

Simulation model for a nomadic animal production system in Southern Iran.

ABSTRACT

The first motive for the determination and evaluation of an energy production system is the need to change. Such system is dynamic in nature and is influenced by many factors such as age and physiological status of individual sheep or goat, quantity and quality of available feed and environment including the management systems. Traditional pastoral resource assessments do not always account for the complex, interrelated nature of land, forage and livestock. Modeling may overcome the limitations of traditional methods by improving the understanding of complex pastoral systems, and makes fast repetitive analyses, spanning time, incorporating variability and representing more realistically complex interactions possible within the system. The estimated values of metabolisable energy for maintenance and production in this study are based on the results of two feeding systems linked together by grazing the energy intake in the Nomadic Production System (NPS) and the dynamic system modeling used to study the assessment of these complex systems. In this study, validation of model relied on the observations of Torki Ghashghaii (TG) sheep (like those in Bakkan) under pen-fed and integrated rangeland-cropland feeding systems, and was carried out mainly by studying the body weight gain of growing animals and also body weight changes of ewes due to pregnancy and lactation. After validation, the study indicated that the mean value of actual data of male and female lambs (weaners) and ewes were in close agreement with the simulated data. These results validate the generalized structure of energy utilization models of grazing sheep under production sub- systems of NPS. These results will enable the prediction of carrying capacities in any given situation under conditions similar to those in Bakkan.

Keyword: Nutritional management; Nomadic; Sustainable livestock production system; Simulation; Southern Iran.