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# Cattle Production: Age and its impact on the productivity of beef cattle in the rangelands

## Introduction

The age of an animal has an effect on its physiological performance, ability to reproduce, and susceptibility to life threatening climatic events or diseases. For cattle grazing in the rangelands, where climatic and natural resource constraints often present extreme challenges, these age interactions are especially significant.

There are two issues of importance:

1. Age increases the risk of mortality and reproductive failure amongst breeders.
2. The ageing process alters the way in which cattle partition the energy provided in their diet into the production of fat and meat.

## The effects of age on the performance and survival of breeders in the rangelands

Research from beef cattle herds in the Southern Pastoral Region has highlighted the growing risk of mortality that comes with increasing age. Observations such as this are not surprising as they reflect the natural trends in mortality amongst all living creatures.

For cattle in a rangeland environment, this trend is broken during drought years, when it seems that breeders of all ages are at risk. If a cow is old enough to reproduce and then faces the nutritional burden of lactation during a drought, then she has a high risk of dying.

Reproductive performance also changes with age. In good seasons, all age groups tend to calve but, research indicates that during poor seasons, breeders may experience either a complete failure or a tailing off in reproductive performance amongst the youngest and oldest age groups.

## The effects of age on the production of meat

Age also has an impact on the way in which animals produce meat. The efficiency with which a growing animal converts the food it eats into meat is determined primarily by the way in which it uses the digestible energy from its dietary intake. This digestible energy in feed consumed by animals is partitioned between heat production and gains in body tissues such as protein (i.e. meat) and fat.

Importantly, as an animal matures, the ratio of fat to protein in body weight gains increases. In other words, as an animal gets older, it expends more energy on producing fat than it does on producing protein and meat. In practical terms, this means that the efficiency with which it converts dietary energy into body tissues and liveweight gains decreases.

In most animals, the peak in efficiency for converting digestible energy into liveweight gain occurs at around 25 per cent of mature bodyweight.

## Sex and breed interactions

In cattle, as with other animals, this efficiency in converting digestible energy into liveweight gain is also influenced by the animal's sex and breed. Females mature at lighter weights and tend to enter fattening phases (where increasing amounts of digestible energy are diverted into the production of fat), earlier than steers. Steers, on the other hand, enter fattening phases earlier than bulls. As a result, under conditions of normal or good nutrition, bulls will grow faster and more efficiently than steers, and steers more so than heifers.

In addition to this, some breeds begin to fatten at lighter weights and others at heavier weights. These differences result in variations in the efficiency with which different breeds produce liveweight gains. Comparisons between Bos indicus and Bos Taurus cattle indicate that Bos indicus animals have a lower maintenance requirement. This means that it takes less energy to keep their body functions ticking over so they tend to have more dietary energy available to use in growth.

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