LAS VACAS BONSMARA UN PATRIMONIO DE LOS GANADEROS.
(Bonsmara Cows an asset to the Industry).

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Nota del traductor: Estas notas no pretenden ser una traducción complete del artículo publicado en los anales de la Asociación Bonsmara de Suráfrica. Solo busca destacar en español, algunos aspectos que surgen de la lectura del documento. Siguen 7 hojas escaneadas del articulo original.

FUNCIONES DE LA VACA BONSMARA

- Producir una cría viva por año.
- Producir suficiente leche para que crezca bien la cría y llegue con desarrollo óptimo al destete.
- Alimentar, proteger y defender la cría.
- Ser eficiente funcionalmente a aspectos visibles como son: Ubre y pezones; facilidad de ordeño, buena comedora de forrajes; resistente a las garrapatas, buenos cascos, capacidad de aumentar o disminuir pelo según la temperatura del sitio donde viva.

REPRODUCCION

La eficiencia reproductiva es 12 veces más importante que la calidad de la canal y 10 veces más importante que la ganancia de peso, cuando se trata de evaluar económicamente un hato. Reproducción debe estar en el foco de acción diaria de todo ganadero.

En Suráfrica el promedio de natalidad esta en 60%. Para la raza Bonsmara el Intervalo entre partos es de 405 días lo cual da una natalidad del 89.5%.

El mejoramiento depende de dos factores: Adaptación al Entorno y Heredabilidad. En reproducción el Intervalo entre partos (IEP) tiene muy baja heredabilidad (0.10). Esto quiere decir que mejorar el IEP es muy difícil, salvo que sea por adaptación de la vaca a su entorno.

Las mejoras en Fertilidad se originan principalmente en adecuada selección de toros superiores. Dentro de las características del toro, la circunferencia escrotal (CE) es la característica que muestra mayor influencia sobre la fertilidad de sus hijas. Brinks, Mccineney y Chenoweth (1978) indican que las hijas de toros con mayor circunferencia escrotal, llegaron a la pubertad 2 meses antes que las hijas de toros con menor CE. Igualmente encontraron una correlación positiva de 0.66 entre CE y tasa de preñez de su progenie femenina.

MEJORAMIENTO DE LOS INDICES REPRODUCTIVOS

Temporada de monta en dos periodos anuales de 90 días cada uno.

En Suráfrica es común tener dos temporadas de monta en verano e invierno. En Colombia podrían hacerse coincidir con los periodos en los cuales no se desean nacimientos, pues el exceso de lluvias aumenta la mortalidad.

- Novillas primerizas deben colocarse con los toros tres semanas antes que las vacas multíparas para evitar competencia con las vacas.
- Novillas de primer parto, deben ser colocadas con los toros dentro de los 90 días después del parto, para evitar que la mayor demanda de leche de la cría las coloque en anestro, lo cual hace más difícil la preñez.
- Destetar las crías a los 90 días de edad y complementar su nutrición con un concentrado adecuado.
- Servir a las novillas con toros que tengan records de bajo peso al nacimiento, para reducir el número de casos de distocia. Terneros grandes al parto no son deseables.

NUTRICION

Las siguientes prácticas de manejo han mostrado aumentar el número de preñeces:

Amamantamiento una vez al día.

Se permite a las crías estar con sus madres y mamar por una hora y se separan hasta el día siguiente. Las terneras aprenden en unos tres días que esta es la nueva rutina y las vacas también lo aprenden. En lugar de aparar a las 3 o 4 de la tarde, apartar a las 9 de la mañana. Una vez preñada la madre se le permite a la cría pastorear con su madre todo el día. Resultados 91% de preñez en novillas de primer parto.

Retirar las crías por 48 horas y presencia de toros.

A partir de los 45 días de paridas las vacas, se encierran en el corral las vacas o las crías por 48 horas (debe haber agua abundante). Esto se repite una vez al mes durante los siguientes 3 meses. 95% de las vacas mostraron entrar en calor dentro de los 25 días siguientes al procedimiento -vs- solo 59% del testigo.

El peso de las crías al destete fue superior en el lote de vacas que tuvo amamantamiento restringido (222 kilos) -vs- 209 kilos del testigo.

