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BEEF PRODUCTION – PRESENT AND FUTURE

by

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The size of the cattle population in Ireland has changed dramatically over the past 10 years (Table 1). For example in 1964, the total population was just under 5 million (4,962,000) and the cow population was 1.4 million. In 1969, the total was 5.7 million and the cow population was 1.657 million, that is an increase in the total of approximately 14% in 5 years. At the present time, the total population stands at 7.3 million and the cow population at 2.15 million.

TABLE 1 **Cattle population (,000)**

Year	Cows	Other Cattle	Total		
1964	1,400	3,562	4,962	100	
1969	1,657	4,031	5,688	115	100
1973	2,096	4,874	6,970	141	123
1974	2,150	5,159	7,309	147	128

In view of the recent crisis in the cattle industry, many people will raise the question, namely, what will happen the cattle population over the next five years? It is generally agreed that in 1975, there will be no increase, or very little, in the cow population and probably in 1976 an increase may occur. For example, after a similar crisis in 1966, the cow population did not start to really increase until 1969 but now we are in a better market situation for dairy products and beef.

With regard to the composition of the cow herd at present, about one-third of it is composed of beef cows and the remainder are dairy cows.

The final product for export in the cattle production process can be either live cattle or carcases and it can be seen from Table 2 that the percentage contribution by each of these has greatly changed over the past 10 years. In 1964, 24 percent of our cattle were exported in carcass form whereas in 1974, 79 percent were exported in this form.

TABLE 2 **Cattle Exports**

No. of Cattle Exported as:–

	Live Cattle	Meat	Total	Meat as % of total
1964	894,000	284,000	1,178,000	24
1969	552,000	598,000	1,150,000	52
1973	302,472	641,431	943,973	68
1974	291,550	1,071,313	1,362,813	79

With regard to land use, there has been some change in the overall stocking rate as a result of the changes in the cattle population. According to data by Kearney (Table 3), over a fourteen year period (1960–1973) the amount of land under pasture and hay per livestock unit has been reduced by 15%, and the overall average stocking rate is now 1.74 acres per livestock unit. This is not to say that all the feed given to a livestock unit comes from 1.74 acres; or to imply that, even with that allocation of land, all animals receive their full requirement. However, taking it on its face value, we still have a long way to go before we reach a stocking rate of 1 acre per livestock unit.

TABLE 3 **Relationship between acres of pasture and hay per livestock unit (Kearney)**

Province	1960	1969	1973	% Change 1960–1973
Leinster	2.04	1.95	1.71	+16
Munster	1.99	1.93	1.69	+15
Connaught	2.31	2.43	2.12	+ 8
Ulster	2.29	2.50	2.07	+10
Ireland	2.04	2.03	1.74	+15

We will now move on to discuss cattle production at farm level.

It is, however, necessary at this stage to clarify two points:–

(i) Most of the calves born in this country are born in spring.

(ii) From the calf stage to the final finish stage, an animal will change hands a number of times. It is unusual, or it has been unusual, to have farmers who buy calves and sell finished beef cattle off the same farm. There is a tendency for the smaller producer to buy and rear calves, and to sell them as stores; and for the bigger producer to buy stores and to sell his cattle as finished beef.

So if we take a typical calf born in Spring-time and follow its performance from birth to slaughter, we would probably find the following pattern in terms of liveweights at different ages as shown in Table 4 for systems A and B.

TABLE 4 **Liveweights of cattle at different ages on different systems of production (lb)**

Date	Mar 1	Nov 1	Apr 15	Nov 1	Apr 15	Aug 1	Nov 1
Age (Months)	0	8	13	20	25	29	32
Farm System A	80	350	400	750	700	950	1150
Farm System B	80	420	500	890	900	1200	
Grange System	80	420	570	940	1200		

From birth to 8 months calves are usually well fed; but we may find that, on some farms, they run into problems with parasites; and performance may be reduced so that at 8 months there is a difference of say 70 lbs. between systems A and B. In system A, weanlings initially weighed 350 lbs. as against 420 lbs. in system B. System A cattle eventually finish at 1,200 lbs. liveweight when 32 months old and system B cattle at 29 months old.

On the other hand, if we compare B with the Grange system, we find that at 8 months of age, the weanling cattle are the same weight as those in system B; but over the first winter, the performance of the Grange cattle is 70 lbs. better. At the end of the grazing season, this difference is reduced to 50 lbs; but over the second winter, system B cattle are fed to maintain liveweight whereas the Grange system cattle are fed to gain live-

weight and consequently reach slaughter weight at 25 months of age. The system B cattle must go to grass for another season before they are finished. If we apply Kearney's stocking rate to systems A or B, we find that almost 3 acres are required to take an animal from the calf to finished stage. In other words, a 60 acre farm would sell 20 cattle/year. With the Grange system, on reasonable land, one acre of pasture plus an input of 8 cwt. of barley supplement would produce a finished animal. The most important lesson to be learnt from these different systems is that performance over the Winter-time is low and performance during the grazing season is fairly good; but the overall stocking rate is low. This may be due to a number of factors of which the more important ones are:–

(i) Low usage of fertiliser

(ii) Poor management of pastures in Winter-time

(iii) Lack of appreciation that high stocking rates can be carried

Low performance during the Winter-time can be due to a number of problems:–

(i) Low level of feeding

(ii) Poor quality feed

(iii) Parasitism

With regard to pasture production, it cannot be denied that, irrespective of the type of pasture (sown or old permanent), if the level of fertility is not high, the level of pasture production will be low.

