

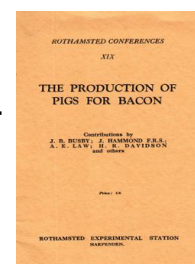
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[Full Table of Content](#)



### Does It Pay to Produce Grade a Pigs?

**H. R. Davidson**

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## DOES IT PAY TO PRODUCE GRADE A PIGS?

By H. R. DAVIDSON  
(Harpenden)

DOES it pay to produce Grade A pigs? In order to find an answer to this question it is necessary to investigate two or three different approaches to the problem. Take, for example, the question of the cost of production generally. Only those who have attempted to obtain detailed costs of production for bacon pigs know how very difficult the whole subject is. The fullest investigation of the subject, however, is undoubtedly that which was given to it by the Reorganisation Commission for Pigs and Pig Products whose Report was published in October, 1932. Having studied data from many different sources the general finding of the Commission on this subject was embodied in a formula which allowed the cost of production to vary with the prices of feeding stuffs. This formula stated that the cost of production of a bacon pig could be taken as being equal to a fixed sum of 35/- per pig plus 10.3d. per score for every 1/- per cwt. in the cost of food.

Now if we calculate the cost price of bacon on this basis since the scheme came into operation in November, 1933, we shall find that the contract price for a basic pig was higher than the formula price until about July, 1934. By that time the contract price was approximately the same as the formula price, but this still left something, over for a Grade A pig. Since that time the contract price has remained very low, while the price of feeding stuffs has risen considerably. By October, 1934, the formula cost was 12s. 3d. per score while the contract price (after deducting for the curers' repayment levy) had fallen to 11s. 9d. In January of this year the cost of feeding stuffs was given as 9s. 2½d. per cwt. with a corresponding formula figure for cost of practically 12s. 11d. The contract price, however, was down to 11s. 3d. per score, a loss of about 1s. 8d. per score which the bonus of 1s. per score for Grade A pigs was not large enough to cancel. For February the situation has been less acute, but there was a difference of 1s. 3d. per score which was still too great for the 1s. bonus to overcome.

It is true that under the 1935 contract terms the curers are giving 2d. per score on all pigs delivered during the year to be paid out on a level delivery basis on all pigs delivered in the first four months of the year. If supplies throughout the year are regular this will amount to about 6d. per score on pigs delivered from January to April; on the other hand, as will be discussed later, it is not possible to obtain 100 per cent. Grade A pigs; and a producer can consider

## THE PRODUCTION OF PIGS FOR BACON 19

himself very fortunate to average out all pigs on a "B" basis. Therefore, even taking the bonus as amounting to 6d. per score, the average price to the producer does not show a profit under February conditions. Another way of looking at the level delivery bonus is to realise that in the case of a producer who delivers fairly regular quantities all the year round this bonus is really only equal to an average of 2d. per score for the whole year. In practice this amount is consumed in administrative expenses.

A brief examination of the low contract price shows that this result is due to the low price of bacon. While the present contract terms are based to a certain extent on the Commission's formula they are also dependent directly on the wholesale price of green home-cured Wiltshire bacon. The contract price only agrees with the formula cost of production when bacon is selling at 104s. 4d. per cwt. At present prices of bacon, therefore, the evidence is that it does not pay to produce either Grade C or Grade A pigs.

Turning now to another aspect of the problem let us assume the situation to be such that the contract price of a basic pig remains steadily at something under the formula cost of production, but at a figure under it less than the bonus for a Grade A pig. This would mean that by producing 100 per cent. of Grade A pigs we could rely on making a small profit. In asking ourselves whether we can produce 100 per cent. Grade A pigs let us consider what exactly a Grade A pig actually is. As at present defined by the contract terms this is a pig with a carcass weight lying between certain defined limits, which has firm white fat, which does not show signs of fishy flavour, seedy cut, disease, bruises, emaciation, or physical damage; which is not a sow or pregnant gilt, and which conforms to certain measurements of back fat and belly thickness. While it has been the province of other speakers to define in what quality of bacon carcass consists, I wish to refer to the matter again for a moment.

