

Post-wean Growth Tests for Beef Cattle Bulls

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INTRODUCTION

It has been estimated that the economic effect of a 5% improvement in feed efficiency is four times more than a 5% improvement in growth (ADG). As feed costs make up to two-thirds of the cost of beef cattle farming, it makes sense to improve feed efficiency. This does not only apply to animals in feedlots, but also to the cow herd on the farm, where more than 70% of feed is used to support cows for most of the year.

In any breed there is genetic variation in feed efficiency, in other words there are animals that are genetically geared to grow better with a lower intake, just as there are individuals who grow less and eat more, with all possible combinations in between. The challenge is therefore to correctly identify genetically outstanding animals, especially bulls, and to distribute their genetics through the breed. Intake on the veld, especially of producing cows, is very difficult to measure accurately. Growth and feed intake are therefore measured on young bulls in growth tests. This information is then used during genetic evaluation to estimate breeding values.

There are two types of growth tests which measure growth efficiency, namely Farm Growth Tests, where bulls are usually fed extensively on the field or in a camp, and Feed Intake Growth Tests, where bulls are fed at a central testing center with a standardized growth ration. In the Feed Intake Growth Test each bull's intake is measured individually, making it possible to more accurately measure feed efficiency. In addition, in all tests, traits such as scrotal size and body measurements are also taken. Carcass traits on the live animal are measured with RTU scanning.

TYPES OF TESTS

Farm growth tests aim to determine the genetic potential for growth efficiency of beef bulls as accurately as possible under farm conditions. It's important to know that the goal is not to pursue maximum growth, but to measure genetic differences in growth potential.

These tests are done under farm conditions under the following nutritional conditions:

- Extensive - veld with a lick
- Semi-extensive - veld or planted pasture with supplement
- Semi-intensive - sufficient concentrates with plenty of roughage in a larger camp
- Intensive - Concentrates (growth ration) in a kraal

Feed intake growth tests aim to determine the genetic potential for growth and feed efficiency of beef bulls as accurately as possible in a controlled environment. Accurate determination of feed efficiency requires that individual feed intake, as well as growth, be measured on potential breeding bulls. The measurement of individual feed intake requires specialized apparatus and is measured at several accredited testing stations. Feedlots are already paying preferential rates to growers with more profitable calves.

If half-brothers and other family members are measured in feed intake growth tests as well as in farm growth tests, genetic ability for traits such as feed conversion ratio can be determined by the genetic correlations between traits, due to genetic ties between related animals. The relationships can also be traced to cows, so that genetic ability in the form of breeding values for traits for which they have not been measured, are determined.

REQUIREMENTS FOR ANIMALS TO BE TESTED

Animals of Studbook breeds must be recorded on Logix and be the progeny of registered bulls to participate in Growth Tests. For meaningful comparisons during breed-

ing value estimation, calves of the same breed in the same test should be the progeny of at least two sires.

Farm Growth Tests: At least 10 animals from one or more herds of the same breed must complete the test, ensuring large contemporary groups for more accurate breeding value estimation. Comparable animals younger than 14 months and differing less than 100 days in age ensure that genetic differences between bulls are easily identified. There are also maximum weight limits according to breed.

For **feed intake growth tests**, the contemporary groups are smaller - at least 3 animals (but preferably more) of the same breed that are the offspring of at least 2 registered bulls, should be tested together if breeding values are required. Comparable animals between 5-9 months, which differ by less than 100 days in age and less than 50kg in weight, are tested together. Bull- and heifer calves are accepted because some breeders want to measure feed efficiency on their entire herd, which includes heifers. As heifers are tested separately from bulls, they can therefore be tested after bull calves for better utilization of the test center. Test at least 10 heifers between about 5 to 10 months of age, but preferably the whole weaner group. As heifers deposit fat earlier than bull calves, they receive a different ration are on test for only 56 days, compared to 84 days for bull calves.

FLOW IN GROWTH TESTS

Before a growth test, there is an adjustment period of 1 to 3 months in which animals are fed the same ration as during the test, to ensure that rumen microbes have built the desired populations for the given ration. Growth tests can therefore only begin when bulls start to gain weight.

The standard test length for intake growth tests is 84 days for bulls and 56 days for heifers, and animals are weighed every week. The average FCR (about 5 to 6) and ADG (1.6-1.8 kg / day) of the tested group should match breed average.

Farm growth tests lasts between 84 and 270 days (\pm 3 to 9 months) and animals are weighed every two to four

weeks. An average minimum increase of 90 to 130 kg and a minimum growth rate of between 400 and 600 g / day, depending on breed, is required during the testing period.

SA Studbook's technical advisor (or representative) concludes the test. Measurement of weight, scrotal size, shoulder or hip height and body length is mandatory, while measurement of ultrasonic (RTU) measurements and skin thickness is voluntary. The pulling of tail hairs for genomic testing is also optional.

Actual and corrected body measurements and corrected scrotal circumference, as well as ADG (Average Daily Gain or growth on test) and GDA (gain per day of age) are expressed in unit of measurement as well as an index within the contemporary group. The information is used for inspection purposes. FCR (feed conversion ratio) is available in feed intake growth tests and measures kg feed consumed per kg weight increase. Breeding values for other growth efficiency parameters such as Residual Feed Intake (RFI), Residual Intake & Gain (RIG) and Residual Feed Utilization (RFU) are also estimated and are available on Logix. RFI is the deviation in animal feed intake from the expected intake.

A growth test receives official recognition if the test procedure was adhered to and the growth test evaluation is statistically acceptable. The SA Stud Book Advisor (or representative) is present at the completion of the test and takes the final weights and body measurements and processes the test results, which are made available to the participant (s) after the test. The test results are also loaded onto the Logix Beef Cattle System so that reports can be generated. The recorded data is included in genetic evaluations, provided the breed receives genetic evaluations by SA Studbook.

Bulls who have successfully completed a feed intake test are branded with an approved Stud Book branding iron, if preferred. All the bulls are branded the same, no merits are awarded. The Stud Book brand is used with a letter / digit of the station where the bull was tested on the top, eg S for Sernick, B for Buffland, etc.

Please contact your nearest Technical Advisor for more information if you would like to have bulls tested.

