25 per cent of all cows, but it must be remembered that this embraces all cows in the remaining lactations. In a static situation most cows will be in

the first one or two with numbers thereafter declining to zero at around 13 lactations. This reflects the increased chance of disposal with advancing age.

Estimating the theoretical structure involves a series of calculations and assumptions. Lactation number at the time of disposal was recorded wherever possible. Cows without such information were eliminated from the calculations. Such omissions might result in an underestimate of the proportion of older cows in the herd. In addition, cows sold for further milk production have been excluded since they do not leave the national herd. It is assumed that the distribution of disappearances by lactation remains constant through time and the implications of this assumption are examined later. With these adjustments, the percentage distribution by lactation is derived in Table 16.

Table 16 The theoretical lactation structure of the national dairy herd, England and Wales, 1972-73

Completed lactations	Disposals Col. 1	Survivors Col. 2	Lactation structure Col. 3
Less than:-		per cent	
1	1.59	98.41	21.25
2	8.61	89.80	19.39
3	12.01	77.79	16.80
4	15.54	62.25	13.44
5	16.29	45.96	9.93
6	13.52	32.44	7.01
7	10.41	22.03	4.76
8	7.25	14.78	3.19
9	5.66	9.12	1.97
10	3.69	5.43	1.17
11	2.79	2.64	0.57
12	0.96	1.68	0.36
13	0.93	0.75	0.16
More than 13	0.75	0.00	0.00
Total	100.00	463.08	100.00

The disposal pattern in column 1 leads to the distribution of survivors in column 2. For instance, column 1 shows that for every 10,000 heifers introduced to the dairy herd, 159 will be lost before completing one lactation,

leaving 9,841 survivors to begin a second lactation.\* Since 861 of these are lost during the second lactation, 8,980 survive to begin the third and so on until all 10,000 are ultimately disposed. Given a national herd of constant size, this distribution in turn gives the lactation structure in column 3. This exemplifies 10,000 heifers entering the herd as replacements for the same number of disposals so that herd size remains constant. In this example the equilibrium herd size is 56,308 cows i.e. 10,000 new entrants plus the sum total of column 2 multiplied by 100. The ratio of replacements to herd size is the net replacement rate. At 17.8 per cent this is higher than the figure for the sample. The difference may be attributable to the omission of cows for which no lactation data was available. Both the theoretical and actual distributions of the national dairy herd by lactation are given in Table 17.

Table 17 Lactation structures of the national dairy herd,  
England and Wales, 1972-73

Lactation	Lactation structure	
	Theoretical	Actual
	per cent of all cows	
First	21.3	20.3
Second	19.4	20.1
Third	16.8	18.5
Fourth	13.4	16.2
Fifth and over	29.1	24.9
Total	100.0	100.0

There are a number of factors which account for the differences between the two distributions. Apart from those already mentioned, the theoretical lactation structure is determined by the pattern of disposals in 1972-73 whereas the actual structure has evolved over a span of several years. The usefulness of the theoretical structure might be questioned if changes occurred in the size of the national herd and the pattern of cow disposals.

Throughout the post-war years, there has been a cyclical movement of cow

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\* It is advisable to deal in multiples of 100 since it is more realistic to consider, for example, that 9,841 cows rather than 98.41 complete one lactation.

numbers in both England and Wales and the U.K.\* Expansion of the national dairy herd can be effected solely by the introduction of more heifers, and in this situation the proportion of young cows relative to older stock increases. Also the herd can be expanded by keeping heifer replacements constant but reducing the rate of disposal of existing cows and clearly this will increase the proportion of older cows relative to younger cows. A contraction of numbers comes from a reduced intake of heifers or an accelerated rate of disposal of existing cows. Dairy farmers probably vary both the intake of heifers and the retention of existing cows, and consequently the lactation structure need not change very much.

The scope for delaying the disposal of dairy cows is fairly well circumscribed. With sales for further milk production there is considerable latitude in the timing of disposals, but cows destined for slaughter may give little scope. For example, a serious disease may demand the immediate slaughter of a dairy cow. In other circumstances it may be possible to delay or bring forward sales. Low yielders are perhaps the best example of disposals which can be delayed. In the survey there was insufficient evidence to say whether they were suffering from clinical or sub-clinical disease, whether they were undernourished, or simply inferior cows. In many cases farmers would be unable to specify reasons for low yields. Within any year the timing of such disposals is of no consequence in deriving a theoretical lactation structure, but if disposals can be delayed by a year or more there will be repercussions.

