ECONOTECH SIMMENTALER SEEDSTOCK PRODUCER

Join us on the journey of genetic progress

Our main objective is BREEDING FOR PROFIT BY BEEF FARMERS.

Over the years we consistently breed with this objective in mind. The main attributes of fertility, calving ease and growth are the only criteria for our breeding decisions. Our clients, cattle farmers, join us in this journey towards Breeding for Profit.

Fertility in the Karoo - First place in the Simdex competition for 2014 and 2nd place in the same competition in consecutive years from 2015 to 2018.

Our family are farming with livestock on a Karoo farm, Doornbult, since 1831. We learn through bitter experience to farm only with cattle and sheep that are adaptable to this harsh environment. Our motto is to change the type of livestock to fit the environment as well as the market and not the other way round.

At first in the 1990's it was not an easy ride for the new seedstock owner. The first set of bulls gave serious calving problems. Our break came when Fred Dell introduced us to bulls proven for calving ease. Since then we are sold to calving ease cattle – no more calving with the help of a block-and-tackle. The attached article by Tom Hook explains why one should use calving ease and not birth weight as criterion because the former is less correlated with growth than birth weight. Of course, one needs to pay attention that every calf counts when selecting a bull for a specific cow.

Our regular drought periods taught us a second lesson – the bigger the cows, the lower their condition and conception rates. An iron rule on the farm – cull heifers and cows if not in calf at the annual pregnancy test by our vet – helped us in keeping only the most fertile females, which turned out to be mostly medium-framed. Lately we introduced another rule regarding our heifers – put everyone to the bull and let nature show us which ones are the most fertile. Those that are empty at the end of the breeding season are culled. (The attached article expands on the controversy of size of beef cattle in the UK - in essence also applicable to South Africa (See www.signetfbc.co.uk)) Again, one do get curve benders that give growth without increasing mature cow weight.

A Strategy for Econotech Simmentaler

Seedstock breeding is a continuous journey. The upcoming breeding season presents two major issues to us:

- Which road lies ahead for our herd?
- Whence is the SA Simmentaler herd going in future?

Strategy issues around our Econotech Simmentaler herd are based on the following:

- Droughts – this is the norm of the Karoo;
- Experience – extensive farming calls for uncompromising calving ease and fertility (these are also important prerequisites demanded by our customers); and
- The market – in our case we are first and foremost a producer of calves for feedlots, with bull sales to customers as a bonus.

These guidelines are encompassed by the economic indexes Simmentaler Breeders Index (SBI)® and Simmentaler Profit Index (SPI)®, but with certain prerequisites, which are not for negotiation:

Fertility – Our climate is getting more severe. Maintaining fertility is, therefore, more of a problem. The breeding value DC (days to calving) is a valuable yardstick of fertility. This is again dependent on the condition of

cows (and bulls). Australian research (Pitchford et al) shows the following in this regard:

- The condition of a cow is determined by fat depth (rib and rump) (0.87 correlation), eye muscle area (EMA)(0.65 correlation) and intra muscular fat (IMF)(0.71 correlation).
- A lower mature cow weight (MCW) may lead to leaner cows with a lower condition count.
- A lower hip height measurement of a cow denotes a lower maintenance requirement without influencing condition.
- We manage our Econotech Simmetaler herd by adhering to a general restriction on MCW (in order not to farm with too large animals). Following Pitchford we strive towards a lower MCW together with higher EMA (eye muscle area), Rib and Rump Fat as well as an increase in intra muscular fat (IMF) plus a lower Hip Height.
- Scrotal Size (SS) is also important as this breeding value denotes early puberty under heifers.

Calving ease – the breeding values, Calving Ease Direct (CED) and Calving Ease Maternal (CEM), are of utmost importance to us. In the beginning "experts" warned us against following this route exclusively as we would breed cows without capacity. However, we persevered as we knew through bitter experience that a herd with low CED's would give too many dead calves (and cows) and a low CEM would lead to heifers with calving difficulties. The judicious use of bulls helped us to increase these two parameters to the top 10% of the SA 2018 herd. This provides peace of mind to us and our clients.