Tener un toro o hembras androgenizadas con las vacas desde recién paridas.

Generalmente aumenta la tendencia de las vacas a acalorarse más temprano.

PRODUCCION DE LECHE.

Debe existir un balance entre reproducción y producción de leche de acuerdo al entorno de cada finca. Es fundamental mantener la meta de UNA CRIA POR AÑO y supeditar a esto el mejoramiento en la producción de leche. Es mas económico suplementar las crías si fuese necesario, que un dia abierto de las madres. 50 días abiertos adicionales en un hato de 100 vacas son 5.000 días o sea 18 terneros adicionales o incrementar la natalidad en 18% y los ingresos en $$$$.

La vaca Bonsmara está diseñada para levantar y destetar una cría sin suplementos y tener una cría cada año. Medida la producción de leche de 73 vacas Bonsmara, en la Estación Experimental de Roodeplaat, fue medida y a los 90 días de paridas fue de 8.3 kg/día. A los 150 días fue 7.1 Kg/día. Los promedios de las otras razas fueron:

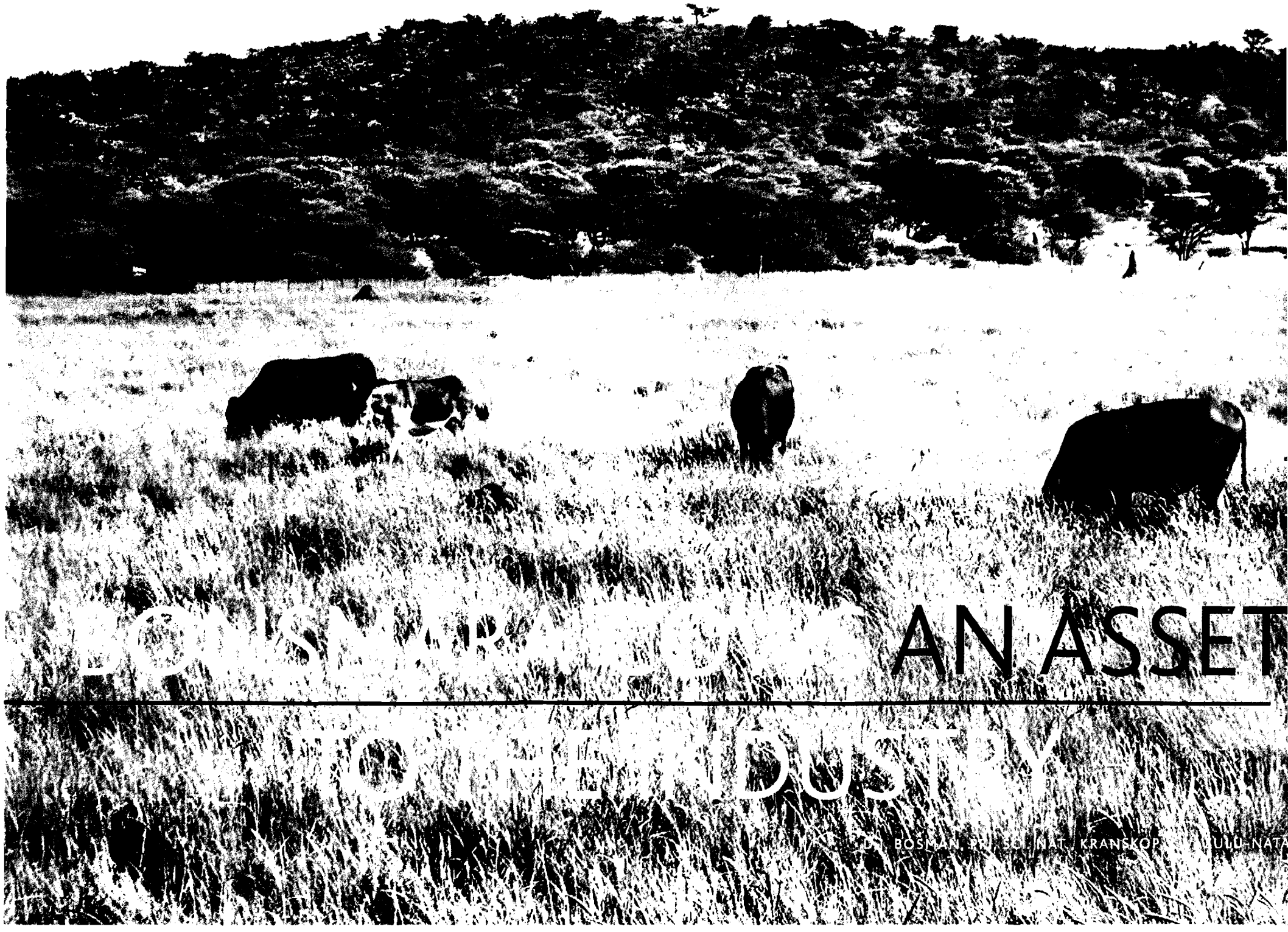
- Afrikaner 4.3 Kg/día a los 168 días de lactancia;
- Hereford 4.1 Kg/día a los 180 días
- Shorthorn 4.2 Kg/día a los 180 días.