Apart from the foregoing physical factors, the replacement rate of dairy cows is also influenced by the prices of milking and cull cows as well as by the profitability of milk relative to other products. High market prices for milking cows would encourage inter-farm sales leaving the national replacement rate and lactation structure unchanged. However, when market prices for cull cows are attractive then more animals, mainly low yielders, find their way to the abattoir rather than on to other farms, affecting both replacement rate and lactation structure. High profits in milk encourage farmers to expand herd size and in the process they tend to retain low yielders which might otherwise be culled. If profits are low in relation to beef prices, dairy farmers are attracted more by an immediate high remuneration rather than an uncertain pattern of returns from milk over a number of years. If there is uncertainty about the future then farmers have to base their production intentions on

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\* See R. E. Williams, "The Problem of the Size of the Milk Industry in the United Kingdom", *Journal of Agricultural Economics*, Volume 22, No. 1, January 1971.

expectations. These expectations may be formulated in many different ways including the projection of past trends in prices and costs and appraisals of government policies. The resulting expectations determine replacement policies as confidence in dairying is enhanced or diminished. In a period of optimism producers tend to increase numbers and vice versa when confidence is lacking. The lactation structure of the national herd is therefore influenced by a number of factors. However, the incidence of disease still limits the scope for manoeuvre and the economic environment undoubtedly has only a limited impact on the lactation structure of the national herd.

#### Economies of resource use

There is no doubt that substantial resources can be saved by reducing replacement rates. A reduction in the national rate implies an increase in the effective life of dairy cows. The longer cows remain in the herd, the fewer the resources needed for rearing replacements. These replacements utilise scarce farm acres which command a high opportunity cost. The consequences of increasing the effective life of dairy cows by one year are given in Table 18.

Table 18 The impact on resource requirements of increasing the effective life of dairy cows, England and Wales.

Item	Situation 1*	Situation 2**
Dairy cow numbers ('000)	2,857	2,857
Effective life per cow (years)	6.4	7.4
Number of cow disposals p.a. ('000)	448	386
Depreciation (£'000) <sup>+</sup>	£16,073	£13,849
Resources saved in fewer dairy replacements (£'000)	-	£2,224
Land saving <sup>φ</sup> ('000 acres)	-	149

\* Current situation

\*\* Following increase in the average effective life of dairy cows by 1 year

+ Adjusted for appreciation of surplus stock leaves depreciation per cow disposed at £36

φ Assuming 2.4 acres per follower

An increase of one year in the effective life of a dairy cow reduces the net replacement rate from 15.7 to 13.5 per cent. With an average depreciation per cow disposal of about £36, the fall in replacements required per year

reduces total depreciation by over £2.2 million. In physical terms, the reduced replacement rate means that some 62,000 fewer replacements are required. Assuming that each replacement uses 2.4 acres of land then nearly 149,000 acres are released for other enterprises. If an alternative use of land earns a modest gross margin of £20 per acre, the national increase in farm income is equivalent to nearly £3 million. The foregoing assumptions can be regarded as feasible since between 1968-69 and 1972-73 net replacement rate fell from 18.6 to 15.7 per cent, an increase of one year in the effective life of dairy cows over the four year period. Clearly, this represents a substantial saving in resources.