In addition to these two important breeding requirements, we intend to concentrate more on feed efficiency (Net Feed Intake (NFI), or Residual Feed Intake (RFI)). This attribute should help us to survive severe climate in future. However, a Canadian study (Basarab et al) showed that feed efficient cows (with a negative RFI) would have less Rib and Rump Fat (or condition) and would thus be slightly less fertile than the less feed efficient cows (with a positive RFI). We intend to overcome this relationship by selecting feed efficient cows WITH positive Rib and Rump Fat (condition). In practice one can expect that by selecting feed efficient heifers which calve early (thus with more Rib and Rump Fat, or with a good condition), one should be able to improve the fertility PLUS increasing feed efficiency.

One of our bulls from the 2016 Beef Genomic Programme (BGP) achieved an NFI of -0.401 and a FCR (Feed Conversion Ratio) of 4.97. This bull, Klein Kalant I (PJD1565 P), has also positive EBV's for Rib (=0.1) and Rump Fat (0.3) plus Eye Muscle Area (0.8), but with a 0.0 value for intra muscular fat (IMF). We are using Kalant extensively in our herd with the aim to increase the herd's feed efficiency (with a heritability factor of 0.3). This new direction in our seedstock production should also benefit our clients in future.

It is not that easy to determine which route the SA Simmentaler Herd is taking at present, or where it want to be in future:

A comparison of the SA and USA Simmentaler herds may be of assistance. The SA herd's calving ease as measured by the breeding value CED increased from -0.1 to 0.4 over the period 2003 to 2013. The USA herd's CED increased from 1.8 in 1993 to 6.5 in 2003 and 9.2 in 2013. Over the same period the SA herd's 400 days growth increased from 18 to 24 (2003 to 2013) and mature cow weight (MCW) from 24 to 32. In contrast, the USA Simmental herd increased its year weight (YW) from 85 (in 2003) to 93 (in 2013), but its mature cow weight (MW) remained the same (83 in 2003 and 84 in 2013). (See Table 1)

The main difference between the Simmentaler herds of the two countries are that the SA herd improved slightly regarding calving ease whereas the USA herd improved dramatically. Both countries increased the growth of their respective herds, but cow weight also increased in SA while the USA kept cow weight in their herd constant.

We need to ask the question whether the SA Simmentaler should keep on increasing calving ease at a slow pace PLUS having a reputation of calving problems under its customers OR to concentrate on calving ease as a priority breeding objective. One should also ask the question whether the SA Simmentaler should not prioritise growth without increasing cow weight.

It is worth noting that the USA Simmental have shifted their attention to improving beef quality. Marbling (we call it intra muscular fat (IMF)) improved from a breeding value of -0.12 in 1993 to 0.12 in 2013. In SA IMF stayed the same at 0.1 over the past decade.

The SBI(R) index (Simmentaler Breeders Index in Rand terms) takes the contribution of all the different breeding values to the economy of cattle farming into account. According to the SBI the economic value of an average Simmentaler increased from R403 in 2005 to R449 in 2013, an

increase of 11 per cent. This increase should be compared to that of the USA herd of 23 per cent over the same period. However, it is important to concentrate more on the balance of the different components of the index such as calving ease, cow size and meat quality versus growth.

The question arises whether the SA Simmentaler have the genetic potential, and the will, to follow the example of the USA.

One way of answering this question is to study the breeding material displayed at the various shows of our Association. The breeding values of the grand champion bulls at the last nine different shows present a wide variation. No clear guidelines could be discerned, especially if the breeding values of those bulls are compared to the SA 2016 herd:

- 5 out of the 9 bulls have CED's that are above the average of the SA 2016 herd, but only two are in the top 10 percentile;
- 3 out of the 9 bulls have 400 day growth values that are above the average, but with only one in the top 10 percentile;
- 6 out of the 9 bulls have MCW's values that are above the average with one even in the top 10 percentile;
- 4 out of the 9 bulls have SF values that are above the average, but only one is in the top 10 percentile; and
- 1 out of the 9 bulls has an inbreeding coefficient of 27% whereas the rest of the bulls have inbreeding coefficients of less than the norm of 5%.