LA VACA MEJOR PRODUCTORA

En Suráfrica el National Beef Cattle Council distingue anualmente a las MEJORES VACAS y en los 4 ultimos años (2005 a 2009) las vacas Bonsmara han logrado el 65% de todos los premios otorgados.

Las razas británicas han logrado el 9.9% de los premios y las razas compuestas el 13.4%.

Nov 8, 2010.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LULU-NATA

Bonsmara cows are an asset to agriculture and since 1964 have played a major role in the Southern African beef industry. They have been prominent in the Agricultural Research Council cow awards. The Bonsmara cow is well adapted to the predominantly natural grazing conditions with temperatures exceeding 40°C in certain areas during the summer months.

Beef cows deserve recognition because they are physically about 96% of the entire breeding herd and they produce the herd sires for the industry.

Beef cows are able to convert grass, shrubs, leaves and waste products into nutritious beef that is in demand with the consumers. Sometimes it is said that people should consume less meat and rather obtain proteins from grain products. Beef cows will however always be an asset to utilize millions of hectare of soil that cannot be used for crop production but can produce grass. The ruminant is the only animal that is able to convert grass and crop residues to an edible most nutritious product for the consumer.

Many of the farms in South Africa have become game farms. In the Limpopo province where beef cattle used to thrive, 85% of the farms are today game farms. Beef cows have a tremendous task in feeding an ever growing population on grazing areas that are decreasing. An improved reproductive and efficiency rate of beef cows has become a necessity.

FUNCTION OF A BEEF COW

- To produce a live calf annually.
- To produce sufficient milk for the calf to grow and develop optimally to weaning age.
- To nourish and protect the calf.
- To be functionally efficient for visual traits such as favourable udder with acceptable teats, milk easily, good shrub and grass utilizer, tick resistant, walk easily, good hooves, and shed hair early in spring.

REPRODUCTION

Increasing reproduction in beef cattle has been estimated to be 12 times as important as increasing the carcass quality of the product and 10 times as increasing the production traits such as growth rate when determining economic values. The improvement of reproductive efficiency is therefore of great importance.

According to available statistics the average calving percentage in the Republic is in the order of 60 percent. The latest average intercalving period for Bonsmara cows participating in the National Beef Recording Scheme was 405 days which gives a calving percentage of 89.5% (ARC – API Annual Reports).

Improvement in any trait is dependant primarily on two factors - environment and inherited ability. The relative influence of heredity and environment for any trait is described by the statistical estimate known as heritability. Intercalving period has a low heritability of 0.08 to 0.10 which means that the intercalving period is influenced by the environment and should rather be used as a management indicator. Fertility traits with meaningful heritabilities are scrotum circumference, 0.52 (Lunstra, 1982) semen quality, 0.28, age at puberty, 0.48 (King, et al 1983) and pelvic area of heifers, 0.56 (Green, et al, 1988a).

Most progress for measures of reproduction is achieved through sire selection. Approximately 87% of the genetic make-up of a cow herd comes from sires used over the past 3 generations (± 15 years). Therefore, reproductive measures in bulls that will genetically improve the reproductive potential of bulls and their female offspring are needed. It is not advisable to use any bull with an average reproduction potential.

