THE ANGUS SIRE REFERENCE SCHEME IN NEW ZEALAND

El sistema de toros de referencia Angus en Nueva
Zelandia

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NEW ZEALAND

## INTRODUCTION

The Angus Sire Reference Scheme (SRS) began in New Zealand with first mat-
ings in 1977, under direction from Ruakura Animal Research Station.   It began
for four reasons:
1.   we were not convinced of the technical merits of central beef bull
     performance tests (Dalton and Morris, 1978).
2.   80% of pedigree Angus bulls used for breeding in New Zealand are not
     homebred (Cheong, 1977), and
3.   bull breeders seem more concerned about progeny test results than about
     within-herd performance data.
4.   Since annual genetic progress from a multiple-herd reference sire testing
     and selection scheme can be at least as great as with within-herd mass
     selection (Morris et al., 1980), the establishment of valid across-herd
     testing seemed worthwhile.
The SRS is currently in its fifth year, and details of procedures and some
results are given below.

## TESTING PROCEDURES

The SRS allows breeders the opportunity to assist with wide-scale testing
of reference sires, and the evaluation of home sires (by natural mating)
against the reference standards.   Other non-reference artificial insemination
(AI) sires are also used, optionally.

Random mating, and then subsequently equal treatment of groups of pregnant
cows and of nursing cows and calves, are all important requirements of the SRS.
The scheme relies on extension in the field provided by Sheep-and-Beef Officers
and Farm Advisory Officers of the Ministry of Agriculture's Advisory Services
Division.   The Division has staff across the country dedicated to servicing
the  sheep and beef cattle industries, especially through the National Flock
Recording Scheme, and the National Beef Recording Scheme (Beefplan).   Farm
advisors have no regulatory role in the SRS, nor in other aspects of their work.
Unlike field staff in other countries (e.g. MLC staff in Great Britain), they
are not required to assist directly in the yards with collection of weight data.
It is however their responsibility to make breeders in the SRS aware of the
necessary technical requirements.   Beefplan is the medium for collecting all
SRS performance data except insemination records.

Membership of the SRS includes registered and unregistered breeders.   All
participants calve seasonally, in spring, and most SRS calves are born in a
90-day period.   Calves born to clean-up bulls do not qualify.

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Analysis of most probable producing ability (MPPA) data of cows bred to different bulls within herds has shown that random matings have been achieved. One method of helping to achieve this end is to offer participants the opportunity to nominate certain matings as Special Matings, whose offspring are to be ignored.

Participants must choose two or more reference sires in a given year. The size of the scheme so far is summarised in Table 1, with three research herds (385 cows) included up to calving year 1981, four herds (420 cows) in 1982. In addition, two Government nucleus breeding scheme herds (Waihora) have been connected with the other data (900 cows). The number of reference sires may seem large, but the research herds have assisted with connecting all sires. Two of the research herds (Waikeria and Waikite) are progeny test herds attached to closed weight-selection herds, where the selected bulls are used within their selection line in one year and in the test herd subsequently. Data are being accumulated to compare the Breeding Values (BVs) of the selection herds with those of bulls bred privately. For the present, only the comparisons of the AI vs non-AI bulls are sufficiently reliable for publication.

A total of 4754 straws have been ordered by 31 private herds, for 90 herd-years of testing, with straws being used at the rate of 1.5 straws per cow, on average. Widespread publicity through the media and direct contact have failed to elicit more participation, due perhaps to:
1.  the state of the beef market,
2.  the inconvenience of AI in beef herds, prior to the advent of cheap, reliable and convenient oestrus synchrony,
3.  political moves in relation to recording performance data.

<div align="center">RESULTS</div>

The data, analysed by regressed least squares procedures, consist of progeny of 503 sires for weaning weight (WW) and 450 for yearling weight (YW). This includes all weaning data from private herds up to the third calving (1980) and some yearling data up to 1980. The current research and Waihora results and back data have also been added.

In the first calving season, 65 valid progeny test WW records were obtained per 100 cows put to qualifying sires for AI or natural mating.

The ranges of BVs were 43 and 74 kg respectively for WW and YW. Ranges in overseas data for WW were very similar to this, 39 kg (Canada), 36 kg (U.S.A.), 39 kg (Australia).

There were 76 AI sires with WW data, 72 for YW. The BVs of these sires were higher by 3.2 and 4.5 kg respectively than the non-AI sires. Reference sire data are available only up to the third SRS round (16 sires), and initial rounds of reference sire selection were difficult due to absence of valid comparative data. However, the BVs (and thus selection differentials) of the 16 reference sires were +1.8 and +4.7 kg above those of all AI sires, and 2 to 4% above the national average bull of say 200 kg at weaning and 260 kg at the yearling stage.

Four reference sires and four others are AI bulls from overseas and have been included in analyses so far, from Australia, Canada, Eire and the U.K. The top one of these eight is ranked only 73rd for WW and 194th for YW. In addition, three N.Z.-bred bulls have been used as reference sires overseas, in up to three other countries.