SUMMARY

1. The study is based on information derived from a random sample of 25,000 cows in 470 herds in England and Wales during 1972-73.
2. In total, 4,349 cows were disposed of giving a gross replacement rate of 17.4 per cent. Allowing for inter-farm transfers of cows sold for further milk production, the net replacement rate is 15.7 per cent. If a further allowance is made for cows transferred out for activities such as calf suckling, the figure is reduced to 15.1 per cent.
3. There were marked variations in replacement rates between provinces, with the highest rates being recorded in the Cambridge province and the lowest in Exeter and Leeds. The greatest difference between gross and net replacement rates occurred in Manchester, Leeds, Wales and Newcastle provinces, which indicates a significant trade in cows for further milk production.
4. Replacement rates were not affected to any marked degree by such factors as yield, herd size and breed.
5. Nearly 59 per cent of disposals took place between October and March. The most important months for disposal were November 1972 and January 1973.
6. Reproductive problems accounted for 35 per cent of the disposals and infectious diseases for a further 11 per cent. The "other reasons" for disposal included 20 per cent described as poor milkers and a further 11 per cent which were either surplus stock or aged cows.
7. Over 77 per cent of disposals were slaughtered for beef, nearly 10 per cent were sold for further milk production, and a further 9 per cent went to the knackers.
8. The average valuation for all cows in the survey was £153. The average net receipts was £117, giving a depreciation of £36 per cow leaving the herd and £6 per cow in the sample. Total depreciation for England and Wales was £18 millions of which reproductive problems accounted for £5.6 millions.
9. Average expenditure on veterinary services and medicines was £2.73 per cow. Over 56 per cent of all herds spent between £1 and £3 per cow.

10. On the basis of both the actual and derived lactation structures of dairy cows, nearly 60 per cent of cows were in their first three lactations.
11. If there is an increase of one year in the effective life of dairy cows over the next four years, then depreciation will be reduced by over £2 million and the land released from rearing replacements will be 149,000 acres.



Statistical Note

Since 1965-66, the National Investigation into the Economics of Milk Production (Milk Costs Investigation) has been conducted on the basis of a random sample of dairy herds stratified by herd size. Its principal objective is to obtain an accurate estimate of the cost structure of milk production. Raising factors are applied to the sample to yield data which are representative of the dairy herd population in England and Wales. Information on cow disposals is derived from the same Investigation and so gives scope for more refined statistical analysis, a summary of which follows.

The relationship between herd size and gross replacement rate was investigated in two ways. Firstly, tests for significant differences between the average gross replacement rate per herd in the various size groups were carried out. Secondly, the relationship between gross replacement rate and herd size was determined by linear regression. The results show that there is no simple relationship between replacement rate and herd size. With one exception average herd replacement rates are very similar for all groups.\* The variance about each group mean is relatively large. The combination of similar means and large variance shows that the hypothesis of no difference between group means cannot be rejected at any acceptable level of statistical significance.

The regression shows that virtually none of the variation in gross replacement rate can be explained by herd size alone. There is adequate reason to suppose that sample replacement rates derived as the ratio of total cow disposals to total cow numbers accurately represent the picture in England and Wales. Raising factors have not been applied, but this should not materially affect results. Inspection showed that no advantage would be gained from subjecting the data to further statistical analysis in preparation of the main report. Results of any additional analyses will be published elsewhere.

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\* The exception is the size group for herds with less than 20 cows. Although average gross replacement rate is exceptionally high, observations are available for only 10 herds. Even if these are representative of the population, the fact that herds of that size account for less than 10 per cent of all dairy cows in England and Wales suggest that interpretation of the data will not be seriously affected if their special characteristics are ignored.

APPENDICES

Appendix Table I

Size distribution of dairy herds in the cow disposals survey  
England and Wales, 1972-73\*

Province	Size groups**											Total
	6-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	90-99.9	100+	
	number of herds											
Newcastle	0	3	7	6	5	0	2	3	4	0	1	31
Leeds	0	9	9	7	3	5	1	2	0	0	3	39
Manchester	3	4	11	19	14	7	4	7	4	2	3	78
Nottingham	2	3	10	4	5	3	3	1	2	1	2	36
Cambridge	0	5	1	0	2	4	1	2	2	0	9	26
Wye	0	2	3	1	1	6	2	3	1	1	5	25
Reading	0	1	2	4	2	4	4	1	2	0	7	27
Bristol	0	3	11	8	13	6	10	4	6	2	9	72
Exeter	1	12	17	5	5	6	8	5	0	2	4	65
Wales	4	22	18	11	5	4	2	2	3	0	0	71
Total	10	64	89	65	55	45	37	30	24	8	43	470

\* derived from the Milk Costs Investigation.

\*\* simple average of opening, mid-point and closing inventories.