- **Intercalving Period**

The average ICP of a herd or breed is a sound indication of the management procedures followed due to the low heritability of the trait. Research results have also indicated that if pressure is put on the animals, by mating young for example, variation increases and a higher heritability is found. The ICP of the Bonsmara breed was 424 days in 1974 increasing to 455 days in 1980 due at that stage to the approval of many basic cows from new breeders joining the society. Since 1980 the ICP has declined steadily to the 2008 figure of 405 days. This ICP was one of the best of the 28 purebred breeds listed.

- **Scrotal Size (SC)**

The scrotal size of the Bonsmara has since 1964 gradually improved. Scrotal EBV increased form 4.1mm in 1999 to 7.5mm in 2008. The measured scrotal size from the phase C data was 335 mm at 326 days of age (ARC – Annual Reports). Results provided by Lunstra, (1982) indicate that SC was a more accurate predictor of when a bull reached puberty than either age or weight regardless of breed. Bulls reached puberty (50 x 106 sperm with a minimum of 10% motility) at an average SC of 270 mm. Lunstra, (1982) also reported a correlation of 0.98 among 8 breeds for SC of bulls with age at puberty in heifers. If heifers are being mated at 12-15 months of age these results are important.

Brinks, McInerney and Chenoweth (1978) indicated that daughters of bulls with above average scrotal size reached puberty 62 days earlier than daughters of bulls with average scrotal size. It was also indicated that scrotal size is correlated to the quality and quantity of semen and pregnancy rate. Later results indicated a high positive correlation of 0.66 between scrotal circumference and pregnancy rate of female progeny.

Scrotal size is possibly the best indicator of fertility presently available. Since most genetic improvement comes from the sires used, selection for a favourable scrotum size and shape and visual characteristics such as the secondary male characteristics and libido are extremely important for the improvement of the reproduction potential of the cow herd.

Scrotal shape needs special emphasis even if the scrotal size is correct. The scrotum must hang symmetrical, the epidydimus

visible and well placed not hanging forward or backwards and the neck must be lean. Bulls going to mating must not be fat. At the Taurus AI Centre at Irene bulls that are in average body condition produce the best quality semen.

- **Calf Tempo**
  Calf tempo is calculated for sires only. It indicates the number of calves 100 daughters of a sire will produce above or below the breed average. In 1973 it was 8 calves below the average for the breed. In 2009 this figure was 39. The genetic merit for reproduction in the Bonsmara breed is continually improving. Herd sires with a calf tempo of over 60 are today present in breeder herds.

IMPROVEMENT OF REPRODUCTIVE RATE

A high reproductive and survival rate are vital to any livestock production. The following notes are directed at managerial procedures which could contribute to a higher calf crop. The most efficient cow is one which is adapted to the specific environment and mating system in such a way that her potential is maximized. She needs to have the best balance of traits for this purpose (Bosman, 2007). If the proper selection pressure is on reproduction, size will take care of itself. In a given herd the average cow weight may be 490kg but the weight may range from 430kg to 580kg. If she calves annually and weans an acceptable calf, cow weight is taken care of by the environment.

- **Breeding Seasons**
  Most breeders in South Africa have a summer and winter breeding season of 90 days. In the State Bonsmara herd at Roodepoort a single 75 day breeding season was practiced for 25 years with excellent results. The management on the mixed bushveld grazing stayed basically the same for all those years. The pregnancy rate never fell below 88 percent.

  Breeding seasons follow the rainfall pattern in summer commencing in November in the eastern parts of South Africa where the rainfall starts earlier to 15 January in the far western parts moving into Namibia. In winter the breeding season should commence after the 21st of June which is the shortest day of the year. After that date the days become longer which stimulates for estrus.

- **Mating of 18 month or 24 month old heifers**
  Heifers should always be mated 21 days prior to the main breeding season. They remain with the bull when the mature cows join them. This procedure eliminates competition with the older cows and uses bull power more effectively because more females can be put to a herd sire.

- **Mating of first calf cows**
  The first calvers have calved earlier and therefore need to also be mated earlier before the calf gets stronger and suckles them into anestrus. In the State herd the calving percentage of this group increased from 68% pregnancy (5 year average) to 92% pregnancy (5 year average) when mated 21 days earlier with the heifers.

