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ON-FARM AND CENTRAL TESTING IN QUEENSLAND

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Both central and on-farm performance testing have important roles to play in the improvement of any pig population. The Queensland boar performance testing station has been operating since 1969, and on-farm performance testing since the early '70's. Because the size of any central testing facility is usually small compared to the population it serves central testing should be regarded as a valuable supplement, not an alternative to efficient on-farm testing. In the 83-84 year the Queensland testing station approved a total of 216 boars. When compared to Queensland's total sow population of approximately 62,000 the inability of the testing station to supply the state's total boar requirements is obvious.

The success of central testing will therefore depend on the source of boars to be tested and the subsequent use of those boars that are approved. Boars should be drawn from herds that are influential in providing breeding stock to the industry. In Queensland these are no longer restricted to stud herds. The widespread adoption of the 'Synthetic' has given rise to influential and progressive breeders with this breed type. These producers are encouraged to central test. There is no doubt that the herds central testing in Queensland at present are influential but by no means are they the only producers with large sales of breeding stock. Foremost amongst this latter group's reasons for not central testing would be the fear of introducing disease with boars returned from the station although the 15 year health record of the station has been good. While this is an obstacle for minimal disease piggeries it is not an insurmountable one. One minimal disease piggery in Queensland regularly central tests and by the use of a quarantine facility and artificial insemination is able to utilize the benefits of its approved boars.

More emphasis could be placed on the comparative nature of central testing. Whereas on-farm results can only be used to compare animals on the same farm central testing allows comparison between farms because boars are tested under identical growing conditions. Minimal disease units could send a sample of boars regularly to monitor their genetic progress. Twelve boars a year would be an appropriate number. Boars from this sample that were approved could be sold to other piggeries if the original owners were unwilling to take them back into their own herds. While this would decrease the rate of genetic progress achieved overall by the test station the advantages of having a wider representation of breeders testing would

justify such a move. Breeders who refuse to centrally test are denying their customers valuable information.

The test station has been very useful in evaluating the recent importations against our own local stock. Indeed this is but one of several ancilliary roles a central test station can provide. Boars passing through the Queensland test station represent a wide cross section of their respective breeds. In past years valuable research information on meat quality, teat number and leg soundness has been collected. The testing station is also an ideal point for monitoring the genetic disease Malignant Hyperthermia Syndrome (MHS). Introduction of the halothane test on Landrace boars in 1977 has reduced the incidence of MHS from 6% to 1% of all Landrace boars tested.

A requirement for success of central testing is for approved boars to be used as sire replacements in their herd of origin. These boars have been identified, at considerable expense, to be the possessors of superior genes and every opportunity should be afforded to them to multiply these genes and pass them on to as many pigs as possible. At present while testing herds tend to use the best themselves, a considerable number of approved boars pass directly to commercial herds which effectively limits their potential to spread their superior genes. Perhaps this should be taken one step further. Associated with many central testing schemes worldwide is the requirement that breeders allow the top five percent of animals to be retained for use in an artificial insemination program.

The Queensland test station is too small to make a major impact alone on the Australian pig population. Improvement has occurred, however, as measured by time trends in station performance (table 1). The performance of recent imported pigs, particularly from Canada indicate Australia as a nation has been unable to keep pace with other countries. Yet individual producers have by conducting an efficient on-farm testing program and judicious use of the test station been able to produce pigs equal to the quality of the recent importations.

The factors that determine the efficiency of an on-farm testing program are many. Treacy (1982) stated that "poor testing facilities are a major limitation to the testing programs in some herds". Performance testing with inadequate facilities is a difficult, frustrating job that all too often gives rise to the taking of shortcuts. Usually the shortcut is to decrease the number of pigs tested resorting to subjective assessment of pigs in pens before testing. Provision of adequate test facilities leads to more pigs being properly tested and should lead to an improved rate of genetic progress.

In 1981 a selection index was developed by an Australia-wide working party for use in on-farm performance testing:

INDEX = 100 * DG - P2 FAT + LWT * 0.1
where DG = daily gain (g/day)
LWT = liveweight at testing (kg)

Unfortunately it seems that adoption of this index has been limited due in part to a lack of understanding of the benefits it has to offer. The index optimally combines growth rate and backfat depth to present a single score that provides the best measure of the animal's potential to produce profitable offspring. With the advent of cheap and simple programmable

Table 1. Performance of boars at the Queensland boar performance test station.

	Year					
	79-80	80-81	81-82	82-83	83-84	84-85
			LARGE WHITE			
Number tested	177	157	122	149	197	120
Daily gain (kg/d)	.88	.89	.89	.91	.96	.95
FCR	2.67	2.59	2.62	2.64	2.60	2.55
P2 backfat (mm)	19.3	19.6	18.6	16.6	15.9	14.3
			LANDRACE			
Number tested	265	257	239	212	141	68
Daily gain (kg/d)	.91	.93	.92	.90	.94	.97
FCR	2.73	2.67	2.68	2.77	2.77	2.65
P2 backfat (mm)	19.0	19.6	19.1	18.2	18.0	16.3
			SYNTHETIC			
Number tested			33	47	10	14
Daily gain (kg/d)			.94	.96	.98	.96
FCR			2.56	2.55	2.53	2.62
P2 backfat (mm)			19.4	18.4	14.7	15.3
			DUROC			
Number tested					16	16
Daily gain (kg/d)					.97	.98
FCR					2.44	2.39
P2 backfat (mm)					14.1	13.6

calculators use of the index is not difficult.

Another area in need of improvement in on-farm testing is the rate of turnover of breeding stock, especially boars. A survey by MacBeth and McPhee (1982) found that the average working life of stud boars was 24 months. Considering that six to nine months is the optimal working life for boars to achieve maximum genetic gain this is a serious revelation indeed. Despite complaints that it is impractical to achieve such a quick turnover of boars several producers are able to do so.

The previously mentioned factors; the number of animals tested, accurate identification of superior animals and the rate of turnover of breeding stock, all vitally affect a farm's rate of genetic progress. In many cases there is room for improvement. One of the keys to achieving this improvement is for potential buyers of breeding stock to be more conscientious consumers. More emphasis needs to be placed on the measured superiority of a particular pig over its contempories tested at the same time. The use of absolute performance figures to compare animals tested in different herds can be misleading. Almost all the differences in on-farm performance between herds has been shown to be environmental. Potential

buyers of breeding stock should ask,

where does this pig rank in this herd? and

where does this herd rank amongst other herds?

Herds that are central testing and routinely and properly on-farm testing would have no trouble providing the answers.

Obviously each system of performance testing central and on-farm has some strengths and some weaknesses. Central testing has advantages in comprehensiveness and accuracy of measuring over on-farm testing as well as identifying useful genetic variation between herds. On-farm testing allows many more animals to be tested and at less cost. When both systems are available and used properly they should complement each other resulting in faster genetic progress than when operating independently.

With our recent importations Australia has been brought up to date genetically with the rest of the world. However, if we neglect performance testing we shall soon fall behind again making us genetically dependent on other countries. The costs and indeed the dangers (e.g. disease introduction) of regular importations would be high. The same potential exists here in this country as any other for genetic progress. Progress which proper use of central and on-farm testing facilities would go a long way towards achieving.

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