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Producer Research Report

Increased use of Australian Genetics

Angus Young Sire Program Management Committee



For the last 15 to 20 years Australian Angus seedstock breeders have relied heavily on semen imported from the USA to make genetic progress.

Only eight of the top 30 sires (25% by usage) are currently Australian bred, yet 22 of the top 30 sires (as measured by B3 index) and 14 of the top 30 sires (as measured by Domestic Supermarket Index Value) are Australian bred.

The Angus Young Sire Program Management Committee aimed to increase the amount of semen used from Australian bred sires by 100% so that by 2008 at least half of the top 30 sires are Australian bred.

The project

For the last 15 to 20 years Australian Angus seedstock breeders have relied heavily on semen imported from the USA to make genetic progress. In 2002-03 the Australian cattle industry was reported to be importing more than 10 times the amount of genetic material it was exporting.

The Young Sire Program (YSP) initiated by Angus Australia was an attempt to raise the profile of Australian bred Angus bulls and to increase their domestic usage, giving rise to high accuracy sires that could improve genetic progress and enhance export opportunities.

Following three years of operation, the program (which was financially supported by MLA, Angus Australia (AA) and Angus seedstock breeders), has been rated a success by respondents to a survey of the AA membership. Sixteen young bulls have been proven through the insemination of around 3000 performance recorded females and analysis of their progeny by Angus Group Breedplan. The usage of Australian bred Angus bulls has increased, export of Angus semen has increased and genetic progress has been enhanced.

Objectives

1. Identify and prove young Angus sires possessing the optimum combination of traits for widespread use domestically; providing them with a profile and the exposure necessary to compete with genetics imported by multinational companies and with the potential to initiate an export market for Australian Angus genetics;
2. Increase the use of young sires in artificial insemination programs in Australia and prove the value of Australian genetics; and
3. Increase the productivity and profitability of participating herds by increasing genetic gain through improved selection differentials and decreased generation interval.

What was done

A combination of Australian developed technologies (Breedplan, Breed Object, IGF-1 testing, DNA markers and Structural Trait Assessment) were used to identify a short list of 40-50 young bulls from a broad genetic base annually.

The bulls were inspected and assessed for temperament, structure and phenotype.

Bull owners were contracted to collect and supply licensed semen for the project and the semen used over performance recorded females (ideally 150 females from 10 different herds).

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Key Points

- Accuracies of 80% or higher (the level required for publication in Angus Group Breedplan Sire Summary) have been achieved for the growth traits.
- Accuracies of 70% to 80% already achieved for carcass EBVs will increase in the next Breedplan analysis as more progeny are scanned.
- The bull with the highest B3 index on the entire Angus database is a graduate of the YSP.
- Five of the top 15 bulls on the B3 index have been proven through the program.
- Some of the highest prices paid for Angus bulls in the past 18 months have been for sons of YSP sires.

Workshops and the internet were used, in conjunction with Angus Australia and Rural Press publications, in order to promote the program and increase participation.

The Angus Young Sire Program involved 48 Breedplan recorded Angus herds, the distribution of 3000 doses of semen and the contracting, for progeny testing, of sixteen young bulls in two cohorts between 2005 and 2008. The young sires selected came from 15 different Angus studs. The progeny from these matings were recorded through the Angus Breedplan system and the EBVs and accuracy updated each time a new analysis was completed.

What happened?

Accuracies of 80% or higher were achieved for at least one EBV trait in all cases, which is the level of accuracy required for a bull to be published in the Angus Group Breedplan Sire Summary.

The Angus B3 \$ Index was used as the benchmark genetic measure for the selection of the young sires and 13 of the 16 tested finished with proofs (B3 values) which placed them in the top 5% of the breed.

Changes in the non-parent B3 indices of individual bulls (and the EBVs from which they are computed) did occur when progeny information became available. While these EBV values improved for some of the animals, others declined, however there was no significant change in the average EBVs (for any of the traits or for the B3 index) of the group of bulls from pre-progeny values to post-progeny values.

The recommendation of geneticists that sires should be randomly allocated to test herds is supported by such data, although project participants were not comfortable with this approach. This was due to concerns about the concentration of particular bloodlines in individual herds, and perceived biases against particular breed lines.

Although project participants nominated their preferred semen, the wide variety of opinions meant that semen distribution remained reasonably equitable.

