

# Farm Facilities On Small - Medium Type Dairy Farms

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# 1. SUMMARY

**The summary of this paper is as follows :**

- 82 % of farms with milk quota < 54,552 litres have bucket/pipeline milking plants.
- There were a high percentage of milking machine faults on the farms surveyed.
- Fragmented land portions are more likely to limit dairy expansion than farm size.
- 60% of farms had beef buildings suitable for conversion to dairy housing
- 88 % of farms had adequate cubicle spaces for present cow numbers
- The cost of purchasing milk quota was considered to be the biggest factor restricting expansion.
- 67 % of farms with quota > 54,552 litres are joined REPS.
- 51 % of farms had dairies registered under dairy hygiene regulations.
- Milk bulk tank size would limit dairy expansion without investment in larger static tanks.
- The number of cows to fill milk quota is better matched in the higher quota category.
- The length of the working day was 12.7 hrs/day for an average herd size of 23 cows.
- Estimated cost of extra facilities per farm to allow for scaling up in milk production from 90,920-181,840 litres is £33,760

## 2. INTRODUCTION

With the expected reduction in milk price and the possible abolition of milk quota in the longer term, improved labour utilisation, low cost milking and increased milk output will be important factors for profitability. Return on facility investment, with improved farming lifestyles will influence the number of dairy farms, which will be maintained.

A study was conducted to investigate the factors affecting expansion in dairy herd size and to establish the investment requirements to expand winter housing and milking facilities. As part of the Co Clare Prospect 2000 Action Research Dairy Project the milking and housing facilities on 35 randomly selected small to medium type dairy farms were studied. Seventy eight percent of Golden Vale suppliers in Co. Clare own milk quotas of less than 113,650 litres, and 37% have less than 45,460 litres quota (Nov. '98). Three categories of milk quota holders were visited between September and November 1998 on this study. Category 1 had milk quota of <54,552 litres. Category 2 had milk quota between 54,552-90,920 litres, and Category 3 had a milk quota between 90,920 and 159,110 litres.

Facility investment required to allow producers to increase milk production from a scale of 90,920 litres to approximately 181,840 litres (44 cows per farm) was estimated for 5 randomly selected farms. The results presented indicate the current practices of dairy farmers, particularly in relation to milking and housing, attitudes to REPS, cow numbers and factors restricting dairy expansion.

## 3. MILKING FACILITIES

### 3.1 Milk Quota

Table 1 gives the available milk quota in 98/99 for each category of producer, the number of dairy cows, milk production (includes milk to calves) and percentage of farmers who purchased or leased milk quota.

**Table 1. Farm milk quota**

<b>Quota Category</b>	<b>1</b>	<b>2</b>	<b>3</b>
Available quota (litres)	46,396	87,029	130,934
Production (litres)	49,892	91,661	137,789
Average cow No.	17	23	33
Average milk yield (litres/cow)	2,887	3,987	4,175
Farmers leasing quota (%)	27	25	33
Farmers purchasing quota (%)	9	16	50

The number of cows required to fill the farm milk quota is better matched in the larger quota category. Production levels are lowest with category 1 (2,887 litres/cow). A small percentage of farms in category 1 were purchasing (9%) or leasing (27%) milk quota, as compared to category 3 (50% purchased and 33% leased). Poor management factors and retention of cows to provide calves for the beef enterprises may explain the poor milk production levels and cow to milk quota ratio with category 1.

### 3.2 Milking Parlour Type

The type and quality of milking parlour used on farms is presented in Table 2. Eighty-two percent of farms in category 1 have Pipeline/bucket plants while 75% in category 3 have Herringbone parlours. Increasing the number of milking units in the milking parlour and the use of Herringbone /side by side type parlours would reduce milking time and the requirement for labour. On many farms it was not possible to increase the number of milking units due to the parlour location. There were a high percentage of milking machine faults on farms. All machines in category 1 had faults with the standard of installations improving with increasing herd size. The main machine faults were undersized pipes, small claws, light clusters and poor regulator types. Seventy three percent of producers in category 1 do not practise post milking teat dipping. Seventy five percent of farms feed meals in the milking parlour with only 10% having manual or automatic feeders.

