A guide to pig feeding

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A GUIDE TO PIG FEEDING

By P. McNAMARA, M.A. (Cantab.), Adviser, Pig Husbandry

FOOD is by far the greatest cost in pig production, accounting for between 60 per cent. and 75 per cent. of the total cost, and for this reason it is important that the basic principles of feeding be understood.

Research workers have indicated the nutritional requirements of the pig, but in the field it is often difficult to apply their findings accurately.

Analysis of wheat samples in this State shows a wide range of protein content from place to place and year to year, and the same applies to other cereals. Pig rations consist of up to 90 per cent. cereals of uncertain analysis, so any recommendation must of necessity be based on an average figure.

Meatmeal, the most widely used source of protein, varies considerably from sample to sample both in protein and mineral content.

The strain and breed of pig may vary considerably. Not least is the question of cost. Such proteins as fish meal and skim milk powder are known to be superior to others in pig nutrition, but to use them exclusively would be prohibitive from the cost angle.

It is for this reason that such recommendations must be treated as a guide and applied as economic considerations dictate.

The composition of feeds is dealt with fully in many textbooks, here it is intended to deal with only those that are commonly met in Western Australia.

Proteins

Adequate protein is required in the ration for the building of flesh on the pig—lean meat production.

Proteins are complex substances made up from amino acids and not every protein has the same amino acid build up. Protein from animal sources usually has a better range of the essential amino acids than protein of vegetable origin, and for this reason pig rations normally include a percentage of meatmeal, this being the most readily available animal protein source in Western Australia.

The analysis of protein in a feed indicates only the percentage of protein and nothing about its quality. Often two feeds with similar percentages of protein may have very different values as feeds.

To obtain a good range of amino acids in a ration a mixture of proteins is better than a single source. In W.A. protein rich feeds are scarce. Some of those most commonly used are:—

MEAT MEAL (55 per cent.)—Quality varies considerably. Many so called meatmeals are really meat and bone meals. Produced in the State and also imported.

WHALE MEAL (65 per cent.)—A good source of protein but unpalatable, useful in conjunction with other protein feeds. Produced in the State.

SKIM MILK POWDER (33 per cent.)—An excellent quality protein supplier, especially useful for young pigs. Is expensive per unit of protein.

SKIM MILK (3.5 per cent.)—On the butterfat farm this is a valuable source of protein, excellent quality.
FISH MEAL (65 per cent.) Excellent protein, but has to be imported.

SOYA BEAN MEAL (50 per cent.)—This is one of the few vegetable proteins which has a good amino acid makeup suitable for young pigs. Imported.

Meat from dead sheep and kangaroos is a possible source of protein, 2½ lb. of cooked meat being equivalent to 1 lb. meatmeal.

Carbohydrates

Carbohydrates consist of sugars, starches and fibre and make up the bulk of the pigs' diet. Carbohydrates are the energy producers and cereals are the main source.

Young stock growing fast need concentrated forms of carbohydrate, which are easily digested, such as sugars and starch. Older stock can make more use of the bulkier carbohydrate feeds with higher fibre content.

WHEAT—High energy value, very little fibre. Do not grind too fine otherwise digestive disturbances result.

BARLEY—Excellent pig feed, should be ground finely. Has little less energy value than wheat and a higher fibre content.

OATS—Useful for pigs if fed in moderation and ground finely. More suitable for mature animal. Should not exceed one third total bulk of ration.

POLLARD—Valuable feed replacing cereals on a pound for pound basis, bulky, best fed combined with cereals. Usually too expensive for inclusion in ration.

BRAN—Bulk feed, only two thirds of the value of pollard. Has its uses as a laxative for sows when pigging, etc. Not valuable for fattening.

A mixture of cereals will usually produce a better ration than when only one cereal is used. Changes in a ration can be made gradually by tapering off one item and adding to another. Price and availability will dictate the composition of a ration.

To determine the cheapest feed from both a nutritive and price angle, divide the price per bushel by the following factors:

Wheat by 43, Barley by 36, Oats by 24, and Pollard by 20.

The one which gives smallest answer is cheapest feed.

If it is wished to know the equivalent price of barley when wheat is $1.60 per bushel, the following calculation may be made:

\[
\text{Wheat price/bushel} = \frac{\text{Barley price/bushel} \times \text{Wheat price/bushel}}{\text{Pollard by 20}}
\]

When it is possible to buy barley at $1.33 per bushel or less when wheat is $1.60, it will be more economical to use barley.

Fats

Fats produce body heat and energy also, but in a concentrated form, 1 lb. fat produces 2½ times as much energy as a similar quantity of starch. Feeds with a high fat content cause bodyfat in the pig and are not desirable.

The total fat in a ration should not exceed 3 per cent.

Water

Water of course is essential. Pigs should have 24 hours a day access to fresh, clean, cool water; both in paddocks and when confined.