Accuracy of EBVs

Proving a sire through progeny testing reduces the potential for unexpected performance from the sire's offspring, thereby increasing the accuracy of an EBV. As the accuracy of an EBV increases, the scope for change in the EBV (due to the analysis of additional data) is reduced.

Discussion

It was estimated that only 25% of the semen used by Angus breeders was from Australian bred sires in 2002.

In 2007, 11 of the top 30 sires, as measured by progeny recorded by Angus Australia, were Australian bred and accounted for 7,400 calves. This was about 40% of the registered calves (up from 25% in 2003). While data is not recorded, it is believed this figure could be closer to 50% when the semen usage of commercial operators is taken into account.

In 2004 only one of the top 30 sires by usage, was under four years of age. In January 2008, the Angus Sire Summary reported that of the 50 bulls with the most progeny recorded in the previous two years, three were graduates of the YSP, 12 were four years old or younger at the time of usage, and 11 of them were Australian bred.



While it has not been possible to obtain precise, industry wide data, a major exporter of Angus semen (Total Livestock Genetics) reports a large increase in export sales since 2003

One of the country's major semen distributors, ABS Australia, has changed from a net importer of bovine genetics in 2003 to a net exporter in 2007 with sales of Angus semen to Germany, UK, Russia, Czechoslovakia, USA, Canada, New Zealand, Argentina, Brazil, Paraguay and Uruguay in this period.

Breeders participating in the YSP were already progressive, but gained an increased awareness of the elements of genetic gain through their involvement. They gained from the use of bulls with EBVs in the highest percentiles for various traits. The average B3 index for the bulls used in the YSP is 99.5. This is within the highest 1% of bulls in the breed.

Prices as high as \$12,500 have been received for sons of YSP sires and vendors have reported prices above sale average for their YSP draft.

Participation

Forty-eight progressive Angus Society members took part in the project, although widespread and prolonged drought conditions in the cattle breeding areas of Australia negatively impacted the scope of this project and the number of participants involved.

Workshops were conducted in all states except South Australia. The number held was lower than anticipated due to the drought conditions and members busy feeding schedules, however additional meetings, field days, farm visits and internet interaction was used in order to attract participants and obtain feedback.

Survey Results – What Has Been Learned From The Project?

An email survey was commissioned by the YSP management committee and sent to participants and other Angus breeders by the consultant. Seventy seven replies were received.

The strongest recommendation received was for the continuation of the YSP with 83% support. There was also very a very strong recommendation that the current emphasis on the B3 \$ Index be reduced and more emphasis placed on finding more diverse pedigrees. Sixty three percent of respondents said they would be prepared to use unlicensed semen and 56% said they would be likely to use YSP semen in 2008.

In ranking the benefits of YSP, members considered the success of the YSP in providing a range of high performance young sires bred for Australian environments and markets, to be the biggest benefit of the program.

MLA also recommends

BeefPlan

BeefPlan is a non-traditional approach to learning. Groups of like-minded beef producers, work together as a management team to focus on property management. Importantly the learning agenda is set and controlled by the group.

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Increased use of Australian Genetics

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The provision of a creditable source of alternative genetics, independently assessed for structure and temperament, that can ensure above average genetic gain was also considered an important benefit, while the use of only moderately priced licensed semen, from fully parent verified and red gene tested parents was not seen as particularly important.

Respondents also considered the potential of YSP semen to raise the marketability of male progeny to be of limited importance.

When asked about the importance of specific traits in selecting semen for use in their herd, 80% of respondents rated structure and temperament as a very important consideration when selecting semen for use in their herd. Over 50% rated EBVs and \$ Index and pedigree as very important, while 45% rated visual appearance (as reported by someone else) as very important.

Semen price, whether the semen was licensed, and stud of origin were rated as least important.

Next steps

Beef cattle semen distributing companies were almost wholly focused on US genetics prior to the launch of the YSP. Following the success of YSP, Angus Australia has received expressions of interest from three companies keen to explore ways they might co-operate in any future program of progeny testing young Australian bred Angus bulls.

There is a need for a continuing education program focusing on the benefits and dangers of in-breeding and out-crossing, and their relationship to the rate of genetic progress. YSP participants regularly expressed concern about in-breeding and their perception that a reduction in genetic diversity is occurring in the Angus breed. This has become even more urgent with the recent announcement that a new lethal recessive gene may have been identified in a popular sire line (used heavily in the YSP) in the Angus breed.