Reproduction and Lactational Performance of Cattle in a Smallholder Dairy System in Zimbabwe

E. Masama*, N.T. Kusina, S. Sibanda and C. Majoni
Department of Animal Science, University of Zimbabwe, PO Box MP 167, Mount Pleasant, Harare, Zimbabwe
*Correspondence: E-mail: kusina@ansci.uz.zw


ABSTRACT

A study was conducted in two adjacent locations. Nharira (communal) and Lancashire (small-scale commercial) farming areas in Zimbabwe to characterize the breeds and evaluate the reproductive and lactation performance of dairy cattle under smallholder management. The types of cows identified were Friesian, Jersey and Red Dane, and an indigenous Sanga breed called the Mashona and its crossbreds. Both sectors used more exotic and crossbred cows than indigenous cows. The mean monthly weights of the dairy cows were higher in Lancashire than in Nharira and the calving intervals were longer in Nharira than in Lancashire. The mean age at first calving was higher and the mean total lactation yields were greater in Nharira than in Lancashire, but the mean 305-day lactation yields were not significantly different. The mean lactation lengths were longer for the cows from Nharira. It was concluded that the reproductive and lactation performances were low. The calving intervals were extended, probably owing to suboptimal nutrition and heat stress, particularly during the dry season, and to poor management practices, such as delayed mating due to the poor availability of bulls.

Keywords: breed, calving interval, cattle, climate, management, milk yield, reproduction

INTRODUCTION

The smallholder dairy sector in Zimbabwe has continued to expand since its inception in the mid-1980s (Mupunga, 1994; Mandibaya et al., 1999). To date, smallholder dairies exist in more than ten locations in the country. The government introduced smallholder dairying as a tool for enhancing rural development and so improving the nutritional base of the rural population (DDP, 1992; Musimawa, 1999). However, the smallholder dairy sector has experienced many problems. Despite there being 2000 members registered with the National Dairy Association of Zimbabwe, only 750 farmers are actively involved in dairy farming. In addition, while the smallholder sector constitutes 60% of the national number of dairy farmers, it contributes only 2% of the total national production of milk (Hungwe, 1998; Musimwa, 1999).

In contrast to the well-developed commercial dairy enterprises in Zimbabwe, smallholder dairy enterprises are characterized by low input and low production levels. Ideally, for viable dairy production, a cow should produce a calf every year. This has not been achieved in most smallholder dairy schemes currently operating. These
factors now threaten the viability of current and future ventures. Several technical and socioeconomic constraints continue to challenge smallholder dairies (Francis, 1998; Mandibaya et al., 1999). These include small herd sizes, inappropriate breeds, poor feeding management, low fertility and inaccessibility to credit. Several research studies have been conducted to address the low viability, recurrent droughts and high capital costs. However, little research has addressed the problems of fluctuations in feed resources and supply of inappropriate breeds. Production indices are not available for the breeds that are currently used. This study was conducted to characterize the dairy breeds used for milk production and to monitor their reproductive and lactational performances in a communal and a small-scale smallholder dairying areas in Zimbabwe.

MATERIALS AND METHODS

Site description

Nharira is a communal crop-livestock production area, while Lancashire is a small-scale commercial farming area. Both areas supply milk to a central milk collection centre called Nharira-Lancashire Dairy Centre. They are located in a semiarid area about 170–200 km southeast of Harare in Mashonaland East Province. Nharira-Lancashire is about 1460 m above sea level on latitude 19°2’S and longitude 30°35’E. The total annual rainfall received in the area in 1998 was 1120 mm and the mean maximum and minimum temperatures were 25.6°C and 12.1°C, respectively (Figure 1). The vegetation in Nharira consists of sparsely scattered trees, short unbrowseable bushes and overgrazed natural veld growing in non-arable plains. In Lancashire, trees are more abundant and tall grasses, such as Heteropogon and Hyparrhenia, grow in several paddocks.

Selection of participating farmers

The study was part of an ongoing investigation that had started in 1993, in which farmers had been trained to keep and maintain dairy records (Francis, 1998). It started by identifying the participating farmers through meetings at the Dairy Centre. The 21 farmers were selected on the basis of their ownership of at least two dairy cows.

Data collection

Data were collected through farmer participation and a monitoring study from January to December 1998. The data included the farming sector, animal identification and age, breed, parity, calving dates, mating dates, dates dried off, daily milk production, lactation yield, health record, body weight and body condition score. Monitoring and updating of records were done weekly with the assistance of a resident field technician.