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**Table 1.**        Status of the N.Z. Angus Sire Reference Scheme
: February, 1982

| | Calving season | | | | | Totals[+] |
| --- | --- | --- | --- | --- | --- | --- |
| | 1978 | 1979 | 1980 | 1981 | 1982 | |
| Herds* | 20 | 24 | 15 | 16 | 15 | 31 |
| Straws ordered | 993 | 1352 | 877 | 972 | 560 | 4754 |
| Reference sires tested | 5 | 11 | 8 | 8 | 5 | 27 |
| Cows used for testing* | 1796 | | | 2300 | 3229 | |

\* Private herds; in addition, 3 research herds with 385 cows (4 herds in
1982) and two Government herds in a nucleus breeding scheme (900 cows).

[+] The totals of herds or reference sires refer to unique herds or sires;
many are repeated across years.

Where repeat progeny-test data have been collected, product moment corre-
lations are high in other tests (Roberts et al., 1982). The correlations
between BVs for weaning and yearling weights in the present data (based on
approximately 22 progeny per season per sire) was acceptable at 0.74 (Morris
and Gibson, 1981). Regressions of YW BV on WW BV were 1.21±0.07 kg kg$^{-1}$

### DISCUSSION

The SRS is identifying the BVs of large numbers of Angus bulls, with the
objective of providing the private bull breeder with comparative information
across herds, at least for WW and YW.

Two main factors are of concern at present. The first is the long delay
experienced by the organisers in obtaining completed performance records from
participants. The second is the high price and/or registration fee charged by
the owners of some reference sires, providing a deterrent to greater member-
ship in the scheme or more semen used per member.

The registration status of bulls is still a major barrier. In practice
the present situation enables breeders of unregistered bulls to have access
to a wider sample of high BV bulls and semen than the registered breeder, and
generally at a lower average price.

In the U.S.A., where an Angus SRS has been in operation for longer, AI
sires which are both reference sires and weight-selected sires have been used.
Genetic progress estimates for 14 years and 564 sires were obtained for WW
(0.39 kg/year) and YW (1.07 kg/year) by Willham (1982). In addition, a nega-
tive selection response had been achieved for birth weight (-0.1 kg/year).
Closed research weight selection herds in N.Z. have achieved twice as fast
genetic progress in YW as above (Baker et al., 1980), but it is not yet known
what rate the industry as a whole is achieving.

### SUMMARY

The Angus Sire Reference Scheme (SRS) began in New Zealand with first mat-
ings in 1977. By supervising the establishment of random mating groups of cows,
home sires are progeny tested against the artificial insemination (AI) reference
sires. A total of 27 reference sires has been used, repeat sires being arranged
across years, with 90 herd-years of testing so far set up (31 separate herds).
In five seasons, 4754 straws of semen have been ordered from reference sires,
used at the rate of 1.5 straws per cow. Three research herds and a Government
nucleus breeding scheme (Waihora) have been connected via reference sires.
From three years of data, plus current and back data from the research herds and
Waihora, progeny records from 503 sires for weaning weight and 450 sires for year-
ling weight were analysed. These include eight AI sires from four countries
overseas. The range of breeding values in N.Z. was 43 and 74 kg respectively

for weaning and yearling weight, compared with weaning weight ranges of 39 kg in
Canada, 36 kg in the U.S.A. and 39 kg in Australia. The averages of all AI
sires tested in N.Z. were +3.2 and +4.5 kg respectively above all non-AI sires,
and reference sires +1.8 and +5.7 kg above the mean of all AI sires.

## R E S U M E N

El Angus Sire Reference Scheme (SRS), comenzó en Nueva Zelanda
en 1977. Mediante la supervisión del establecimiento de grupos de reproduc-
ción al azar de las vacas, los sementales destinados a la monta natural se
probaron en su descendencia contra los de inseminación artificial (AI). Se ha
utilizado un total de 27 referencias de padres, renovándose a lo largo de los
años, con 90 establos-años de prueba de tal manera que se estudiaron realmen-
te 31 establos separados. En cinco estaciones, se expidieron 4.754 pajuelas
de semen de los padres de referencia utilizados al tipo de 1,5 pajuelas por
vaca. Se conectaron tres establos de investigación y un esquema de núcleos
de mejora gubernamental (Waihora) a través de los padres de referencia.
Tras tres años de datos, se analizaron los controles de descendencia de 503
padres para el peso al destete y de 450 padres para el peso al año. Se inclu-
yeron tambien aquí los toros de inseminación artificial de cuatro paises ex-
tranjeros. La oscilación de los valores de mejora en Nueva Zelanda fueron
de 43 y 74 kg respectivamente al destete y al peso anual en comparación con
los pesos al destete oscilantes de 39 en Canadá, 36 en Estados Unidos y 39
en Australia. Las medias de todos los padres de inseminación artificial pro-
bados en Nueva Zelanda fueron de + 3,2 y + 4,5 kg respectivamente sobre
el total de padres no-inseminación artificial y los padres de referencia + 1,8 y
+ 5,7 kg sobre la media de todos los padres de inseminación artificial.

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