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# The Economic and Management Consequences of Early Weaning Pigs

By

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AS has been stated on numerous occasions, the main management problem of the New Zealand pig industry is that of fitting pig numbers and pig appetite to the milk supply. By staggering farrowings and varying slaughter weight, requirements and supply can be made to coincide fairly satisfactorily.

There are, however, disadvantages arising from this flexibility and economic limits to it. For example, farrowings can be staggered, but only to a point. Litters from sows that are farrowed down late in the spring prove extremely useful in consuming the summer peak feed supply. These same sows farrow again late in the autumn and produce litters which face a falling milk supply. Such pigs are usually "stored" through the winter. Over this period they grow but little and, because of the low plane of nutrition on which they are kept, together with the fact that they are barely weaned when submitted to it, losses are often heavy making this whole phase of production extremely costly.

The choice of marketing pigs at pork weight or carrying them on to bacon weight is largely determined by the feed available or expected at the time the decision has to be made. While this flexibility simplifies the task of fitting feed requirements and supply, it ignores the fact that under New Zealand conditions the production of pork is more economic in terms of feed efficiency than the production of bacon pigs (Smith 1952).

Briefly, the New Zealand farmer is attempting the impossible task of fitting two reproductive cycles, each of six months duration, into a ten-month dairy season.

In this paper, an attempt is made to illustrate the consequences of early weaning (7-10 days) upon the management, type of pigmeat production, i.e. pork or bacon production, and meat output on a farm milking 40 cows and producing 12,000 lbs. of butterfat annually.

## Source of Data:

To calculate the separated milk available for pig feeding a herd size of 40 cows was decided upon. The following general data were used:

1. A herd averaging 300 lbs. of fat per cow. This was not considered as an average, but as a target as too are all the standards relating to pig production.
2. An average fat test of 4.8 percent;
3. A cream test of 40 percent;
4. Ten calves kept;
5. Eight percent of cows aborting or empty;
6. Distribution of production as follows:

July	1.6 %	August	5.7 %	September	9.9 %
October	13.35%	November	14.5 %	December	14.2 %
January	12.35%	February	9.25%	March	8.15%
April	6.25%	May	3.4 %	June	1.1 %

The above basis was adopted from Dairy Board Report (1946).

Calculations were made from these data, it being assumed that the difference in production between months was accounted for by a steady daily increase or decrease.

The calving dates were fixed arbitrarily within months, due regard being paid to the Dairy Board data relating to the percentage of cows calving each month. Times of "drying off" were similarly assigned. Calves kept and their weekly milk requirements were related to calving times.

The data for pig requirements were derived from Ruakura intake data. Where possible, whole litters were taken showing the normal variation in weaning weight, which variation was largely reflected in time taken by individual pigs to reach market weight. Feed requirements for sows while pregnant and suckling were those recommended by this Station (Smith 1955).

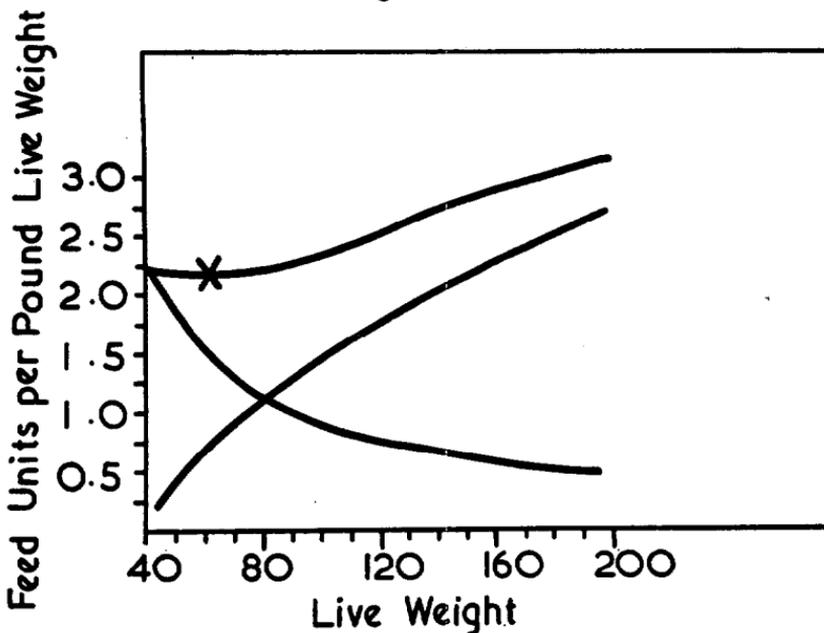
The sow culling rate was based on the industry figure of 25 to 30 percent annually. Culling has been done after weaning the spring litter since this reduces the pig numbers and feed requirement over the autumn. The system was adopted of farrowing young sows early in the season and the older sows (which were assumed to be the ones to be culled) later. In all cases, litters of seven pigs raised have been used. The feed requirements of early weaned litters were based on current feed records at Ruakura where on the average 40 lbs. of pellets were eaten per pig, consisting of 6 lbs. of No. 1 ration and 34 lbs. of No. 2. On this basis, the cost per pig was 15/6d.