The cured side of Wiltshire bacon is normally divided into ten different cuts. Of these, two form the gammon, two the fore-end and six the "middle." The "middle" cuts again are grouped into three forming the back and loin, and three which form the belly. The three belly cuts are known as the thick streaky (in front), thin streaky (in the middle) and flank (behind). The ten cuts vary widely in selling price according to their value to the consumer. A general relationship, however, is ascertainable between the price per lb. of each of the cuts and the price per lb. of the whole side. Roughly speaking, when the price of a bacon side is about 1s. per lb. (*i.e.* when bacon is about 112s. per cwt.) the price of flank should be about 8d. per lb., thin streaky about 11d. per lb., and thick streaky about 1s. 2½d. per lb. The corresponding prices for prime back on the other hand would be about 1s. 7d. per lb. (These prices, by the way, are allowing for 15 per cent. gross profit for the retailer.) The flank, then, is with the exception of the fore-hock, the least valuable cut in the whole side, while the thin streaky comes about sixth out of ten

20 THE PRODUCTION OF PIGS FOR BACON

in the value per lb. of the cuts. In addition the total weight of both flank and thin streaky only amounts to rather less than 10 per cent. of the total weight of the side.

Now if you will consider for a moment the place at which the belly measurement is taken under the present contract terms you will perhaps see what I am aiming at. The contract states that "the belly measurement shall be the thickness of the belly  $1\frac{3}{4}$  in. from the belly edge opposite the joint between the fourth and fifth vertebrae from the curve." Because the backbone is removed in the process of curing it is not possible to demonstrate on a cured side just where this measurement is taken, but by analogy it will be found to be somewhere close to the division between the flank and the thin streaky.

In the Danish Testing Stations the belly is measured at three points, and where similar measurements have been taken in this country it has usually been found that the smallest measurement is obtained in the flank, while the largest is found in the thick streaky. Under British conditions, therefore, the belly is measured at what is virtually its thinnest point, while in Denmark and Sweden the belly thickness is taken as the average of three measurements from the thinnest to the thickest point. Now, as I see it what we have to compete with in this country is the production of lean sizeable Wiltshire bacon abroad. Do the contract terms suggest that our Grade A pigs are similar to those which produce No. 1 Danish Wiltshire sides?

For Class 1 pigs, that is those with a cold dead weight of 140 to 170 lb., the Grade A qualifications are that the back fat must not exceed  $1\frac{3}{4}$  in. while the belly measurement must not be less than  $1\frac{1}{2}$  in. If, however, one turns to the measurements of Grade 1 pigs in Denmark, which correspond to Class 1, Grade A pigs in this country, it will be found that they do not come up to the standard for Grade A in respect of belly measurement (see Table I). Of 1,880 pigs measured in the Danish Testing Stations last year and which were graded as Grade 1 (*i.e.*, Class 1, Grade A), the average belly measurement was 1.30 ins. This, it must be remembered, is the average figure for three measurements, and will be greater than the single measurement taken in the flank under British conditions. Even so this means that the belly measurement would only qualify for Grade C in this country, the minimum being 1.5 ins. and hence, even if the back fat were satisfactory the whole carcass could only be graded C. In other words, what would be Grade A under Danish conditions would only be Grade C under British conditions. This means that in competition with foreign imports the home producer is under a handicap of two grades or 1s. per score which amounts to about 7s. on the average bacon pig.

Similar results have been obtained in Sweden and the following excerpt from a report by Axelson<sup>1</sup> may be quoted here :

<sup>1</sup> Einige Resultate der Schweinemastkontrolle in Malmöhus Län. Joel Axelson. Z. Züchtg.: B, Tierzüchtg. u. Züchtsbiol, Bd. 28. Heft 2. S. 157-315 1933.

THE PRODUCTION OF PIGS FOR BACON 21

“Correlation between the various properties of bacon pigs—thickness of belly and grading.”

“For the correlations between thickness of belly and grading the following coefficients were obtained :

Large White Breed	Males	$r = -0.189$	$\pm 0.0500$
	Females	$r = -0.218$	$\pm 0.0482$
	Average	$r = -0.346$	$\pm 0.0615$

“From this it will be seen that all three coefficients are negative and significant, and they show therefore that the thinner the belly the higher the grading of the side and *vice versa*. This result appears to contradict the well-known fact that in pig breeding it is a thick belly which is striven after, in order to obtain bacon of higher quality. The result, however, is perfectly correct and finds its explanation in the relationship by which a thicker belly is associated with a thicker back fat, and as the thickness of the back fat is of far greater importance in grading than the thickness of belly it follows that a thicker belly is associated with a lower grading although a thicker belly by itself, purely from the point of quality, is certainly to be desired.

“The same result is obtained if the average value of the belly thickness of the different grades is recorded. These average values are actually as follows :

		GRADE		
		I	II	III
Large White Breed	Males	3.22 cm. $\pm 0.031$	3.31 cm. $\pm 0.027$	3.38 cm. $\pm 0.032$
	Females	3.49 cm. $\pm 0.019$	3.67 cm. $\pm 0.040$	3.66 cm. $\pm 0.059$

“These average values show that the thinnest belly measurements are given by the best quality bacon. This result, too, agrees with the earlier Danish and Swedish investigations.”

