

CHAPTER 3

Nutrition and feed management

The most crucial aspect of animal production systems is the management of feed. Animal requirements need to be matched with the available feed supply from pastures and crops, and conserved and purchased feedstuffs.

The principles outlined in this chapter aim to improve the decision making when assessing feed requirements of a sheep flock. Chapter 4 outlines the particular feed and management issues associated with drought.

The nutritional requirements of livestock

Rumen structure and function

Sheep are ruminants, which means that they have a forestomach designed to use cellulose, the largest source of energy available in plants. The forestomach consists of the reticulum, rumen and omasum.

The rumen is the largest compartment of the forestomach and is lined by absorptive papillae and is partly subdivided by folds. It can hold up to 7 litres of food and fluid. It connects with the reticulum and it covers most of the floor of the abdomen on the left side. The reticulum, also called the 'honeycomb' because of the hexagonal pattern of its mucous membrane, connects with the oesophagus (the gullet) and to the omasum. The omasum is the smallest compartment of the forestomach and connects with the abomasum. The omasum is also known as the 'bible' because of its many leaves. The abomasum, sometimes referred to as the true or fourth stomach, is an elongated sac, which is comparable in structure and function to the stomach of non-ruminants.

The rumen acts as a fermentation vat and provides an anaerobic environment (no oxygen), and operates at constant temperature and pH. The pH of the rumen is 6 to 7 when animals are on a pasture, and 5.5 to 6 when on a grain diet. The forestomach has specialised contraction patterns that serve to mix and regurgitate food. Rumination consists of regurgitation of 'cud' (a bolus of food) for re chewing and re swallowing. This allows for further physical breakdown of feed, with the addition of large quantities of saliva, which also acts as a buffer. Time devoted to rumination is determined by the nature of the diet.