Pigs which have to wait long periods between drinking will not eat well and cannot be expected to make maximum growth. There are several makes of automatic drinkers available.

Minerals

Lack of essential minerals can cause trouble. Minerals are as necessary for good growth as are the other elements of feed.

Many minerals are present in normal pig feeds and it is usually only necessary to make up the levels of the most important ones.

Generally speaking, a ration which contains a mixture of cereals and 10 per cent of meat and bone or fish meal will contain sufficient minerals for normal growth.
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THE MAJOR MINERALS — CALCIUM, PHOSPHORUS, SODIUM AND CHLORINE

The calcium/phosphorus ratio should be in the region of 1 : 1. Vitamin D enables calcium and phosphorus to be utilised efficiently, yet another influencing factor.

Phosphorus is present in large quantities in grains, but calcium is not. Meat and bone meal (not pure meat meal) is rich in calcium and also phosphorus, and rations with over 10 per cent. meatmeal should have a satisfactory balance, provided Vitamin D is adequate.

Sodium and chlorine are normally provided by the addition of salt to the ration. Excesses can be toxic and additions should not be made if there is a high salt content in the drinking water.

IRON AND COPPER

These two minerals have an important role in pig nutrition and their activities are linked—iron is useless without traces of copper. In normal rations there will be adequate copper and iron, but small additions of copper sulphate and ferrous sulphate to the ration will ensure that these elements are not a limiting factor.

It is for baby pigs that iron has its major importance in the prevention of anaemia, for sows milk is very deficient in iron. The sow is unable to pass sufficient iron to her offspring however well supplied is her diet.

At 3 days old piglets should be injected with an iron compound or given an oral dose in paste, liquid or solid form. A number of anti-anaemia remedies are available. (See Department of Agriculture Bulletin No. 322.) Piglets on clean pasture will normally obtain their requirements from the soil.

COPPER

High levels of copper have been fed to obtain increased growth rates. Although higher rates have been fed, 1 lb. of copper sulphate per ton of feed is the maximum recommended. Reports on response to high level copper feeding vary considerably.

High levels of copper can be toxic and on no account should be fed to breeding stock.

ZINC

There is also a link between calcium level and zinc utilisation. High levels of calcium in a ration cause troubles which are often easily cleared up by mixing 1 lb. zinc carbonate or 12 oz. zinc sulphate per ton of feed.

GENERAL

Except in certain areas and special cases the other minerals will be present in sufficient quantity to supply the pigs' needs.

Complex mineral mixtures are available and their use will ensure that there is no deficiency of any of the known essential minerals. Whether to incur the extra cost to be on the safe side is up to the farmer himself.

SIMPLE MINERAL MIXES

**Mixture A**
- 20 lb. ground rock phosphate
- 10 lb. salt.
- 8 oz. ferrous sulphate.
- 12 oz. zinc sulphate.
- 4 oz. copper sulphate.
Mix 1 lb. per 100 lb. of feed.

**Mixture B**
Similar to mixture A, except no ground rock phosphate.

Vitamins

There are a large number of vitamins known to be essential for pigs' growth, but in many cases they are supplied by the pigs' normal feed. Under certain conditions the following might be deficient.

**VITAMIN A**—Lack of Vitamin A can cause considerable trouble and it is wise to ensure that pigs have an adequate supply. There are few normal pig feeds which supply the pigs' requirements except for green feed and even this can provide an inadequate supply if of poor quality. Addition of synthetic Vitamin A is recommended.

**VITAMIN D**—is necessary for bone formation. Pigs can synthesise this when exposed to the ultra violet rays of the sun. Housed pigs should be given a synthetic vitamin supplement.
RIBOFLAVIN

Normal rations will probably have insufficient quantities, especially if large quantities of vegetable protein are used.

VITAMIN B12

The same remarks would apply to this vitamin.

Preparations providing adequate levels of vitamins are today available in stable form, and these enable one to provide a cheap insurance against vitamin deficiency.

Mixing feeds

All feed mixtures should be:

- Palatable—especially important for little pigs.
- Economical—the ingredients must be the best available within the economic range.
- Balanced—there must be a correct balance of proteins, carbohydrates, vitamins and minerals.
- Suitable—pigs at different stages require different types of ration.
- Flexible—capable of having slight alterations made without major changes in the whole mix.
- Fresh—putrid and rancid feed will upset pigs and cause digestive upsets.

FOUR TYPES OF RATIONS REQUIRED

The requirements of pigs for protein, starch, fibre and the other constituents of a ration vary according to age. What is right for the sow is not correct for the weaner, the old concept of sow and weaner feed is out of date.

Sow Ration—16 per cent. protein

Feed this ration all the time, varying the quantity according to condition. A sows ration can contain a higher percentage of fibre than that of other pigs, for she is a mature animal and will have the capacity to contain it. This allows greater use of oats.