- **Mating of 12-15 month old heifers**
  The requirement is that the heifers must have reached 300kg when they are mated. This procedure needs special managerial care. If successful it has the advantage of increasing reproductive rate by about 20% and after a 9 year period herd numbers would be doubled – an excellent selection and economic advantage. These heifers are mated 21 days earlier to carefully selected bulls. The bulls need to be of slighter bone structure with a below average birth weight. The EBV's must be acceptable for all the traits so that the progeny do not lower the herd standard. In herds where heifers are mated young, assistance during calving may be a necessity. The heifers therefore need to calve under supervision.

  An interesting phenomenon is found when a male donkey is kept with the calving heifers or cows. No jackal will come near the heifer or cow calving. According to a Namibian breeder the cows and calves on his farm come to the kraals in the morning. If one is left behind due to some problem the donkey will go back to fetch it.

  The heifers may also be mated to bulls of the smaller breeds e.g. a red Nguni or Afrikaner bull. The progeny are then moved to the commercial herd.

  After these heifers have calved they will be mated again. It is important that they are carefully managed so that they become

pregnant again to maintain the advantage of an extra calf. The following are possible procedures:

a. Wean the calves early at about 3 months of age

This procedure ensures that the first-calf-cow will conceive again more readily. The calf however needs special care and a high protein ration must be provided until 7 months of age to ensure proper development. Reconception with this procedure is above 90%.

b. Allow calf to suckle normally

Cow and calf however need a good nutritional environment for the cow to conceive again and retain the advantage of a higher reproductive rate.

In a Bonsmara herd in the eastern Free State, 352 heifers were mated at 12-15 months of age in the 2004 to 2007 breeding seasons. The calves were not weaned early but left to run with the mothers receiving better treatment. Conception at second mating was an acceptable 74%. However during the first calving 26 (7.4%) of the calves died at birth. During 2006 and 2007, record was also kept of assistance provided at calving. A total of 29 (20.1%) of the 144 heifers required assistance. The matings have been continued during 2008 and 2009. This procedure will be carefully analyzed and adapted to ease the losses and assistance at birth.

Much still needs to be learnt from mating heifers at a younger age. Using the correct bulls, providing a better nutritional environment and managing the heifers carefully is necessary to enjoy the benefit of an extra calf in the productive life cycle of the cow.

- **Pelvis Measures**

First calf heifers tend to have a higher percentage of calving difficulties. The two major factors affecting calving difficulty are birth weight and pelvic area.

A typical yearling heifer will have a pelvic area of 140 to 170 square cm with a growth of approximately 0.25 cm per day. (Green et al., 1988b)

A major cause of dystocia is the disproportion between the size of the unborn calf and pelvic opening of the dam particularly in first-calf heifers. Changes in birth weight are considerably larger than changes in pelvic area. Phenotypic correlations between pelvic area and calving difficulty are not high averaging – 0.20. (Beef Improvement Federation Fact Sheet, 1992). Because the genetic correlation between male and female pelvic area is high (0.60) selection for pelvic area in bulls would be a better option. (Green et al., 1988G)

- **Calving Ease**

Selection for muscling and growth rate tends to increase birth weights which may cause a larger percentage of calving problems. Even if cows do not need attention heavier calves at birth lengthen intercalving periods. It is important that the Bonsmara breeder realises that a low incidence of calving difficulty makes a breed more acceptable to commercial breeders. A relatively low birth weight ensures that the uterus of the dam returns to normal within the required 80 days post calving enhancing the reproductive rate in the herd. Palpating the uterus of the cow after calving in the Vaalhartz trials increased conception rate by 14%. In a certain study it was also found that conception rate in the following breeding season was 16% lower in cows requiring assistance at calving. At the Roodeplaat Bonsmara herd the effect of the birth weight of the first calf on the subsequent intercalving period is presented in **Table 1**.

TABLE 1 • Intercalving period of second calving cows according to birth weight of first calf.

RANGE (KG)	NUMBER	ICP (DAYS)
< 31	6	373
31 - 35	12	380
36 - 40	20	380
< 40	11	391

Research done with Mara Research Station data by Smith et al., (1988) showed that the average birth weight of calves expressed as a percentage of cow weight was 8.1% in dystocia cases versus 6.8% in normal births. It was also shown that 78% of dystocia cases were from bull calves.