These Scandinavian figures, scientifically arrived at, only confirm what has already been known in this country, namely that in selecting for the British market, foreign bacon producers have placed the greatest of emphasis on a thin back fat and while striving to get as thick a streak as possible they have refused to select on this basis because of its effect on back fat.

It is easy to understand that in the case of the Midland bacon trade a thick belly is essential. In this case the back and loin are removed as well as the ham, and of the part left for curing, the the streaky and flank obviously form a very high proportion. In this case one can appreciate that the thickness of the belly is all important, and that the thicker back fat which is associated with it, although undesirable, is not the major problem that it is in the case of lean sizeable Wiltshire bacon. In fact as Callow has shown in his recently published paper in the *Empire Journal of Experimental Agriculture* on “Carcase Quality in Relation to Growth and Diet” the firmness of fat which is required for the Midland ham trade is only obtained from a well fattened pig. To insist, however, on a Midland standard of belly and a Wiltshire standard of back fat

would, from the evidence just submitted, seem to be asking the British producer to do something which is not demanded of his Danish competitors and which is biologically very difficult to achieve.

It is not here suggested that the measurement for belly thickness should be done away with. As Dr. Hammond has pointed out, the streak should be as thick as possible but it is the relation of this to the thickness of the back fat which, under present conditions, seems to be uneven.

It has been said that it is not the thickness of streak which is difficult to obtain but rather the required thinness of back fat. This, however, is begging the question, as it is not the actual belly measurement which matters but its relation to the back fat.

Should the price situation be such that a profit can only be obtained from Grade A pigs, and at present bacon prices it does not seem possible to obtain one from Grade C pigs, then on the present grading standards there is no likelihood of producing the 100 per cent. of Grade A pigs necessary to make that profit.

There now remains to be considered the more general problem of whether the pig of typical bacon conformation actually costs more to produce than one of a recognised pork or lard type. Here the evidence is a little conflicting. According to theoretical considerations arising from the very valuable investigations into growth and carcass conformation recently carried out by Hammond, the best type of bacon carcass is achieved by the use of a late-maturing type of pig which is pushed on in the early stages of growth to make as rapid gains as possible. Now it is generally imagined that because heavy feeding leads to greater daily gains, and because, therefore, the maintenance requirements of the pig is reduced, the amount of food consumed per lb. of live weight gain must be less. Actually, however, it is found that lighter feeding leads, as would be expected, to slower growth, but also to a more economical use of food. Findings to this effect were obtained by Henry and Morrison in America, and by workers at the Rowett Research Institute in this country. On the other hand it is known that growth in the early stages is made at the expense of a smaller amount of food than later on, because muscle tissue contains so much more water than fat. Yet this is countered once again by the fact that the high percentage of protein ingredients required in the food of young pigs makes the ration more expensive than is required in the finishing stages. From these somewhat confusing considerations what conclusions can we draw? Perhaps the best answer is to refer to two of the few cases where data on both quality and economy of food consumption have been recorded. The first case relates to a report of an American Testing Station, published in 1932 (see Table II). In this case 20 pens of groups of four pigs each were recorded so that the total consumption of food was known and so that the total retail value of the meat was also ascertained. The difference between food cost and selling value is not the exact net profit, but it is obviously closely

THE PRODUCTION OF PIGS FOR BACON

TABLE I  
MEASUREMENTS OF DANISH AND SWEDISH BACON PIGS  
Data from Official Reports of National Testing Stations, 1934  
DANISH SWEDISH

	Total No. of pigs.	Inches	Belly Grade	Carcase Grade.	Inches.	Belly Grade.	Carcase Grade.
GRADE I							
Average thickness of back fat ..	1880	1.34		C.	1.39		C.
Average thickness of belly ..		1.30	C.		1.32	C.	
GRADE II							
Average thickness of back fat	572	1.57		C.	1.57		B.
Average thickness of belly		1.26	C.		1.38	B.	
GRADE III							
Average thickness of back fat ..	186	1.69		C.	1.71		B.
Average thickness of belly ..		1.30	C.		1.39	B.	

Minimum belly measurements under English Contract grading.  
GRADE A, 1.5 inches GRADE C, 1.25 inches  
GRADE B, 1.375 inches GRADE D, 1.0 inches

TABLE II  
Relationship of profit to feeding cost and carcass quality.  
Compiled from "Report on Iowa Swine Performance Record," 1932.