The pig-meat price adopted was 1/9d. for pork (80 lbs.) and 1/4½d. for bacon-weight pigs (145 lbs.).

#### The Effect of Early Weaning upon Type of Production:

In a paper by the present writer (Smith 1952) it was shown that by using pasture extensively as a feed for pregnant sows in New Zealand, sow overhead feed costs, in terms of milk and meal, were reduced substantially as compared with those pertaining in overseas countries. As a result the production of pork-weight pigs, 75 to 80 lbs.

Fig 1.



carcase weight, was a more efficient means of utilizing feed than the production of heavier pigs.

One of the effects of early weaning is to reduce sow overhead very materially (Smith 1955). The effect of this reduction is shown in Figure 1. It can be seen that the critical weight, i.e. the weight above which feed cost per pound of meat produced steadily increases, is lowered from the 75 to 80 lbs. mentioned previously to approximately 60 lbs. live weight.

A pig weighing 60 lbs. liveweight will yield a carcase of about 42 lbs. Such a carcase is not acceptable on the local or export market so full advantage cannot be taken of this finding. On the other hand, it does follow that pigs raised under an early weaning system should be marketed at as light a weight as the market and feed supply will allow because, as the critical weight is lowered, the difference in efficiency between pork and bacon production increases. From Ruakura data, the extra feed costs per pound of meat of producing heavy pigs are shown in Table 1.

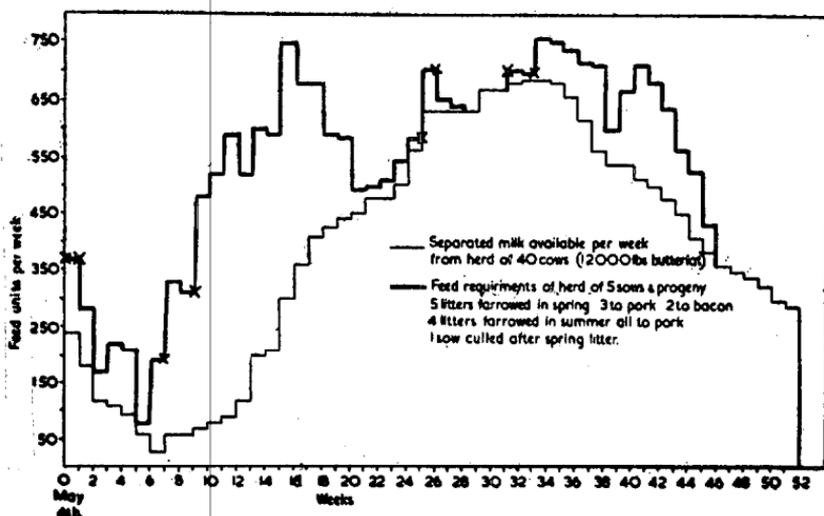
TABLE 1.  
Comparison of feed costs per pound of meat for pork and bacon production according to the system of rearing used.

Rearing System	Market Weight		Difference in feed per lb. of meat
	80 lbs.	150 lbs.	
Suckling	4.0	4.7	0.65
Early Weaned	3.2	4.2	1.05
	.8	.5	
	—	—	

#### The Effect of Early Weaning upon Management:

As has been pointed out, the New Zealand farmer is faced with the difficult problem of fitting two reproductive cycles of the sow each consisting of a six-month period into a ten-month dairy season. Figure 2 shows the extent to which this can be done under a normal suckling system.

Fig. 2.