For example, in work which Willie Murphy and I were associated

with on old permanent pastures in Ballintubber, we found, under cutting conditions, that if fertiliser was not applied, production was only about 40 percent of the potential of these pastures. On the other hand, response to phosphorus and potassium was low in the absence of nitrogen.

TABLE 5 **Old Permanent Pasture – Average yields of dry matter with different levels of phosphorus and nitrogen (lb)**

	P per acre (lb)				
N/ac (lb)	0	13.5	27	54	108
0	3475	3986	4150	4463	4980
276	6165	8030	8469	9200	9247

TABLE 6 **Old Permanent Pasture – Average yields of dry matter with different levels of potassium and nitrogen (lb)**

	K per acre (lb)				
N/ac (lb)	0	56	112	224	448
0	3732	4176	4172	4261	4065
276	6803	8194	8218	8582	8837

On this same type of pasture, we compared some animal production systems on an all-year-round basis where all the feed had to come from the pasture (either as grazing or conserved grass), except some concentrates fed

during winter. The number of stock which were carried and the input of fertiliser and production of liveweight gain per acre are shown in Table 7.

TABLE 7 **Number of stock on 50 acres of old permanent pasture and liveweight gain per acre**

Year	Stock Numbers	Livewt. Gain/acre (lb)
1964	70 ewes + 18 cattle	202
1965	90 " + 30 "	498
1966	110 " + 40 "	550
1967	120 " + 44 "	674
1968	140 " + 50 "	790
1969	150 " + 50 "	800
1970	150 " + 50 "	825

It will be seen that, within five years, the number of stock carried more than doubled and production per acre quadrupled. Apart from potassium and lime, the main change in the fertiliser input was nitrogen.

TABLE 8 **Fertiliser usage per acre – Ballintubber**

	1964	1968	1970
Super Phos. (Cwts)	4	4	4
Potash (Cwts)	1	2	2
Nitrogen (23%) (Cwts)	3	6	7
Lime, G.L. (ton)	4	2	—
Cobalt Sulphate (lb)	2	2	—

The key factor in the success of the Ballintubber project was a

combination of the strategic use of fertiliser, particularly nitrogen; controlled management of the pasture in terms of integrating grazing and cutting; making the maximum use of high stocking rate during the periods of maximum rate of pasture growth; and cutting the grass for silage when the grass was at the leafy stage of growth. Work done by my colleague, Dermot Collins, at Grange, has clearly shown that in order to get high yields of grass for conservation, nitrogen must be used.

TABLE 9 **Effect of incremental dressings of nitrogen on herbage yields (100 lb D.M./ac) and responses (lb D.M./lb N)**

	First Cut		Second Cut		Third Cut	
N lb/ac	Yield	Response	Yield	Response	Yield	Response
0	31.5	–	26.5	–	17.7	–
37	43.2	32	32.2	15.4	20.2	7.0
75	48.0	22	35.7	12.2	22.5	6.4
112	53.0	19	38.0	10.0	23.7	5.3

The next question is how do we conserve surplus grass – hay or silage? Our experience would be 100 percent in favour of silage and I think the reasons are obvious to you all. When high yields are attained, it is important that the grass is cut at the right stage of growth. In work done a number of years ago by Dr. McCarrick, it was found that grass cut for silage in June gave only half the liveweight gain of grass cut two weeks earlier.

TABLE 10 **Effect of quality and preservation of silage on animal production**

Time of Cutting	Livewt. Gain/ day (lb)	D.M. / lb Livewt. gain
End of May	1.5	10
Mid June	0.7	18
Preservation		
Good	1.9	9.8
Poor	1.0	13.3

It must also be borne in mind that preservation of silage can have a very big effect on animal production. For example, Vincent Flynn has found in Grange that poor preservation reduces silage intake, and consequently animal performance; and this increases the amount of feed required per unit of liveweight.

So if we could return to systems A and B as practised at farm level, can we now identify the important factors limiting performance and can we also say what they mean in national terms? To me, the most important critical factor in a system of cattle production is having sufficient feed to take the animal over the winter at a high level of performance. This means having sufficient high quality silage which can be supplemented with grain, if necessary; and the job of the farmer is to combine grazing and conservation efficiently in order to operate his particular system.

Now if we could turn to the crisis which the cattle industry is going through. This has caused a serious set-back to the whole industry, and to the whole economy, which is going to affect us for a few years. But rather than consoling ourselves, we should now be asking ourselves the questions as to what lessons can be learnt from this crisis?

