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Improving production from pigs

Selection of gilts for the herd at the Medina Pig Research Station.

By P. McNamara*

In the early 1970s, separate investigations began with on-farm backfat testing of pigs, and pig carcase measurements at abattoirs. Both schemes aim to help pig farmers produce leaner, meatier pig carcases.

A major problem in the production of pigs is to assess the quality of the carcase. It is relatively easy to compare performance characteristics such as liveweight gain or number of piglets reared per sow, but the quality of the carcase on the live animals was entirely a question of judgement.

In the late 1960s to help assess backfat thickness in potential breeding stock, the Department of Agriculture started testing a device for measuring the thickness of fat on a live pig. The instrument, called a Sonatest, consists of a transmitter, which sends ultrasonic waves through a probe. These waves penetrate fat and meat at different speeds, and the differences are measured to determine thickness of backfat.

Early trials with the Sonatest were done at Watsons, Spearwood, where measurements on the live animals before slaughter could be compared with measurements on the carcase. When reliability of the test was established, testing began on farms, and this formed the basis of the Western Australian Pig Improvement Programme.

In early 1970s the newly formed Australian Pig Industry Research Council commissioned a study group to investigate the feasibility of implementing a national pig carcase grading system in Australia.

In 1972 the committee reported that a grading scheme was not practical but recommended a national pig measurement and information service. All States co-operated in abattoir work to determine the best sites at which to measure carcases. In Western Australia, work was done at Watsons and Midland abattoir. Pig Carcase classification today is based on this work carried out over the past eight years.

PIG IMPROVEMENT PROGRAMME

The Western Australian Pig Improvement Programme is based on the "on farm" testing scheme used in the United Kingdom by the Meat and Livestock Corporation. It enables

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pig producers to identify genetically superior individuals within their herds and to use these animals as future herd replacements.

Selection is made on growth rate and carcass quality, (as indicated by backfat depth). Both can be measured easily on the farm and are quickly passed on to progeny in a breeding programme. The method enables large numbers of pigs to be tested economically and the superior ones to be selected.

Pigs are tested at a weight which enables those not required for breeding to be marketed for slaughter. It is important to remember that this testing programme is an aid to selection of superior animals within a group; it should not be used to compare pigs tested at different times, nor for comparisons between herds. Such comparisons can only be made in central test stations where all pigs are reared under similar conditions, or by the use of a reference sire system which illustrates the differences between the conditions.

It is emphasised that on farm testing is a valuable aid to selection of superior pigs in individual test groups.

Membership
Membership of the Pig Improvement Programme is open to breeders with herds of 40 sows or more. In special circumstances herds with fewer sows but using 5 or more boars and selling a significant number of breeding stock can be included. The minimum herd size has been set because with fewer sows, genetic gain would be very slow.

The programme is aimed to raise the quality of the breeding stock for the whole industry and for this reason breeders selling stock should participate.

To obtain worthwhile progress, a member of the programme should test as many of his potential breeders as possible throughout the year. Regular testing is encouraged, and the registration fee now includes the cost of twelve tests, unlike in other years where testing was paid for on a per visit basis. To get full value for money, and to get the best value from the scheme, a member should test the herd at least 12 times each year.

To qualify for testing, membership of the Pig Herd Health Scheme is required. The farm is visited by a veterinary officer three times in the year, and recommendations on health and hygiene are made.

Testing
Good handling facilities on the farm are necessary to enable testing with the minimum upset to normal farm operations. Holding pens, with races leading to scales and a testing crate, enables a steady flow of animals to be tested.

Before testing, the owner should list ear numbers of pigs to be tested and other information relevant to subsequent calculations. At time of test he can identify the animals by ear number and enter the weight and fat depth measurements on the form. The test itself is relatively simple. Potential breeding stock are weighed and those within the weight range of 70 to 90 kg are tested. This of course, is the weight range at which bacon pigs are marketed, so those not to be saved for breeding can be sent for slaughter immediately.

After weighing pigs are moved into the test crate where the backfat depth is measured with the ultrasonic probe. Measurements are taken at points on the back referred to as C and K. These are 4.5 cm and 8 cm from the midline at a point at the junction of the last rib and the vertebral column.

The intrascopc which is used for measuring backfat.