Appendix Table II

Reasons for disposal of dairy cows in relation to destination,  
England and Wales, 1972-73  
ALL COWS

Reason for disposal \ Destination	Further milk production	Slaughter for beef	Knackers	Transfers out	Not known	Total cows	Per cent
<b>1. Reproductive problems:</b>				numbers			
Failure to breed	2*	1336	0	15	0	1353	31.12
Abortion (cause unknown)	0	47	3	1	0	51	1.17
Abortion (cause known)	0	7	1	0	0	8	0.18
Calving injury	0	36	62	2	0	100	2.30
Reproductive disorders	0	10	3	0	0	13	0.30
	2	1436	69	18	0	1525	35.07
<b>2. Infectious diseases:</b>							
Mastitis	3	396	13	17	0	429	9.87
Johne's disease	0	3	5	0	0	8	0.18
Foul-in-foot	1	16	0	0	0	17	0.39
Foot infections	0	34	3	0	0	37	0.85
	4	449	21	17	0	491	11.29
<b>3. Non-infectious diseases:</b>							
<b>a) Metabolic disorders</b>							
Milk fever	0	8	25	0	0	33	0.76
Hypomagnesaemia	0	2	21	0	1	24	0.55
Other	0	4	7	0	0	11	0.25
	0	14	53	0	1	68	1.56
<b>b) Alimentary disorders</b>							
Bloat	0	3	21	0	0	24	0.56
General enteritis and scours	1	0	4	0	0	5	0.11
Poisoning	0	1	6	0	0	7	0.16
Peritonitis	0	2	3	0	0	5	0.11
Other	0	5	7	0	0	12	0.28
	1	11	41	0	0	53	1.22
<b>c) Traumatic conditions</b>							
Accidents	0	4	3	0	0	7	0.16
Teat troubles	5	37	1	7	0	50	1.15
Mechanical injury	1	50	42	4	0	97	2.23
	6	91	46	11	0	154	3.54
<b>d) Lameness</b>							
Arthritis and rheumatism	0	9	2	0	0	11	0.25
	0	9	2	0	0	11	0.25
<b>e) Other conditions</b>							
Pneumonia	0	1	5	0	0	6	0.14
Lung conditions	0	1	6	0	0	7	0.16
Septicaemia	0	1	8	0	0	9	0.21
Redwater	0	1	2	0	0	3	0.07
Tumours	0	11	8	0	0	19	0.44
Wooden tongue	0	1	0	0	0	1	0.02
Fog fever	0	1	3	0	0	4	0.09
Back trouble	0	11	2	0	0	13	0.30
Heart trouble	0	4	21	0	0	25	0.58
Jaundice	0	1	3	0	0	4	0.09
Poor condition and wasting away	0	8	6	0	0	14	0.32
Liver and kidney ailments	0	7	7	0	0	14	0.32
	0	48	71	0	0	119	2.74
<b>4. Other reasons:</b>							
Poor milker	166	680	0	23	0	869	19.98
Old age	9	226	7	5	3	250	5.75
Surplus stock	197	25	0	7	0	229	5.26
Deaths	0	0	56	0	0	56	1.29
Other udder complaints	6	118	3	6	0	133	3.06
Brucellosis test failure	1	173	0	0	0	174	4.00
Miscellaneous	32	74	13	51	44	217	4.99
	411	1296	82	92	47	1928	44.33
<b>Total</b>	424	3354	385	138	48	4349	100.00

\* long delays between calving and conception.

Appendix Table III

Reasons for disposal of dairy cows in relation to destination,  
England and Wales, 1972-73  
 Friesians only

