LIVESTOCK SECTOR IN ZAMBIA: OPPORTUNITIES AND LIMITATIONS

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Abstract

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Zambia is endowed with a vast feed resource base for animal production purposes. However, the feed resource base is not fully utilised and this is manifested by low livestock productivity. The quality and production levels of animal products depend largely on the quality and quantity of feed, which is fed to the livestock. Among the constraints limiting livestock productivity in Zambia, insufficient and low quality of veld grass, particularly during the long dry season (March-November) is responsible for low production levels and poor reproductive performance in ruminants. The problem of inadequate veld grass can be overcome by feeding crop residues which are in abundance during the dry season. Zambia produces large quantities of sugarcane tops, bagasse and straws from maize, sorghum, wheat, millet and rice. These could sustain livestock productivity if supplemented with protein sources or treated with urea. Despite the production of large quantities of crop residues, these are wasted by burning or get destroyed by termites. There is a need, therefore, to develop feeding systems based on crop residues which are compatible with the farming systems in Zambia and to promote such feeding systems.

1. INTRODUCTION

The Livestock Sector in Zambia is increasingly becoming an important component of Zambia's economy. For example, its contribution to the National Gross Product in 1996 and 1997 was estimated at 6.4 and 6.5% respectively. This accounts for about 35% of the total agricultural production. In 1997, the livestock sector accounted for 33% of agricultural exports.

In Zambia, about 23% of the per capita supply of protein comes from animal products. However, with regard to meat consumption, beef is the most preferred, followed by pork, chicken, rabbit, mutton/lamb and goat meat. Cattle contribute at least 61% of the meat and milk consumed in the country. In view of the above, the livestock sector has tremendous potential and capacity in contributing to poverty alleviation, increasing the socio-economic status of most people and, consequently, contributing significantly to the economic growth of the country. However, the potential of the sector is under-estimated and hence minimal.

This paper will attempt to discuss the production ratios and major limitations to increased productivity. For the purpose of this workshop the discussion will be confined to ruminants.

2. PRODUCTION RATIOS AND MAJOR CONSTRAINTS TO INCREASING PRODUCTIVITY OF RUMINANTS

Ruminant livestock numbers in the traditional sector comprise 2.7 million cattle, 700 000 goats and 70 000 sheep. These figures represent 82, 97 and 64% of the national cattle, goats and sheep respectively. Most of these animals are concentrated in Eastern, Western and Southern Provinces. Despite these large numbers, their productivity is very low and hence the livestock production sub-sector is not expanding at a sufficient rate to meet the needs of each household and increasing population. The demand for animal products is constantly out stripping the production and supply. The increased output of animal products observed in the

traditional sector, has largely been due to increased animal population rather than increased productivity. For example cattle numbers in the traditional sector are increasing by 3.5% per annum. Sheep and goats numbers have been estimated to increase at 5 to 7% respectively, per annum. The increase in cattle and goat numbers is justified by the increasing number of traditional farmers who are going into livestock farming.

In Zambia, constraints to increased ruminant production include inadequate marketing infrastructure such as low price incentives; disease (tick borne diseases, helminthiasis, trypanosomosis); inappropriate livestock research; inadequate extension services and poor animal husbandry practices. However, there is concrete evidence that nutritional stress, in terms of quantity and quality of available grazing, particularly during the dry season (April-November), limits ruminant productivity. For instance, in cattle, low productivity is manifested by high calf and adult mortality rates (20 and 9% respectively) and overall low reproductive efficiency [1]. The low reproductive efficiency is characterised by low conception and calving rates (45–50%) coupled with periods of anoestrous and long calving intervals (≥450 days).

Nutritional stress, due to crude protein deficiency in mature natural veld grass, has also been responsible for slow growth rates (five-to-seven years to reach mature market weight, low birth and weaning weights; [2]); low milk production and inefficient performance of draught animals, due to their poor physical condition resulting from underfeeding during the long dry season.

Mature poor quality roughages are deficient in rumen degradable nitrogen, RDN [3]. The consequences are reduced dry matter intake of such poor quality roughage, largely due to a limited supply of RDN for rumen microbial activity [4]. Ruminants that depend entirely on poor quality roughage are, therefore, unable to meet their nutrient requirements (amino acids) for reproduction, growth rate and milk production during the long dry season. Most ruminants fed on poor quality roughage, especially during the long dry season, are always in negative nitrogen balance [5], an indication that these roughages are unable to meet the nutrient demand for maintenance and production [6].

The low feeding value of roughages may ultimately give rise to a poor response to veterinary treatments and inadequate exploitation of the genetic potential of both indigenous and, to a greater extent of exotic breeds. The net effect is low output of milk, meat, wool, hides and skins, with corresponding increased costs of production [7]. Where nutrition is inadequate, as is the situation in most parts of Zambia, parasites have major effect on ruminant productivity, emphasising the greater necessity for the control of diseases and parasitism.

Other than a limited supply of RDN in poor quality roughage, poor performance of ruminants in the traditional sector is further complicated by a critical shortage of veld grass due to severe overgrazing, especially in most parts of the Eastern and Southern provinces of Zambia, where cattle and goat numbers have soared. The scarcity of grazing is enhanced by uneven distribution of rainfall and persistent droughts, resulting in reduced biomass availability; the Southern, Eastern and Western Provinces being the most affected.

The scarcity of grazeable veld grass is further complicated by the distribution of tsetse fly. Livestock numbers are negatively correlated to the severity of tsetse infestation. It is estimated that about one third (120 000 km^2) of Zambia's natural grazing resource is infested and unusable [1], thus confining the livestock to the remaining two thirds. Consequently this causes a negative impact on the environment and productivity of both the uninfected areas and livestock.

The problem of shortage of grass in most parts of Zambia is exacerbated by the ever increasing importance of arable production of cash crops (maize, sorghum, millet, wheat, rice, groundnuts, soybeans, sunflower, cotton and sugarcane) at the expense of grazing land. However, the residues arising from these crops, particularly maize, sorghum, millet, wheat

and sugar cane can be utilised by ruminants when veld grass is scarce. Unfortunately, as with mature veld grass, crop residues have a low feeding value due to their low protein content [8].

In Zambia, approximately 2.06 million, 59 600, 95 777, 13 653 and 53 278 metric tons respectively of maize, sorghum, millet, rice and wheat straws are produced annually. Nakambala Sugar Estate grows sugarcane and hence produces substantial quantities of cane tops, bagasse and molasses as sugarcane by-products. This suggests that crop residues and molasses are more important as a source of feed for ruminants in the dry season, particularly in the traditional sector. However, crop residues are grossly under utilised, much being burnt or destroyed by winter fires. Therefore, there is a need for specific research to develop appropriate technologies which will encourage the use of this local feed resource base, particularly sugarcane tops, bagasse, maize and sorghum stovers, agro-industrial by-products (oil cakes) and forage legumes. It is important to note that technologies that are aimed at improving the feeding value of roughages should be socially acceptable to the subsistence farmers, technically feasible, economically viable and environmentally friendly.

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