There are sires in Bonsmara herds that consistently produce

heavy calves at birth with attractive muscling. A genetic package of this kind will not enhance reproductive rate and should be culled. Select bulls that are curve benders. They have excellent EBVs but have relatively low birth weight EBVs. This is the genetic package that Bonsmara breeders need to be multiplying (Bosman, 2009).

- **Nutrition**

It is well known that nutrition has a major influence on reproductive rate. Most breeding failures are in some way related to nutrition. A cow requires more feed during pregnancy to nourish the unborn calf and get it off to a good start at calving. After calving her feed requirement increases. It is sound practice to have cows gaining weight after calving and into the breeding season to ensure a high reproductive rate.

Cows tend to exhibit lactation anestrus after calving particularly if the grazing is not adequate. Once they are in anestrus it is difficult to get them cycling again.

It has been found that bull calves suckle more than heifer calves causing their mothers to have a longer anestrus period. The mothers of bull calves may therefore have a 1% to 2% lower pregnancy rate.

The pregnancy period of 26 962 Bonsmara cows on which AI was done was found to be 287 days for bull and 285 days for heifer calves. In individual cows the pregnancy period may vary from 260 to 300 days. If the figure of 287 and 285 days is accepted a cow only has 78 to 80 days from calving to show estrus and to be mated again to calve within 365 days. This sounds like sufficient time but on natural grazing it can take more than 78 days before cows show heat. The early calf is more advantageous because it allows the cow more time to conceive again.

Dietary elements that are important are energy and phosphorous. Licks in South Africa are usually well formulated for a particular area and are made available by feed companies. Most of the areas in South Africa need phosphorus in the licks. In winter production licks may be made available that includes a certain percentage of energy. Most breeders will provide a Vitamin A, D, E injection prior to calving and again prior to mating.

- **Once-a-day nursing**

To enable cows and first calvers to show heat and be mated once-a-day suckling may be introduced. The calves are allowed to suckle for about 60 minutes each morning. The cows learn the procedure within three days and will be off to the paddock once the calf has suckled.

In a herd where this procedure was followed 91% of the first calf heifers were pregnant in the first 60 days of the breeding season. As soon as a cow is mated her calf is allowed to go with her to pasture. The bull needs to be equipped with a chin ball marker to identify mated cows.

- **Removing calves for 48 hours**

The O'Connor method developed by Dr Wiltbank may have merit. (Niswender, et al., 1984) There are five major practices associated with this management scheme:

1. Animals are exposed to 60 day breeding.
2. Cows must be in at least a moderate body condition.
3. Cows must be gaining weight for at least 3 weeks prior and 3 weeks into breeding.
4. Calves are removed for 48 hours at beginning of breeding.
5. Fertile bulls are used.

A total of 89 cows entered the O'Connor method and 86 cows were controlled in a 120 day breeding season. Ninety-five percent of the cows on the O'Connor method were showing estrus by 25 days of breeding compared to 59% of the controls. Eighty percent of the O'Connor cows calved within 20 days and 99% had calved within 60 days. This is compared to only 28% of the control cows calving within the first 20 days and 72% within 60 days.

The actual weaning weight for the O'Connor group were 222kg versus 209kg for the controls.

- **Teaser bulls**

The presence of a bull during the post partum period to breeding will decrease the interval to first estrus. Care should be taken to

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ensure that they are sound and free of disease. It may also be possible to use a cow or steer treated with androgen hormones.

MILK PRODUCTION

Genetic improvement for milk production and growth potential will improve herd productivity, provided reproduction is not adversely affected. It is necessary to attain a sound balance between milk production and fertility in the particular environment. Bonsmara cows with wean maternal values higher than +6kg are acceptable provided they conceive annually and have a sound udder attachment.

Bonsmara cows are exceptionally good mothers with sufficient milk to wean healthy, strong calves without the aid of creep feeding. At the Roodeplaat Research Centre the milk production of 73 Bonsmara cows was measured (Eden, 1970). At 90 days the cows were producing 8.3kg per day and at 150 days, 7.11kg of milk. This compares favourably with the three breeds from which the Bonsmara breed was developed:

Afrikaner - 4.3 kg per day at 168 days
Hereford - 4.1 kg per day at 180 days
Shorthorn - 4.2 kg per day at 180 days

In this study it was also found that Bonsmara cows produce milk with a high fat content of 4.88 % which is advantageous for the calf.