Order of pens.	Difference between food consumed and "cut out" value per 100 lb. live weight gain.	Value of food consumed per 100 lb. live weight gain.	"Cut out" value per 100 lb. live weight gain.	Average of every four groups.
	s. d.	s. d.	s. d.	s. d.
1.	18 8	24 0	42 8	
2.	17 5	25 0	42 5	
3.	17 3	26 4	43 7	
4.	17 1	26 4	43 4	43 0
5.	17 1	26 2	43 1	
6.	16 9	26 3	43 1	
7.	16 6	26 1	42 9	
8.	16 5	26 11	43 5	43 1
9.	16 4	27 2	43 6	
10.	16 3	27 1	43 5	
11.	15 10	27 11	43 9	
12.	15 3	27 11	43 3	43 6
13.	15 1	27 8	42 10	
14.	14 9	28 3	43 3	
15.	14 7	28 9	43 6	
16.	14 2	27 6	41 3	42 10
17.	13 11	28 2	42 4	
18.	12 7	30 7	43 2	
19.	11 10	31 5	43 3	
20.	11 1	31 9	42 11	42 6

## 24 THE PRODUCTION OF PIGS FOR BACON

TABLE III

DANISH TESTING STATIONS, 1934

*Pens having more than 13 points out of 15 for bacon type.*

<i>Station</i>	<i>No. of Pens.</i>	<i>% of Total.</i>	<i>Food per 1 lb gain. Selected Pens.</i>	<i>Food per 1 lb. gain. Average of all pens.</i>	<i>Difference</i>
Bregentved ..	6	4.5	3.13	3.35	0.22
Hong ..	14	12.7	3.30	3.47	0.17
Elsesminde ..	11	14.1	3.25	3.36	0.11
Overlojstrup ..	25	15.4	3.21	3.34	0.13
Haraldskjaer ..	33	15.6	3.20	3.29	0.09

related to it. When a table is made showing the gross profit, the value of food consumed per 100 lb. gain and the value of the carcass, an interesting relationship will be found. The profit is found to be almost exactly proportional to the efficiency of food consumption, and not to the value of the carcass. In fact, the pen with the highest profit (No. 1) was only third from the bottom (42s. 8d.) so far as carcass was concerned. In this case some strains have been good both from the point of view of food consumption and quality, while others have been good in one direction and not in the other. Profit, however, has almost entirely depended on economy of food consumption.

A second, and for our purpose, much more significant example is to be found in the case of the Danish Testing Stations for last year. From these results have been selected all pens which have scored over 13 points out of 15 for bacon quality (see Table III). The average for all pens tested is about 12.6 points. The average amount of food consumed by these pens has been compared with the average for all pens tested. From Table III it will be seen that those pens which obtained highest marks for bacon quality have also a figure for economy of food consumption definitely above the average. The actual amount means a saving of about 19 lb. of food per pig, or something like 1s. 3d. to 1s. 6d. at present costs of feeding stuffs.

Comparing the American and Danish results with one another it does not seem as if they were in agreement. The data from Danish sources, however, correspond more closely to our own conditions, as thickness of back fat is the main criterion of quality followed by length of middle, and thickness of streak. It is possible, too, that the American pigs were much more heterogeneous in type and had not been selected over such a long period. Taking the available evidence it would seem that a type of pig similar to that which has supplied the best foreign imports in the past is more profitable to feed than the less suitable type, and there is ample evidence, to which I have not time to allude here, that from the point of view of fecundity it is as good as any.



## THE PRODUCTION OF PIGS FOR BACON

25

### *Conclusion*

To return to the question asked in the title of my paper, " Does It Pay to Produce Grade A Pigs ? " my reply would be as follows :

(1) Under present conditions where the contract price depends on the price of bacon and where the price of bacon remains so low, the extra return from a Grade A pig is not sufficient to cancel the loss involved in a basic pig.

(2) The present standard of belly measurement is too severe and out of proportion to the demands of the market which we are trying to develop. The percentage of Grade A pigs produced is therefore small and the effort and capital involved in providing stock and accommodation to produce them does not meet with an adequate return.

(3) Given a reasonable standard for a Grade A pig its production will give a more economical return than a pig of poor type. If the Pigs and Bacon Marketing Boards can secure the adjustment of the price of bacon which will be to their mutual advantage and which will make the price of a Grade C pig not less than the cost of production, and if they can reach a rather more reasonable understanding on the question of the contract grading terms, then the production of Grade A pigs will certainly be a paying proposition.

As development of the pig industry in this country can only come from increased production of bacon, and bacon of Grade A quality at that, I consider it incumbent on every pig producer in the country to give his fullest support to the Marketing Scheme in the hope and belief that it will remain in active operation till these improvements are achieved.