**Table 2. Milking parlour type**

Proportion of farms (%) with :	Quota Category		
	1	2	3
Herringbone milking parlour	18	67	75
Abreast milking parlour	-	-	17
Pipeline/Bucket plants	82	33	8
No. of units/plant	3.5	4.6	5
Machine Faults	100	92	58



*One-sided milking parlour*

### **3.3 Milk Storage Facilities**

All milk producers with milk quota less than 54,552 litres have to transport milk to a depot for collection. The average age of milk bulk storage tanks inspected was ten years. Bulk tank size would limit dairy expansion without an investment in larger static tanks.

The Department of Agriculture and Food had registered fifty-one percent of dairies visited, with category 1 having only 27% registered. Inadequate dairy waste disposal on 45% of these farms probably explains why some dairies are not yet registered.

**Table 3. Milk storage facilities**

<b>Quota Category</b>	<b>1</b>	<b>2</b>	<b>3</b>
Milk Tank size (litres)	846	1,173	2,005
Bulk Collection %	-	50	83
Mobile Milk Tanks %	100	50	17
Dairy Register %	27	83	41
Dairy Waste Disposal Tank %	55	67	83

## 4. DAIRY HOUSING

### 4.1 Dairy Housing Type and Slurry Storage

The housing type used on farms is presented in Table 4. Producers use cubicle housing with milk quota >54,552 litres, with a high percentage having adequate spaces for present cow numbers. Thirty-six percent of producers with a milk quota <54,552 litres use cow byres; these systems are commonly used for milking and housing and are labour intensive. More out-wintering is practised where cubicles are not present with an increased labour demand. Sixty percent of all farms have slatted or scraper systems installed in cubicle passages, with 80 % using easy/feed silage feeding systems. Sixty percent of all farms had beef buildings suitable for conversion in the event of dairy herd expansion with a reduction in beef numbers. Sixty eight percent of farms had adequate slurry/manure storage for a 20-week housing period.

**Table 4. Type of dairy housing**

<b>Quota Category</b>	<b>1</b>	<b>2</b>	<b>3</b>
Cow Byre %	36	8	-
Cubicles %	55	92	100
Adequate cubicles %	83	91	92
Adequate slurry storage %	82	58	67
Automatic scrapers/slats %	45	66	66
Easy feed system %	64	83	92
Out-wintering practised %	73	20	33
Beef housing conversion %	45	67	67



*Self-feeding silage*

## 5. FARM INFRASTRUCTURE

### 5.1 Farm Size

Table 5 gives the number of hectares farmed by each category of producer, percentage of farms using farm roads/paddock systems and the number of farmers who participate in the Rural Environmental Protection Scheme.

**Table 5. Farm size, number of paddocks, and REPS participation**

<b>Quota Category</b>	<b>1</b>	<b>2</b>	<b>3</b>
Adjusted Hectares per Farm	44	40	47
Farm roadways %	55	58	83
Farm paddocks %	55	50	83
Average No. of Paddocks per Farm	6	8	15
REPS participation %	45	75	58
Intention to join R.E.P.S. %	55	18	25
Meeting R.E.P.S requirements (all farms) %	36	72	50



Farm size is not a restriction to dairy cow expansion. Fragmented land portions is a problem in some cases. (Table 9). The use of roadways and paddocks is more prevalent (83%) with category 3 producers as is the number of paddocks. Investment in infrastructure is essential on most farms to aid grassland management and facilitate a reduction in costs of production. On over half of the farms gravel is available for laying farm roadways.



*Easy-feed beef unit*

### 5.2 Farm Development Plans

The future farm development intentions of farmers are presented in Table 6. The percentage of farms that plan to increase roadways/paddocks and dairy housing increased with quota category, while 46% of farms in category 1 intend to improve their milking facilities.

**Table 6. Farm development plans (main factors)**

<b>Quota Category</b>	<b>1</b>	<b>2</b>	<b>3</b>
Milking Facilities %	46	17	33
Dairy Housing %	27	33	42
Roadways/paddocks %	36	42	50

### 5.3 Cost of Farm Facility Development

Estimated costs of investment required in milking facilities, pollution control and conversion of beef housing to allow for scaling up from 90,920 to 181,840 litres are outlined in Table 7. Increasing the milk bulk tank size and redesigning the milking parlour/number of units is a common cost to all farms and was estimated at £15,930 per farm. The cost of increased farm slurry storage to keep within the requirements of REPS and re-designing of farm buildings was estimated at £14,830 per farm. The average farm investment required was calculated at £33,760. The cost of purchasing milk quota and replacement stock is not included.