In the Best Producing Cow category of the National Beef Cattle Improvement Scheme Bonsmara cows have over years performed exceptionally well. The number of Best Producing Cows for the past 5 years are presented in **Table 2**.

TABLE 2 • Best producing Cow (BPC) numbers.

YEAR	BREEDS	ALL BREEDS TOTAL COWS	ALL BREEDS BPC	BONSMARA BPC	%
2005	18	110651	2456	1636	66.7
2006	16	113650	2129	1314	61.7
2007	17	120517	2222	1421	64.0
2008	17	126763	2464	1577	64.0
2009	17	134746	2562	1659	64.8
Average	17	121265	2367	1521	64.3

* Source: ARC – API Annual Reports

A total of 1521 or 64,3% of cows receiving BPC awards were Bonsmara cows.

The composite breeds recorded 13.4% of the BPC followed by the British beef breeds with 9.9%, the indigenous breeds with 8.9%, the lean meat breeds with 3.0%, and the commercial cows with 0.5%. Many excellent individual Bonsmara cows are found on the farms of breeders. In the 2006 Bonsmara Journal the cow PHRL13 is shown with her 17th calf at 18 years of age – an exceptional reproductive rate. An even higher reproductive rate is found in the cow PHR92.139 and her mother. She had 3 sets of twins and was 14 years old with 14 calves. Her mother produced 12 calves at 12 years of age. Between mother and daughter they produced 26 calves from a combined age of 26 years.

The breeding program in most commercial herds in South Africa entails cross breeding which has hybrid vigour advantages but managerial disadvantages. Commercial herds are relatively small so that a systematic crossbreeding program is difficult to implement. Bonsmara cows are readily available, productive and docile mothers well adapted to South African conditions and the progeny are popular with the feedlots. Many Bonsmara cows are in the top part of the best performing cows in South Africa. It would simplify the management of commercial breeders if they used Bonsmara cows as mothers in their herds.

EFFICIENCY IN THE COW HERD

The primary function of the beef cow which relates to efficiency is her part in the production chain to produce weaner calves. Cow efficiency is generally expressed as biological or as economic efficiency. Biological and economic efficiency should in most cases be closely related. That gives the incentive to improve biological efficiency. Since the output of a production system is cattle and the major impact is nutrition (grazing) one of the following ratios is used to describe efficiency:

Biological efficiency = **Product output** / Input (mostly feed) = **Total calf weight** / Input (mostly feed)

= kg wean weight / LSU of 450kg

or = kg wean weight / ha

or = kg wean weight/cow weight to the 0.75 power

or = kg wean weight/cow exposed/feed consumed

Reference in the following part will be made to weaning weight, cow weight and reproductive rate.

EFFICIENCY CALCULATION FOR COW

- **Weaning index and cow efficiency calculation**

  In the Performance Testing Program biological efficiency is calculated as a relationship of 205 day weight to dam weight of calf at weaning to the power of 0.75. This calculation tends to favour the lighter cows. In a Bonsmara herd the regression of calf weight to cow weight indicated that the cows produced calves weighing 30 added kg's for each added 100kg of mature body weight. The efficiency in calculations using cow weight raised to 0.30 power was subsequently done. The calculation removed the bias but the correlation with weaning index was 0.92 in comparison with 0.70 for cow weight raised to the 0.75 power.

  It was concluded that weaning index alone was more closely related to individual cow efficiency than the ratio of weaning weight to metabolic cow weight or the ratio of weaning weight to cow weight.

  In another study researchers found that actual weaning weight was 60% accurate in predicting cow efficiency, milk production 23% accurate and cow weight only 1% accurate.

- **Intercalving Period (ICP)**

  The intercalving period of a cow is also a measure of efficiency. If reproduction is emphasized in breeding herds and all non-pregnant cows are culled, this measure of efficiency would increase production and cow size would largely be taken care of. The average 2008 ICP for 27339 Bonsmara cows was an excellent 405 days.