Reason for disposal	Destination	Further milk production	Slaughter for beef	Knackers	Transfers out	Not known	Total cows	Per cent
<b>1. Reproductive problems:</b>		numbers						
Failure to breed		2*	1072	0	15	0	1089	31.18
Abortion (cause unknown)		0	7	1	0	0	8	0.23
Abortion (cause known)		0	45	1	1	0	47	1.34
Calving injury		0	34	41	0	0	75	2.15
Reproductive disorders		0	10	3	0	0	13	0.37
		2	1168	46	16	0	1232	35.27
<b>2. Infectious diseases:</b>								
Mastitis		3	335	10	15	0	363	10.40
Johne's disease		0	2	4	0	0	6	0.17
Foul-in-foot		1	14	0	0	0	15	0.43
Foot infections		0	32	3	0	0	35	1.00
		4	383	17	15	0	419	12.00
<b>3. Non-infectious diseases:</b>								
a) Metabolic disorders								
Milk fever		0	7	17	0	0	24	0.69
Hypomagnesaemia		0	0	18	0	1	19	0.54
Other		0	2	4	0	0	6	0.17
		0	9	39	0	1	49	1.40
b) Alimentary disorders								
Bloat		0	3	16	0	0	19	0.55
General enteritis and scours		0	0	4	0	0	4	0.11
Poisoning		0	0	3	0	0	3	0.08
Peritonitis		0	1	3	0	0	4	0.11
Other		0	5	7	0	0	12	0.35
		0	9	33	0	0	42	1.20
c) Traumatic conditions								
Accidents		0	4	2	0	0	6	0.17
Teat troubles		4	30	1	5	0	40	1.14
Mechanical injury		1	40	30	3	0	74	2.12
		5	74	33	8	0	120	3.43
d) Lameness								
Arthritis and rheumatism		0	6	2	0	0	8	0.23
		0	6	2	0	0	8	0.23
e) Other conditions								
Pneumonia		0	1	4	0	0	5	0.14
Lung conditions		0	0	4	0	0	4	0.11
Septicaemia		0	0	7	0	0	7	0.20
Redwater		0	0	2	0	0	2	0.06
Tumours		0	10	6	0	0	16	0.46
Wooden tongue		0	1	0	0	0	1	0.03
Fog fever		0	1	2	0	0	3	0.08
Back trouble		0	10	1	0	0	11	0.32
Heart trouble		0	4	18	0	0	22	0.63
Jaundice		0	0	1	0	0	1	0.03
Poor condition and wasting away		0	6	5	0	0	11	0.32
Liver and kidney ailments		0	7	6	0	0	13	0.37
		0	40	56	0	0	96	2.75
<b>4. Other reasons:</b>								
Poor milker		140	526	0	23	0	689	19.73
Old age		7	188	2	4	1	202	5.78
Surplus stock		166	25	0	6	0	197	5.64
Deaths		0	0	39	0	0	39	1.12
Other udder complaints		6	93	3	4	0	106	3.03
Brucellosis test failure		0	152	0	0	0	152	4.35
Miscellaneous		24	54	11	45	8	142	4.07
		343	1038	55	82	9	1527	43.72
<b>Total</b>		<b>354</b>	<b>2727</b>	<b>281</b>	<b>121</b>	<b>10</b>	<b>3493</b>	<b>100.00</b>

\* long delays between calving and conception.

Appendix Table IV Factors influencing the main reasons for disposal of dairy cows,  
England and Wales, 1972-73

Main reasons Factors	Breeding problems	Udder problems	Low yield	Old age	Surplus stock	Other	Total	Gross re- placement rate
per cent								
<u>Herd size: cow numbers</u>								
6 - 19.9	26.3	16.7	12.2	6.7	15.5	22.6	100	26.2
20 - 39.9	28.7	17.5	15.7	8.0	6.1	23.0	100	16.7
40 - 59.9	35.5	11.0	16.5	9.0	6.9	21.1	100	17.3
60 - 79.9	34.9	16.7	22.4	5.6	2.9	17.5	100	17.1
80 - 99.9	35.7	14.3	19.7	4.4	5.2	20.7	100	17.3
100 and over	39.6	11.6	23.8	2.5	0.3	22.2	100	16.8
All herds	34.8	14.1	19.7	5.7	4.6	21.1	100	17.4
per cent								
<u>Yield group: galls.</u>								
Less than 700	30.9	13.3	18.1	6.4	3.3	23.0	100	17.5
700 - 799	34.9	12.9	17.5	5.3	6.1	23.3	100	17.1
800 - 899	32.7	12.5	22.0	8.6	5.2	19.0	100	16.5
900 - 999	36.5	14.4	17.4	4.3	5.0	22.4	100	18.4
1000 and over	35.6	15.6	22.8	5.2	3.5	17.3	100	17.2
All groups	34.8	14.1	19.7	5.7	4.6	21.1	100	17.4
per cent								
<u>Lactation number: (completed lactations)</u>								
0	14.6	11.2	15.7	0	23.6	34.9	100	1.75
1	27.5	14.1	26.1	0	4.5	27.8	100	8.01
2	27.2	10.7	31.2	0	8.1	22.8	100	12.73
3	33.0	13.1	22.1	0	6.0	25.8	100	17.32
4 and over	36.8	15.1	14.1	9.6	2.7	21.7	100	41.20
All lactations*	33.6	14.0	18.8	5.7	4.6	23.3	100	17.39

\* differences in percentage distribution when compared with other factors accounted for by omission of cows with no recorded lactation.