One can conclude that an exceptional visual appearance of an animal is not always a guarantee for its progeny to excel in economic terms.

In our own Econotech Simmentaler herd we managed to increase our CED from 1.4 in 2005 to 4.6 (2019), with the latter value within the top 10 percentile of the SA 2018 herd. Our SBI index also increased from R525 in 2005 to R651 (2019), an increase of 24%. Furthermore, the SBI of R651 of our herd falls within the top 10 percentile of the SA 2018 herd.

Structural soundness of our animals is important to Econotech Simmentaler. All our animals are, therefore, adjudged by the association's technical advisors on an annual basis. Only those animals that pass this test are retained in the herd. This is, however, only one of the building blocks for an economic sustainable herd. Our breeding process starts when bulls with suitable breeding values for our farm's environment are selected to complement those of specific cows in the herd. This helps us to produce superior genetics according to our genetic breeding objectives.

The present status of Econotech Simmentaler

The outcome is most rewarding.

Fertility (See graph 1):

- Our average Inter Calving Period (ICP) is 381 days against the 431 days for the Breed.

- Our average first calf (AFC) of our heifers is 24 months against the 32 months for the Breed.
- Our herd was awarded the 1st place in the Simdex competition for 2014 and the 2nd place in 2015 (in the category 50 to 74 cows), and 2nd in 2016, 2017 and 2018 (in the category 25 to 49 cows).
- The EBV for our herd's Days to Calving (DC) is -1.9 which is in the top 20% of the RSA 2018 herd.
- Scrotal Size (SS) of our herd is 0.6 which is in the top 30% of the RSA herd.

The latter two breeding values, DC and SS, are being used consistently in order to improve the fertility of our herd.

Calving Ease (See graph 2):

- Calving Ease Direct (CED) and Calving Ease Maternal (CEM) increased consistently over the last fourteen years to 45.5 and 3.7 respectively. These values are in the top 10% and 5% of the SA 2018 crop respectively. This contrasts with 2005 when our CED of 1.4 was in the top 40% of the SA 2018 crop.
- Our technical advisers warned us against decreasing birth weight too much as this will inhibit our herd's growth rate. We avoided this problem by concentrating on calving ease and not on birth weight without sacrificing growth performance.
- The trick is to use easy calving, high growth sires that bend the normal rules of a high-birth weight/low calving ease associated with high-growth.

Growth and Mature Cow Weight:

- Our herd's growth (EBV for 400 days growth) increased from 16 in 2004 (in the lowest 5% of the SA 2017 crop) to 28 in 2020 (in the top 35% of the SA 2018 crop). (See graph 3)
- However, our mature cow weight (MCW) increased also from 22 to 31 over the same period, that is from the lowest 15% in 2003 to the lowest 45% in 2017. (See graph 4)
- It is rewarding that by concentrating on calving ease (CED) and not birth weight we are able to obtain growth without increasing birth weight. (See graph 5)
- In order to adapt our animals to the environment, we concentrate on medium frame animals. However, growth and animal size (and mass) go hand in hand. Our challenge for the future is to use only real curve bender sires that can increase growth without increasing size as well.

Economic Selection Index (See graph 6):

- These different breeding traits combine to make our herd profitable year on year. The economic selection index, Simmentaler Breeders Index (SBI), provides a tool to measure the economic contribution of each trait towards profit into one single index. Over the past 15 years our herd improved at a satisfactory rate, namely:
- In 2005 the SBI index was 521 (in the top 30 percentile of the SA 2018 crop).
- In 2019 the SBI index was 651 (in the top 10% of the SA 2018 crop).

- Our SPI index (which take the contribution to cross breeding into account) increased from 483 in 2005 (top 40%) to 601 in 2019 (top 5% of the SA 2018 crop).
- These indexes take the genetic progress of a herd into account and are, of course, permanent. The most important breeding traits which contributes to the SBI index are shown in Graph 7.