- **Production Per Productive Year (PPY)**

  This is a good efficiency measure because it takes into account the sum of the weaner weights of a cows calves (mothering ability) per year of production (calving rate). An index calculated for PPY would be valuable.

BIOLOGICAL EFFICIENCY BY BREED

In South Africa different types of beef cattle are found. The efficiency

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of the cow herd or breed or type of cattle may be calculated using the following formula which simulates the input: output concept:

$$\text{Kg wean weight per LSU} = \frac{365}{\text{ICP}} \times \frac{\text{205 weight}}{\text{cow weight}} \times 450\text{kg}$$

Where LSU = Livestock unit of 450kg
ICP = Intercalving period (days)
Cow weight = weight at birth more accurate but at weaning acceptable

This calculation is nearly all inclusive taking into account reproduction rate, mothering ability and weight of dam corrected to a 450kg LSU which standardises the input. The only aspect not included is the loss of calf at birth or prior to weaning.
The efficiency of Bonsmara cows in comparison to cows of the 5 best breeds for the period 2006 to 2008 is presented in **Table 3**.

TABLE 3 • Cow efficiency of the five most efficient breeds for 2006 to 2008.

Breed	Number	205 day Weight (kg)	Cow Weight (kg)	ICP (days)	WWLU (kg)
Nguni	6802	157	365	402	175
Beefmaster	18519	225	497	431	173
BONSMARA	**83997**	**217**	**509**	**408**	**172**
S.A.Angus	8812	226	524	426	166
Hereford	3890	212	553	393	160
Average	**115218**	**207**	**490**	**412**	**169**

According to this method of calculating weaner calf production per livestock unit the Bonsmara cow takes up the third position closely behind the Nguni and Beefmaster breeds. However Bonsmara cows represent the entire breed which places the Bonsmara cow in a commanding position in the beef cattle industry.

- **Kilogram weaner weight produced per hectare**
  This biological efficiency calculation is done on a herd bases if the management procedure remains the same over time and only beef is produced from the farm. The higher output of weaner weight can be achieved only if record is kept of each cow and calf weights are recorded and selection pressure is directed at the individual animal.

In **Table 4** the kilogram of weaner weight produced per hectare is presented for the State Bonsmara herd that was run at Roodeplaat on a mixed grazing Bushveld farm for a 30 year period. The herd was on a non-selective grazing system with a mixed lick according to the Soutpan formula.

TABLE 4 • Kilogram weaner weight improvement in the Roodeplaat Bonsmara herd.

Years	205 weight (kg)	Calf %	Kg/ha
1-3	195	65	12.6
7-9	209	73	15.3
13-15	217	88	19.1
19-21	237	95	22.5
25-26	246	92	22.6
29-30	245	94	23.0
% Change	**25.6%**	**41.1%**	**82.5%**

The improved economic return to weaning in this herd would be similar to the 25.6% improvement of the 205 day weaner weight.

CONCLUSION

It can be concluded that the Bonsmara heifers, and cows have an excellent ability to produce weaner calves efficiently and economically.

Bonsmara cows are adapted to most of the Southern African farming conditions from temperate areas to areas like the Limpopo Province, North West Province, Namibia, Zambia and Angola where summer temperatures reach 40°C and higher. The breed has a large genepool of about 130 000 animals to effectively select animals for different conditions and ecological areas.

Sandy soil areas are hard on the hooves. Selection in these areas has been done over many years so that adapted genotypes are available. Similarly, Bonsmara bull calves have been subjected to intensive growth tests in both phase C and D growth tests. This has provided Bonsmara genetics that are well adapted to feedlot conditions. About 80% of beef in South Africa is produced from feedlots. The Bonsmara is the predominant beef breed found in the feedlots. (ARC report, 2004)

Different procedures to improve reproductive rate were investigated. Bonsmara weaning weights have improved considerably during the past 45 years enabling heifers to be mated at 12-15 months of age. This necessitates an improved management procedure. It will improve the reproductive rate of a herd considerably. Management and selection procedures need to be refined to minimize losses and problems during calving. Early mating of Bonsmara heifers well managed has definite economic advantages for the entire industry and will double output over a 9 year period.

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