The quantity required may be as little as 2 lb. per day for a sow grazing on good clover; up to 12 to 14 lb. per day for a sow suckling eight piglets. Average feed requirements area:—

1st month of pregnancy 5 lb. to 6 lb. per day.
2nd and 3rd month of pregnancy 4 lb. per day.
4th month of pregnancy 5 lb. to 6 lb. per day.
Suckling 6 lb. + ½ lb. per piglet.

THREE SOW RATIONS

<table>
<thead>
<tr>
<th>Ration 1</th>
<th>Ration 2</th>
<th>Ration 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat meal (55 per cent.)</td>
<td>15 lb.</td>
<td>—</td>
</tr>
<tr>
<td>Fish meal (65 per cent.)</td>
<td>—</td>
<td>7 lb.</td>
</tr>
<tr>
<td>Soya bean meal (50 per cent.)</td>
<td>—</td>
<td>5 lb.</td>
</tr>
<tr>
<td>Barley or mixed grain</td>
<td>60 lb.</td>
<td>63 lb.</td>
</tr>
<tr>
<td>Oats</td>
<td>25 lb.</td>
<td>25 lb.</td>
</tr>
<tr>
<td>Vitamins</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Minerals</td>
<td>9 oz. B</td>
<td>1½ lb. A</td>
</tr>
</tbody>
</table>

Creep Ration—19 to 20 per cent. Protein

Pigs will be encouraged to eat creep rations as early as a week to 10 days old. It must be palatable, easily digested and highly nutritious. The capacity of the piglets stomach is very small at this stage, feeds must be carefully chosen.

Meatmeal (55 per cent.) | 10 lb.
Fish meal (65 per cent.) | 5 lb.
D.S.M. Powder (33 per cent.) | 10 lb.
Pollard | 15 lb.
Wheat | 60 lb.
Vitamin supplement + trace minerals | 9 oz. B

If available 15 lb. of rolled oats could be included in ration. Very palatable and liked by young pigs.

To get piglets eating early, 5 per cent. sugar may be mixed with the early feeds. Some pigmen start their suckers on sugar coated breakfast cereal.

Growers Ration—16 per cent. protein

The protein make up can be similar to sow rations 1, 2 and 3 but the cereal fraction should consist of wheat or wheat and barley. Oats are too fibrous for little pigs. If rolled oats (no husks) are available (and the price is reasonable) they could replace 20 per cent. of cereals.
Change to this ration from creep, and feed until 120 lb. liveweight is reached. Rapid growth is required, so ration must be palatable, highly nutritious and easily digested. It must not be too bulky.

Pigs may still be fed ad-lib, but if hand fed the following amounts can serve as a guide:

At 8 weeks old feed 2 lb. per day for a week. The next week increase daily allowance by ½ lb. and continue to increase allowance by ½ lb. per pig each week.

**Finishing Ration—12 to 13 per cent. protein**

The period of rapid growth and building the skeleton have been completed. Growth must continue but tendency to overfatness must be checked. Protein requirement is down, bulk can be increased.

Feed from 120 lb. liveweight to baconer:

- Meatmeal ... ... ... 7 lb.
- Cereals (up to 30 per cent. oats) ... ... ... 91.5 lb.
- Mineral mix ... ... ... 1.5 lb. A

Pigs will probably be eating about 4 lb. per day when they start on this ration, and may get to a maximum of 6 lb. per day.

Lucerne meal is a valuable additive to any ration and should be included when price and availability allows. Up to 10 per cent. may be used. Its principal value lies in its mineral and vitamin content.

Linseed meal 1 to 2 per cent. only, is often included in ration with apparent benefit.

The various rations outlined are suggested patterns from which to build rations on the farm, the contents of which will be largely dictated by availability and price.

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**EXPORT LAMB COMPETITION**

THE ROYAL AGRICULTURAL SOCIETY will again conduct an Export Lamb Competition in conjunction with the Australian Meat Board this year.

The competition is for lambs submitted from July 1 to October 31. Entries need not be restricted to first quality carcasses.

The classes are similar to those of previous years:
- Class 1—Lambs sired by Southdown rams.
- Class 2—Lambs sired by other British breed rams.

The number of lambs per entry remains at three and as before the grower may submit five, the best three to be selected at the works.

Lambs will be judged locally, but prize-winning entries will be sent to London for display. Prize money, donated by the Australian Meat Board, will be: Class 1—First prize, $100; second, $40; third, $30; fourth, $10. Class 2—First prize, $80; second, $30; third, $10. There will be no State Championship.

A display of carcasses and presentation of prizes will be held at the West Australian Meat Export Works, Robbs Jetty, on January 26, 1967.

Full particulars and entry forms are available from the Royal Agricultural Society, the Australian Meat Board, stock agents and the regional and central offices of the Department of Agriculture.
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