To me the following can be learned:-

(i) The producer of finished cattle survived or rode out the storm much better than the rearer or producer of stores.

(ii) There are too many of our cattle being finished as beef off grass in the second half of the year (see Tables 11, 12 and 13). This means that too much pressure is being put on the processing plants. Of course, if we are going to get more beef finished in the first six months of the ye year, the producers must be paid a premium to cover the extra cost, involved.

(iii) Finally, we are not producing enough winter feed. This is the most important lesson to be learned (see Table 14).

TABLE 11. Seasonal slaughtering of prime cattle - percent

Period	1972	1973	1974
January-March	21	18	19
April-June	24	20	18
July-September	25	35	25
October-December	30	27	38
Total Cattle (,000)	400	402	657

TABLE 12. Seasonal slaughtering of cows - percent

Period	1972	1973	1974
January-March	25	20	26
April-June	15	19	18
July-September	24	26	24
October-December	36	35	32
Total Cows (,000)	152	240	414

TABLE 13. Seasonal exports of live cattle - percent

Period	1972	1973	1974
January-March	24	24	25
April-June	23	23	21
July-September	20	24	25
October-December	23	29	29
Total exported (,000)	469	302	292

TABLE 14. Winter feed production 1973

Hay or Silage (000 ac.)	2,511	No. of L. Units (000)	6,052
Total Yield of D.M. (000 tons)	4,520	D.M. from Roots (000 tons)	512
Total D.M. (000 tons)	5,032	D.M./L. Unit (lb)	1,862
D.M./L. Unit/Day (lb)	13.3	D.M. required/L. Unit/Day	22.3
Total D.M. requirement (000 tons)	8,435	Shortfall (000 tons)	3,403
To Supply Shortfall			
One cut of silage (000 ac.)	1,890	Cut twice (000 ac.)	945

If we take 1973 as an example of the amount of winter feed produced for the total number of livestock units (Table 14), there is no reason to believe that the situation was any better in 1974 for Winter feed supplies. All the indications are that it was probably much worse because of poor hay-making weather in 1974. From Table 14, it can be seen that in order to supply the feed requirements during the Winter, it would be necessary to take one cut of silage from almost 2 million acres or two cuts from almost 1 million acres more than we are presently cutting.

So we are only producing 60 percent of our total Winter feed requirements and this is where the big input is required in cattle production at national level; and this is where the Fertiliser Association can play a major role in assisting in the promotion of a national campaign on the expansion of our cattle Winter feed supplies. I will not discuss the effect which adequate Winter feed supplies would have on reducing the age of cattle at slaughter, or the effect on seasonal slaughterings, but suffice it to say that it would have a considerable impact.

With regard to the extra requirements in terms of silos, cattle buildings and machinery, it will be necessary to have considerable investment. Whether the farmers, particularly the store cattle farmers, have the confidence at present to make such investment is very doubtful; and in my view, all the agencies concerned with the cattle industry have a responsibility to provide the cattle producer with the type of long-term security to enable him to make such investments.

With regard to the use of fertiliser to produce all this extra grass for conservation, I will leave those calculations to you to work out.

I have not said anything, Mr. Chairman, about expanding the cattle industry but I have concentrated on feeding and managing the cattle which we have presently in the country. I think that a lot of effort and investment must go intothis facet of the industry; but this is not to say that an expansion programme could not, or should not, take place at the same time, provided that we have the outlets for extra meat produced. As stated above, the cow population probably will not increase very much in 1975 because of the high slaughterings of cows in 1974, but Bord Bainne have initiated a campaign for more milk which will probably mean more cows in dairying in 1976. It is difficult to say whether this increase in cow population will occur on existing dairy farms, or that farmers now doing suckling will switch to dairying. It is also difficult to say whether the farmer with the low acreage, at present rearing stores, will move into dairying as a result of his poor returns in 1974. There is no doubt however, that milk production is a much more secure system of farming for the man with the low acreage; but there are many reasons why such people do not move into dairying. Some of these reasons are sociological and some are economic.

If there was a big expansion of dairying on small farms, we need to answer the following question, namely, who would now rear the calves for beef production? To put the question another way, what are the implications of a dairy expansion programme on the cattle industry at national level? This is where I feel the agencies concerned with the dairy industry and the agencies concerned with the cattle and beef industry could perhaps work closer together in the long-term planning of their respective industries; because the national dairy herd is still the main source of animals for cattle production.

Finally, Mr. Chairman, the combined dairy and cattle industry is our greatest industry. In 1974, the export of these two industries was just £300 million which was almost 30 percent of our total exports and almost 70 percent of our agricultural exports. Grassland is the main source of feed for the cattle and dairy industries; and in view of our climatic advantages, it is likely to remain so in the future. Presently, we are only utilising about 50 percent of the potential of our grasslands and we do not have a serious short-fall of feed in Winter-time. In my view, much effort and money must be put into grassland development if the Irish economy is to exploit it fully.