Appendix Table V

Average net receipts for dairy cow disposals in relation to destination and reason for disposal,  
England and Wales, 1972-73

Main reasons for disposal	Destination Average net receipts by reason for disposal	Further milk production	Slaughter for beef	Knackers	Transferred out	Unrecorded	Total	Per cent of cows	
								Disposals	Total
				per cent					
Reproductive problems	£121	0.1	94.2	4.5	1.2	0.0	100.0	35.1	6.1
Udder troubles	£120	2.3	90.0	2.8	4.9	0.0	100.0	14.1	2.5
Test failure	£123	0.6	99.4	0.0	0.0	0.0	100.0	4.0	0.7
Other disease conditions	£ 44	0.6	43.0	55.8	0.3	0.3	100.0	7.2	1.3
Unclassified	£ 94	8.8	33.9	31.0	14.6	11.7	100.0	8.7	1.5
Low yield	£135	19.1	78.3	0.0	2.6	0.0	100.0	20.0	3.4
Old age	£108	3.6	90.4	2.8	2.0	1.2	100.0	5.7	1.0
Surplus stock	£160	36.0	10.9	0.0	3.1	0.0	100.0	5.2	0.9
<b>Total</b>	<b>£117</b>	<b>9.7</b>	<b>77.1</b>	<b>8.9</b>	<b>3.2</b>	<b>1.1</b>	<b>100.0</b>	<b>100.0</b>	<b>17.4</b>
Per cent of all cow disposals	-	1.7	13.4	1.5	0.6	0.2	17.4		
Average net receipts by purpose for which sold	-	£161	£123	£12	£133	-	£117		

Appendix Table VI Reasons for disposal of dairy cows sent to knackers or kennels,  
England and Wales 1972-73

Reason for disposal	Numbers	Average Net Receipts
<b>1. Reproductive problems:</b>		£
Failure to breed	0	-
Abortion (cause unknown)	3	9.0
Abortion (cause known)	1	10.0
Calving injury	62	8.9
Reproductive disorders	3	14.0
	69	
<b>2. Infectious diseases:</b>		
Mastitis	13	9.3
Johne's disease	5	11.4
Foul-in-foot	0	-
Foot infections	3	31.7
	21	
<b>3. Non-infectious diseases:</b>		
a) Metabolic disorders		
Milk fever	25	8.4
Hypomagnesaemia	21	8.0
Other	7	10.9
	53	
b) Alimentary disorders		
Bloat	21	7.6
General enteritis and scours	4	7.7
Poisoning	6	56.0
Peritonitis	3	10.0
Other	7	10.9
	41	
c) Traumatic conditions		
Accidents	3	15.0
Teat troubles	1	50.0
Mechanical injury	42	23.6
	46	
d) Lameness		
Arthritis and rheumatism	2	29.0
	2	
e) Other conditions		
Pneumonia	5	14.2
Lung conditions	6	8.0
Septicaemia	8	8.6
Redwater	2	9.0
Tumours	8	17.3
Wooden tongue	0	-
Fog fever	3	11.0
Back trouble	2	45.0
Heart trouble	21	8.0
Jaundice	3	16.0
Poor condition and wasting away	6	15.3
Liver and kidney ailments	7	9.0
	71	
<b>4. Other reasons:</b>		
Poor milker	0	-
Old age	7	12.6
Surplus stock	0	-
Deaths	56	7.6
Other udder complaints	3	14.7
Brucellosis test failure	0	-
Miscellaneous	16	9.2
	82	
<b>Total</b>	<b>385</b>	<b>12.2</b>



Appendix Table VII

Factors associated with average depreciation per cow per herd,  
England and Wales,  
1972-73

