



agriculture & rural development

Department:
agriculture
& rural development
PROVINCE OF KWAZULU-NATAL

Beef Production: The Basics

Useful Statistics

1. Expected calving date

With cows the average length of gestation is between 280 and 285 days. Some authorities maintain that large breeds of cattle are, on average, pregnant for as much as a week longer than small breeds of cattle and that female calves are born 1 to 3 days earlier than male calves conceived on the same day.

Assuming a gestation length of 283 days, a rule of thumb to find the expected calving date is as follows:

Start at the date on which the bull mated with the cow.
Subtract 3 months from the number of months in the bulling date.
Add 8 days to the number of days in the bulling date.
Add one year to the year in the bulling date.

Example:

If mating took place on 15 November 1994 (15/11/94):

Subtract 3 months from 11 months = 8

Add 8 days to 15 days = 23

Add 1 to the year = 95

Thus expected calving date is 23/8/1995 or 23 August 1995.

If bulling took place in the example on the 28th day of the month, adding 8 days = 36. The expected calving date would therefore be the 6th of September 1995 (Note: September has 30 days, so subtract 30 from 36 to get 6. Where the following month has 31 days, subtract 31 from this figure to obtain the correct date.) The same principle holds when a date flows over the end of a year.

This rule of thumb can also be used to find out when conception took place, working back from the date of birth. In this case, add 3 months, subtract 8 days and 1 year from the calving date to obtain the bulling date.

2. **Live mass**

Live mass is a very useful statistic to have and is vitally necessary for feed budgeting purposes. Where a farmer does not have access to a scale, chest circumference can be used to obtain an acceptable estimate of live mass.

The time of year traditionally used to weigh cattle for feed budgeting purposes is in summer, just after the peak of summer pasture growth, which is usually February to March in most parts of KwaZulu-Natal. A second weight recording is advisable toward the middle and end of winter i.e. July to August. The following rules of thumb then apply:

2.1

Mean cow mass = mean mass of all the mature non-pregnant or early pregnant cows in a herd after peak of summer pasture growth.

Mean cow mass in South Africa is 450 to 470 kg, with smaller breeds like the Nguni averaging 390 kg and larger breeds like the Simmentaler averaging 540 kg.

2.2

Bull live mass = 1.3 x mean cow mass.

2.3

Calf birth mass = 8% to 10% of mean cow mass.

2.4

Calf weaning weight = 42% of mean cow mass without supplementary feeding.

Farmers should set the following targets:

Overall weaning percentage = 80%.

Weaning percentage of heifers = 90%.

Weaning percentage of second calvers = 75%.

Weaning percentage of mature cows = 80%.

Where heifers calve down for the first time at 3 years old, replacement heifer mass at two years must be at least 65% of mean cow mass.

Overall mortality \leq 3%.

Cows are unlikely to reconceive during the following summer if they lose more than 16% of mean cow mass by the time they have calved. Only in severe drought situations can live mass be allowed to drop below 70% of mean cow mass. Cows should lose some mass between winter and summer and a loss of 8% to 11% of mean cow mass is considered optimum.

3. **Temperature, respiratory rate and pulse rate**

3.1 Rectal temperatures

Young calf - 38.5 to 40.5°C

Cattle under 1 year - 38.5 to 40.5°C

Cattle over 1 year - 37.5 to 39.5°C

3.2 Respiratory rate per minute

Calf 4 days - 56
 Calf 14 days - 50
 Calf 5 weeks - 37
 Calf 6 months - 30
 Cattle 1 year - 27
 Mature cattle - 12 to 16

3.3 Pulse rate per minute

Calf under 8 days - 116 to 141
 Calf 8 to 14 days - 108
 Calf 1 month old - 105
 Calf 2 months old - 101
 Calf 3 months old - 99
 Calf 6 months old - 96
 Calf 12 months old - 91
 Mature cow - 40 to 60
 Mature steer - 35 to 70

4. Dentition

Characteristically the teeth of mammals, which includes cattle, erupt from the gums at different ages and some teeth, known as milk teeth, are lost prior to eruption of the adult or permanent teeth. With cattle there is evidence that higher levels of nutrition leads to an earlier eruption and there is a clear difference in the time of eruption between breeds. The data in Table 20 must therefore be used as a guide only and more reliable data should be built up on each farm if dentition is to be used for the age determination of cattle. Farm data will be useful to decide when to market livestock to controlled abattoirs to ensure that slaughter cattle fall into the desired age class.

Table 20. Age of eruption of teeth in cattle.

Age	Molars (M) and premolars (P)	Age	Incisors	Common term
6 months	M1			Milk tooth
12 - 15 months	M2			Milk tooth
22 - 24 months	M3 & P2	20 - 26 months	First pair	2 - tooth
30 months	P1	27 - 33 months	Second pair	4 - tooth
30 - 36 months	P3	36 - 42 months	Third pair	6 - tooth
		42 - 48+ months	Fourth pair	Full mouth

5. **Breeding data**

Appearance of first oestrus is at 8 to 10 months

Puberty (Cow): 12 to 18 months

Suitable for breeding: Bull: 1½ to 1¾ yrs

Cow: 1½ to 2 yrs

Oestrus cycle in animal not served: 20 to 22 days

Duration of oestrus period: 1 to 2 days (could be hours in indicus cattle in very hot environments)

First occurrence of oestrus after parturition: 3 to 8 weeks

Best time for serving: 6 to 8 hrs after the start of oestrus

Suckling period: For fattening: 3 to 4 weeks

For breeding: 6 to 8 months

6. **Carcass composition**

The ratio of muscle, fat and bone in a beef carcass varies according to the water content, age and sex of an animal, but is not significantly different between carcasses of the same sex compared at the same age and fat content.

A beef carcass classified A2 to A3 has on average a fat content of 18%, 15% bone and the rest is muscle.

Dressing percentage of young stock varies from 50% as A1 class carcasses, to 53% as A2 and 54% to 56% as A3 to A5 class carcasses. Mature cows, when lean, have a dressing percentage of 48% to 49%, and 53% when fat.

The percentage weight of the different components of a carcass dressing at 55% of hot carcass mass is approximately:

Gut fill	17.0
Hide	7.0
Empty gut	4.5
Intestinal and channel fat	4.5
Heart, lungs and trachea	1.5
Liver, gall bladder, pancreas and spleen	1.5
Head	3.0
Trotters	2.0
Blood	3.0
Diverse	1.0

Subdivision of carcass according to cuts:

Cut	Percentage of cold carcass mass
Fillet	0.98
Topside	6.18
Silverside	4.49
Aitchbone	1.43
Rump steak	5.66
Loin	6.13
Thick flank	3.97
Thin flank and short rib	3.53
Hind shin	3.82
Flat rib	3.17
Chuck	14.87
Brisket	10.87
Wing rib	3.84
Prime rib	4.74
Bolo	2.31
Neck	4.21
Hump	0.98
Fore shin	5.02
Kidney	0.34
Bone and fat trimmings	9.54
Soup bones	1.85
Fat	2.07