**Table 7. Estimated cost of dairy expansion (£)**

	<b>Milking Facilities</b>	<b>Buildings</b>	<b>Infrastructure</b>	<b>Total</b>
Farm 1	14,600	13,400	3,000	31,000
Farm 2	8,400	10,550	3,000	21,950
Farm 3	27,050	18,950	3,000	49,000
Farm 4	19,600	7,100	3,000	29,700
Farm 5	10,000	24,150	3,000	37,150
Average costs	15,930	14,830	3,000	33,760



*Modern Dairy Unit*

## 5.4 Factors Restricting Dairy Herd Expansion

Farmer views regarding the factors restricting dairy herd expansion and on increasing cow numbers are given in Table 8 and 9. The cost of purchasing milk quota is perceived by forty nine percent of farmers to be the single biggest restriction to dairy expansion. Land availability close to milking facilities is also a restricting factor in 22% of cases. Cow housing was considered a restriction to expansion by only 8% of producers with Quota >90,920 litres. Repayments and milk price have a high priority ranking with producers >90,920 litres. This would confirm that a level of investment in housing has already taken place on these farms.

**Table 8. Factors restricting dairy herd expansion**

<b>Quota Category</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Average</b>
Milk quota cost %	62	50	50	49
Land structure %	23	33	8	22
Cow housing %	15	17	8	14
Repayments %	-	-	17	5
Milk price %	-	-	17	5
(Percentage of all factors)				

Twenty seven percent of farms in category 1 do not wish to milk more cows as compared to 8% in category 2 (Table 9). This is partially due to labour intensive milking facilities (bucket/pipelines) and also the imbalance of cow numbers to match present milk quota. A high percentage of all farms would reduce beef animal numbers if the milk quota system were abolished. The drop in cattle prices probably influenced this decision in '98. The majority of farms in this study had availed of pollution control grants and built slatted housing for beef cattle. Reducing beef animal numbers allows an opportunity to convert some beef housing to suitable dairy housing.



**Table 9. Cow and beef numbers**

<b>Quota Category</b>		<b>1</b>	<b>2</b>	<b>3</b>
Milk more cows	%	73	92	83
Reduce beef numbers	%	91	75	58

## 6. FARM LABOUR

### 6.1 Silage Feeding and Yard Cleaning

Baled silage was used on 80% of farms with 44% of farms having baled silage as the only method of silage conservation. The popularity of baled silage is influenced by farmer participation in REPS, field size and the wet season of '98. The time taken to milk cows, feed silage, scrape yards and feed calves are given in Table 10. There was considerable range in the time taken to carry-out farm tasks. Silage feeding ranged from 30-360 min./day, and calf-rearing ranged from 30-120 min./day. Farm labour inputs were high with each producer category visited, on average 12.7 man-hours/day for an average herd size of 23 cows with

additional beef enterprise. Increased quota category size was associated with more easy feed systems in use and less time employed feeding and cleaning.

**Table 10. Daily milking, feeding, and cleaning times (min.)**

<b>Quota Category</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Average</b>
Milking time	121	128	174	141
Range	60-180	60-200	120-240	150
Feeding time	80	103	85	89
Range	30-180	30-360	30-360	
Calf-feeding time	35	45	60	47
Range	30-60	30-60	20-120	
Yard-cleaning time	29	66	43	47
Range	10-120	10-240	10-135	
Labour (hours/day)	11.6	13	13.5	12.7

## 7. CONCLUSIONS

In order to increase farm milk output, to maintain income with expected milk price reductions, a level of investment on facilities is required on many farms. Upgrading of milk bulk tanks to allow for increased milk supply was the single common cost that would be necessary on all farms. Re-designing the milking parlour and increasing the milking unit number is necessary on a high percentage of farms. Poor dairy waste disposal and out-wintering practises may explain why only 45% of farmers with milk quota less than 54,552 litres participate in REPS. The length of the working day on the farms visited averaged 12.7 hrs/day,; this is mainly due to the design and layout of farmyards and the farm methods employed. As many farms had previously invested in slatted beef housing there is an opportunity on 60% of these farms to convert for suitable dairy housing.

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