Farrowing Dates:

Sow	Spring Litter	Weight Marketed	Summer Litter	Weight Marketed
1	May 4-10	Pork	October 26-31	Pork
2	May 11-17	Pork	November 1-7	Pork
3	June 24-30	Bacon	December 7-13	Pork
4	July 8-14	Pork	January 1-7	Pork
5*	July 8-14	Bacon		

\* Sow culled after weaning this litter.

In preparing this figure, the feed requirements of a number of sows and their progeny were arranged and rearranged to give the best fit with the feed supply. In addition, where the requirement exceeded the supply and meal had to be fed, young pigs were always on hand. One sow was culled following the weaning of the spring litters. The output from such a herd is as follows:

5 litters farrowed in the spring: 3 litters to pork weight, 2 to bacon.  
4 litters farrowed in the summer: 4 litters to pork weight.

**Meat Output:**

49 pigs at 80 lb. carcase	3,920 lbs.	
14 pigs at 145 lb. carcase	2,030 lbs.	
		5,950 lbs.

**Return:**

3,920 lbs. at 1/9d. per lb.	£343	
2,030 lbs. at 1/4½d. per lb.	£139	
		£482

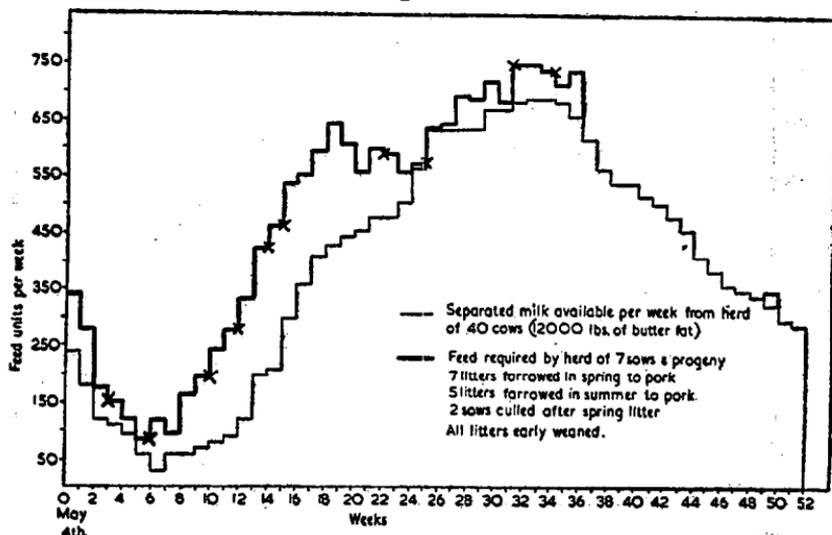
**Meal Needed:**

3½ tons at £32 per ton	£112	
		£370

Meat produced per 100 lbs. fat	49.2
Return per lb. fat	7.4d.

Figure 3 shows the fitting of the requirements of seven sows and their litters to the same basic feed supply when sows are early weaned and all litters marketed at pork weights.

Fig. 3.



**Farrowing Dates:**

Sow	Spring	Litter	Weight Marketed	Summer	Litter	Weight Marketed
1	May	25-31	Pork	October	7-13	Pork
2	May	25-31	Pork	October	7-13	Pork
3	June	15-21	Pork	October	28-	
4	July	15-21	Pork	November	3	Pork
5	August	5-11	Pork	Culled		
6	August	19-25	Pork	December	16-22	Pork
7	August	26-31	Pork	Culled		
				January	6-12	Pork

7 litters farrowed in spring: 7 litters to pork weight.  
 5 litters farrowed in summer: 5 litters to pork weight.

**Meat Output:**

84 pigs at 80 lbs. .... 6,720 lbs.

**Return:**

6,720 lbs. at 1/9d. per lb. .... £588  
 Meal used: 1 1/6th tons at £32 per ton .... £38  
 Pellets used: 84 pigs at 15/6d. each .... £65  
 -----  
 £103  
 -----  
 £485  
 -----

Meat produced per 100 lbs. butterfat .... 56  
 Return per lb. of fat .... 9.7d.