Average depreciation per cow per herd Factors	(-) £20 and over	(-) £10 to (-)£19.9	0 to (-)£9.9	0 to £9.9	£10 to £19.9	£20 to £29.9	£30 to £39.9	£40 and over	Total	Total herds
<u>Herd size: cow numbers</u>	per cent									number
6 - 19.9	2.7	4.0	9.5	45.9	23.0	10.8	1.4	2.7	100.0	74
20 - 39.9	1.9	1.9	9.0	57.7	21.8	7.1	0.6	0.0	100.0	154
40 - 59.9	1.0	0.0	11.0	61.0	24.0	2.0	0.0	1.0	100.0	100
60 - 79.9	0.0	1.5	7.3	51.5	38.2	0.0	1.5	0.0	100.0	67
80 - 99.9	0.0	0.0	3.1	71.9	18.8	3.1	3.1	0.0	100.0	32
100 and over	0.0	0.0	0.0	71.4	28.6	0.0	0.0	0.0	100.0	43
All herds	1.3	1.5	8.1	57.9	25.1	4.7	0.8	0.6	100.0	470
<u>Yield group: galls.</u>	per cent									number
Less than 700	2.8	1.4	8.5	53.5	24.0	7.0	1.4	1.4	100.0	70
700 - 799	0.0	3.0	8.9	65.7	14.9	4.5	1.5	1.5	100.0	62
800 - 899	2.0	1.0	4.9	63.7	20.6	6.8	1.0	0.0	100.0	105
900 - 999	0.0	1.0	5.7	59.0	31.4	2.9	0.0	0.0	100.0	109
1000 and over	1.6	1.6	12.0	50.4	29.6	3.2	0.8	0.8	100.0	124
All groups	1.3	1.5	8.1	57.9	25.1	4.7	0.8	0.6	100.0	470
<u>Herd turnover:</u>	per cent									number
Disposals as per cent of average cow numbers										
0 - 9.9	0.9	0.9	4.8	62.9	10.5	0.0	0.0	0.0	100.0	107
10 - 19.9	1.0	2.1	9.2	62.6	20.5	3.6	0.5	0.5	100.0	195
20 - 29.9	0.0	0.0	12.6	41.2	40.3	5.9	0.0	0.0	100.0	119
30 - 39.9	3.4	0.0	0.0	27.6	55.3	10.3	3.4	0.0	100.0	29
40 and over	9.1	9.1	0.0	27.3	13.6	22.7	9.1	9.1	100.0	20
All herds	1.3	1.5	8.1	57.9	25.1	4.7	0.8	0.6	100.0	470

Appendix Table VIII

Factors associated with veterinary fees and  
medicinal expenditure on dairy cows,  
England and Wales, 1972-73.

Average vet. and med. per cow per herd	Up to 99p	£1 to £1.99	£2 to £2.99	£3 to £3.99	£4 and over	Total	Total herds
Factors							
<u>Herd size:</u> cow numbers	per cent						number
6 - 19.9	14.7	24.0	25.3	12.0	24.0	100.0	74
20 - 39.9	15.0	33.3	24.8	16.4	10.5	100.0	154
40 - 59.9	10.0	31.0	28.0	19.0	12.0	100.0	100
60 - 79.9	9.0	34.3	25.4	14.9	16.4	100.0	67
80 - 99.9	3.1	18.8	43.7	15.6	18.8	100.0	32
100 and over	2.3	23.3	23.3	18.6	32.5	100.0	43
All herds	11.0	29.6	26.8	16.2	16.4	100.0	470
<u>Yield group:</u> galls.	per cent						number
Less than 700	25.7	25.7	27.2	11.4	10.0	100.0	70
700 - 799	14.5	25.8	24.2	21.0	14.5	100.0	62
800 - 899	13.3	34.3	21.9	16.2	14.3	100.0	105
900 - 999	7.3	29.4	33.0	11.9	18.4	100.0	109
1000 and over	2.4	29.8	26.6	20.2	21.0	100.0	124
All groups	11.0	29.6	26.8	16.2	16.4	100.0	470
<u>Herd turnover:</u>	per cent						number
Disposals as per cent of average cow number							
0 - 9.9	14.0	38.3	24.3	15.9	7.5	100.0	107
10 - 19.9	10.2	29.2	28.3	17.9	14.4	100.0	195
20 - 29.9	10.9	22.7	26.9	16.0	23.5	100.0	119
30 - 39.9	6.9	24.1	27.7	10.3	31.0	100.0	29
40 and over	10.0	35.0	25.0	10.0	20.0	100.0	20
All herds	11.0	29.6	26.8	16.2	16.4	100.0	470