

SECTION 1

THE INTRODUCTION.

It is difficult to determine with any accuracy the amount of water required per day by a given breed or type of animal. Using a large number of animals over a considerable period one can arrive at a figure which will serve as a guide, and a guide only as to the amount of water which the average member of a breed will drink over 24 hours under certain conditions. There is a surprising degree of individuality with respect to water requirements within breeds of cattle under identical conditions, and this has been demonstrated by practically all workers in this field of investigation.

This project has been aimed at determining the amount of drinking water required by zebu oxen in the humid tropics, not merely for academic interest but to assist farmers in these conditions to assess the volume of water which should be supplied for grazing zebu oxen.

The value of the figures obtained from this project is limited to non-working, grazing zebu oxen, but at the same time may be used as useful basis for estimating the requirements of working oxen, zebu cows, nursing calves and other classes of cattle whose requirements may be greater or smaller than those used in this project. Further, the number of oxen used was limited as was the period over which the trial extended due to limited grazing available. Greater value could be attached to the result of this project had there been a large population from which to draw a sample.

Figures showing the amounts of water drunk by animals are of little value unless feeding and grazing conditions are known, temperatures, rainfall, presence or absence of shade and other factors all of which affect the water requirements, and hence these factors were recorded over the trial period and taken into consideration when analysing the final figure obtained.

The importance of an adequate supply of drinking water cannot be overemphasized as the drastic effects on growth rate, reduction in milk production, loss of weight and poor condition are rapidly brought about by an insufficient water supply. On the other hand the supply of great quantities of possibly excess water to stock is frequently very expensive and often renders a livestock enterprise uneconomic.

The amount of drinking water which appears to be necessary for zebu oxen in the humid tropics is shown from this project to be surprisingly little, especially during the wetter periods.

The trial was spread over five months in an attempt to assess differences in requirements during the wet, intermediate, and dry seasons of Trinidad.

Less water than is cattle from temperate regions uses in hot areas.

The importance of an adequate supply of water for cattle is appreciated by cattle farmers in arid areas to a far greater extent than it is by those working in the well-watered temperate zones of our world.

(5) Water in the animal body.

Water content of the animal body varies greatly with the nutritional plane and degree of fitness. The percentage water decreases as animals put on fat and increases when a substantially ration is fed for a long period. Water is a fundamental constituent of all living cells. It is essential for the transformation of nutrients and excretory matter between the digestive system, the walls of the body tissues and the excretory organs.

"The loss of 10% of body water causes serious disorders and further losses may lead to death, whereas animals may lose nearly all their glycogen and fatty reserves and 40% of their body weight and still live."

(French 1956.)

Water is the vehicle for excretion of a number of metabolic end products e.g. minerals and proteins. Urea is toxic in concentrated amounts hence adequate water for transport of this excretory product of protein is essential. Elimination of abnormal or superfluous constituents and the conservation of a normal supply of water and other important body constituents is a function of the kidneys. The water excretion is the latter depends on the quantity and nature of the substrate undergoing oxidation. (French 1956)

Blood contains ~ 85% water and the plasma ~ 90%. Reduction in plasma volume causes, independent of viscosity of blood which tends to impede transport of the oxygen, circulatory failure, and this the danger of dehydration. (French 1956)

A large amount of water is used in the process of digestion and absorption of nutrients.