Operation of the intrascopc.
To give greater accuracy, measurements are taken on both left and right sides to derive an average C and K reading. These measurement sites were chosen, as the depth of fat in this area is a good indicator of the percentage of lean in the carcase.

It will be noted that the measurements taken on a carcase in the abattoir, the P2, is directly between the C and K points, and in fact the average of C and K readings gives a close estimate of P2.

**Using the test for selection**

The farmer will have a supply of blank test sheets on which information, such as age, can be entered before the tester arrives. The weight and average C and K are filled in at the time of testing.

The tester then completes the calculations, in the farm office. Using a programmable calculator he completes the next three columns and calculates an index which appears in the blank column. This was at one time used as a selection index, but in the new scheme a further calculation is carried out whereby all pigs tested are scored between 70 and 130 with an average fixed at 100.

In the guidelines for selection it is suggested that only the top 10 per cent of boars should be scored and the top 15 per cent of gilts. This will ensure that worthwhile progress is made.

It is again stressed that on farm test figures relate only to the herd; comparisons between herds are not valid. However when buying breeding stock, the purchaser should ask to see the test sheets to see how the pig he is purchasing compares with its contemporaries.

For example, a pig might have a score of 108 and rank fourth in its test. The owner decides to keep the three best pigs, ranked first, second and third, and offer the fourth for sale. The fourth pig could be described as “108; rank 4/20; gilt”. This means that it ranked fourth out of a batch of 20 gilts, and had a score of 108.

**Carcasse Classification**

The pig carcase measurement and information service was a nationally coordinated project funded by the Australian Pig Industry Research Committee, and it provided the information used to formulate a pig carcase classification system.

To begin the project, a large number of measurements of pig carcases were required to establish a relationship between weight, fat depth and the percentage of lean in the carcase. Backfat measurements were taken with the intrascope at a number of points on split and unsplit carcases, and calliper readings at traditional grading points were also taken on the split sides.

From all this work it was established that the best single indicator of the percentage lean in a carcase was a fat depth measured with the intrascope. The measurement is taken with a probe at a point 65 mm off the midline at the level of the last rib and is referred to as the P2 measurement.

The committee then recommended that P2 be adopted throughout Australia for classification, and this, combined with the hot carcase weight of a standard carcase would be a common language for everyone dealing with pig carcases.

In Western Australia a pilot scheme was begun in 1977. All carcases which passed through Midland abattoirs were classified, and where possible information about them sent back to the producer.

To pass the information back to the producer, it was necessary to identify the carcases. In theory, this was relatively simple as all pigs had to be branded with the owner’s registered tattoo. However, due to poor branding, confusion caused by lazy letters in brands and no visible brands, it was not always possible to identify the producer.

The brands act has since been totally reformed to an entirely numerical system. This is now being introduced.

In addition to the weight of the carcase and the P2 reading, the sex of the carcase was recorded. Numbers slaughtered according to sex would eventually help in a system for forecasting future supplies.

Through the period of the pilot scheme, in 1977 and 1978, producers whose pigs were killed at Midland abattoir received these details in the form of a computer print-out, provided they had branded their pigs legibly so that they could be identified. Producers sending pigs on a weight-and-grade basis to specific buyers received a copy of the kill sheet, as did the buyer.

As a result of this work, several companies who purchase pigs on weight-and-grade adopted the P2 as the basis of their grading schedules, offering prices in relation to weight and fat depth indicated by P2.

The closure of the pig floor at Midland brought to an end the pilot scheme, but classification had then become established. Processors who had based their grading systems on the scheme wanted it to continue.

Carcases of pigs consigned to these companies are now intrascoped in the private abattoirs to which they are sent, and there is a growing interest by wholesalers and retailers in classification. At the time of writing, about 80 per cent of all pigs are classified.

The Department of Agriculture has accepted responsibility for training and checking intrascope operators to ensure that a similar standard is set at all abattoirs.

**Conclusion**

The Pig Improvement Programme and pig carcase classification compliment each other. The producer using the Pig Improvement Programme and testing stock on the farm, and obtaining carcase information by selling weight and grade, has a continuous check on management, feeding and the breeding programme. The pig industry is becoming more specialised, and programmes such as these will enable producers to ensure that they are getting the best results from their pigs.