The important advantages accruing from early weaning are:

1. Since the litters are removed from the sows at 7 to 10 days of age, the sows can be remated 5 to 6 weeks earlier than is the case where the litter suckles for 8 weeks. As a result, spring farrowings can be delayed by three to six weeks without delaying summer farrowings to a point where litters cannot be marketed before the winter. This makes it possible to market all pigs as pork and yet farrow some litters so that their peak demand coincides with the peak supply. Where normal suckling is practised the peak supply can be conveniently consumed only by carrying some litters to bacon.
2. There is a greater return per pound of butterfat.
3. There is a greater meat output per 100 lbs. of fat. The total meal used in the normal suckling herd was 3½ tons but when early weaning was practised, 2¾ tons were used (inclusive of pellets). This increase in production from the same milk supply and less supplement is due to:
  - (a) The greater feed efficiency achieved over the reproductive cycle by the early weaning technique as compared with the normal suckling method of rearing; and
  - (b) The marketing of all pigs at pork weights.

**SUMMARY.**

1. Through use of the early weaning method of rearing sow overhead is reduced substantially below that obtaining under the normal method of allowing the litter to suckle the sow.
2. This reduction in sow overhead results in a lowering of the critical marketing weight.
3. The lowering of the critical weight increases the margin of feed efficiency for pork over bacon production. To gain full advantage of the early weaning system, therefore, farrowings should be arranged to produce the greatest possible proportion of pigmeat in the form of lightweight pork.
4. The shortening of the reproductive cycle achieved under an early weaning system allows later spring farrowings to take place so that the peak requirements of some pork litters can be made to

coincide with peak supply, without postponing the summer farrowings to a point where it is impossible to market these litters before winter.

#### References:

1. New Zealand Dairy Board Annual Report 1946.
  2. Smith, D. M., 1952. "Factors affecting the efficiency of feed conversion by pigs." Proceedings N.Z. Soc. Animal Production, Vol. 11, 89-98.
  3. Smith, D. M., 1955. "Early weaning of pigs pays handsome dividends." N.Z. J. Ag., 91, No. 6, 594-599.
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## Discussion

Mr. LAWRY: Mr. Smith showed in one slide the feed units required for his two systems. There seems to be quite a difference in the feed requirements for gestation under the two systems of weaning. Why is this?

Mr. SMITH: When a sow suckles her litter for 8 weeks she normally loses weight. A maiden sow may lose up to 30lb. while older sows lose up to 100lb. This condition must be rebuilt by feeding. When a sow has her litter removed for early weaning at 7 to 10 days after farrowing, she loses little if any weight and the feed requirement during gestation is reduced.

Mr. WILLIAMS: Could Mr. Smith give us some idea of the comparative cost of raising pigs by the two different systems considering the extra labour which early weaning would probably require?

Mr. SMITH: There is very little extra labour required. During the first two days that the pigs are away from the sow it is necessary to see that all piglets are eating satisfactorily. After this, by using self-feeders there is little labour needed beyond that required to see that all utensils are meticulously cleaned.

Professor CAMPBELL: In assessing the relative efficiency of the two systems of pig production, has the grass consumed been included?

Mr. SMITH: There will obviously be a difference in the grass intake of sows under the two systems. One aim of early weaning is to utilize grass more fully during the dry period. At present we have no comparative intake data for sows subjected to the two systems. However, the two systems differ substantially in the efficiency of pasture utilization. Sows which suckle their litters generally have access to grass pens which they graze sparingly seldom sufficiently to control growth. The same area is almost adequate to support an equal number of dry sows which graze more efficiently. From our grazing observations we have found that suckling sows, when fed for milk production, will only graze for an hour in the morning and an hour in the cool of the evening. Dry sows will graze up to eight hours each day.

Mr. LONGWILL: Mr. Smith has only mentioned feed costs. Farmers are also interested in the extra overhead costs and two extra sows would increase these by about £30. The heat lamp cost for early weaning has also not been accounted for. He has suggested that under the early weaning system, farmers should produce all pork. This surely would result in the price for baconers increasing on the local market and it may then become more profitable to produce bacon.

Mr. SMITH: Overhead costs would certainly be increased if pork alone were produced. The extra returns would more than cover this.

Heat lamp costs would not be greatly increased since we have found that, except in very cold weather the early weaned pigs will do well without extra heat as long as they are properly housed. When pork is 1/9d per lb., it is not profitable to produce bacon until it reaches 2/3d per lb. then supply and demand will determine the proper relationship of pork to bacon output.