

Beef Production: The Basics

Bull Management

Bull selection

A recent Australian study highlighted some factors which farmers consider when selecting a breeding bull (Table 3). These range from subjective things like eye appeal to objective performance records.

Table 3. Factors for bull selection and the proportions of a sample of farmers who rated these factors into categories of importance - from the Australian National Farmer.

Factors	Farmer rating		
	Very important	Moderately important	Unimportant
	(%)	(%)	(%)
Fertility test and guarantee	65	19	16
Eye appeal	55	33	12
Herd performance records	53	31	16
Seller's reputation	52	37	11
Breed bloodlines	44	36	20
Previous dealings with seller	32	29	39
Price of bull	26	58	16
Other producers recommendation	15	43	42
Show ring success	6	23	71
Agents recommendation	5	26	69
Breed society and stud advertising	2	12	86

It is likely that South African farmers will have different views and ideas as to the importance of the selection factors listed in Table 3, and could use other factors not in the list for their bull selection. However, before a list like the above can be considered, the following aspects must be examined:

- A farmer's goals, including breeding goals. Clearly, when selecting a bull, the selected animal must have the potential to promote the farmer's goals, otherwise the animal is unsuitable.
- Bull availability. Although animals can be transported over great distances with relative ease, using local bulls circumvents problems associated with adaptation to new environments and costs involved with transport. The non-availability of a desired breed of bull could place further constraints on bull selection.
- Farmer's financial status and beef prices. When beef prices are good, farmers could consider spending more buying bulls, but when beef prices are poor and the farmer carries too much debt, thrifty buying is essential.
- The type of females in the herd or herds where the bull will be used. Adaptation to the local environment in cows is essential, whereas with bulls, although it remains a factor warranting consideration, can be placed lower on the list of priorities.
- The need to buy a bull. Farmers usually replace bulls that have broken down. Replacing bulls that are unable to work cannot be questioned, however, at times bulls are replaced without sound reasons. Furthermore, home-bred bulls can be used where inbreeding in a herd is relatively low and is often a useful way to circumvent unnecessary expenditures.
- Disease status of the farmer's own herd. Whereas in healthy herds there are no limitations when buying a bull, with a disease like trichomoniasis, only young bulls or artificial insemination should be used.
- Health status of the herds from which breeding stock will be bought.

Bull-to-female ratio

The number of cows allocated per bull depends on a number of considerations, including:

- Age of the bull.
- Bull fertility.
- Size of paddocks.
- Vegetation.
- Climate.
- Topography.

Age

Allowing young bulls to serve too many females when they are relatively young could result in poor conception rates, as well as infertility of that bull in later life. It is therefore important that the following guidelines be maintained, assuming a 90-day breeding season:

Yearling bulls can serve between 10 and 12 cows.
Bulls 18 months old, 20 to 25 cows.
Mature bulls (24 months and older), 25 to 30 cows.

Fertility

Bull fertility is the result of

- the amount of normal (*i.e.* quantity and quality) semen a bull is able to produce within a set period of time
- and is significantly affected by the bull's libido and mating dexterity.

and can be arrested by disease. When a bull runs a high temperature, he is usually rendered infertile for many days.

Semen production is a function of the size of testicles. Research has shown that small testicles cannot produce large volumes of semen and findings of a recent investigation indicate that when testicles are too large, fertility also tends to decline. Scrotal circumference is the measure used to indicate the size of testicles and varies between breeds and with the age of a bull. As a general rule, a yearling bull with a testicular circumference lower than 32 cm, should be considered suspect. The upper limit for testicle size has not been determined satisfactorily.

The amount of semen a bull produces per ejaculate and what proportion of the semen is live, can be determined by veterinary examination. At the same time, microscopic examination will show any presence of anatomical abnormalities of the semen. When a veterinarian does a fertility test on a bull, the testicles and seminal vesicles are also palpated to determine their state of health. This examination only indicates whether a bull is normal on the day of examination. At times, bulls are re-tested at a later date and bulls tested negative at the first examination, could prove positive at the second examination, and the converse can also happen.

Mating capacity and mating ability are best evaluated by observing a bull within the herd situation over a period of two to three weeks. Bulls tend to fight, which can affect mating in multi-sire herds, but once a pecking order has been established amongst bulls, as long as circumstances remain the same, fighting is less common. At times two bulls tend to persist in fighting and must be separated to work in different herds. It is assumed that the reason for continued aggression between bulls is because they are similar in strength and aggression.

Other factors

The other factors listed include size of paddocks, vegetation, topography, climate, and temperature and all affect bull fertility in a mechanical way. Thus, in a small paddock a bull can see and reach more cows, whereas in a large paddock, with dense bush or hilly country, more bulls are needed. With high temperatures, semen production is depressed.

Multi- and single-sire mating

Where the farmer's objective is to know the parentage of offspring, as with stud breeding, a bull is allocated a number of cows and the relevant herd is run separately. In commercial situations, where parentage is ignored, multi-sire herds are common and herds of 150 to 300 cows are run with a prescribed number of bulls. The size of large herds is determined by veld management practices, size of paddocks and ability of herders. Using modern technology, it is possible to identify parents, even in multi-sire herds, although costs are presently still too high for such a practice to become common practice.

Fighting between bulls is a common problem in multi-sire herds, as has been indicated. Keeping bulls in the same groups where pecking order is well-established limits fighting. When a new bull is introduced into a group, fighting can be expected and toward the end of a breeding season, when less cows are coming into heat, the number of bulls in the herd should be reduced to prevent fighting.