

Synergisms of Range Forage Availability and Milk Production on Calf Growth

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BOTTOM LINE

In order to achieve large weaning weights, both forage and milk must be available in abundant quantities. A limit in either forage or milk prevents expression of the other in calf growth.

Summary

- High availability of forage is of little advantage for growth for calves consuming little milk.
- High milk consumption is of little advantage for growth for calves allowed low levels of forage.
- Brahman-Hereford F1 cows that give large amounts of milk can produce heavy calves only when high levels of forage are available.
- Maximum calf growth occurred at about 15 lb of milk consumed per day regardless of amount of forage available.
- Maximum calf growth is attained at greater than 2800 lbs. dry matter per 100 of cow weight.

Introduction

For extensive range conditions, the factors most easily and economically altered are type of cow used and stocking rate (as a means of manipulating forage availability). Although several traits characterize cow type, milk production is thought to have a great impact on calf growth and thus the economically important variable, weaning weight. The purpose of this experiment was to evaluate the influence of milk production and forage availability (stocking rate) on calf growth.

Experimental Approach

Over a 3 yr period, Brahman-Hereford F1 first-calf heifers were bred to Braford bulls to calve in Jan-Mar and were allotted to rangeland to accomplish an array of forage availabilities from 400 to 2800 lb of forage per 100 lb of cow weight. Stocking rate varied from 17 to 146 lb of cow weight per acre (10 to 40 acres per cow). Rangeland consisted mostly of sandy loam and clay loam sites with some shallow ridge sites. These sites were dominated by pink pappas, curley mesquite grass, and buffalo grass with the shrubs being mesquite, guajillo, and twisted

acacia. Milk production was estimated by weighing the calf before and after suckling after a 12 hour separation of cow and calf. Male calves were castrated at birth. All calves were weighed at birth and at weaning (about 240 d of age in Oct) to calculate preweaning average daily gain. Regression procedures were used to determine the relationship of forage availability and milk production to calf average daily gain.

Results

At low levels of forage availability, calf gain increased at only moderate rates as milk consumption increased. At 400 lb DM/100 lb cow weight, as milk consumption increased from 6.6 to 19.8 lb/d, calf gain only increased by .11 lb/d. In contrast, at 2800 lb DM/100 lb cow weight calf gain increased by .3 lb/d as milk consumption increased over the same range. In a similar way, at low milk consumption, calf gain increased at only moderate rates as forage availability increased. At 3.3 lb of milk/d, as forage increased from 400 to 1200 lb DM/100 lb cow weight, calf gain increased by .1 lb/d. In contrast, at 19.8 lb/d, as forage increases over the same range, calf gain increased by .3 lb/d.

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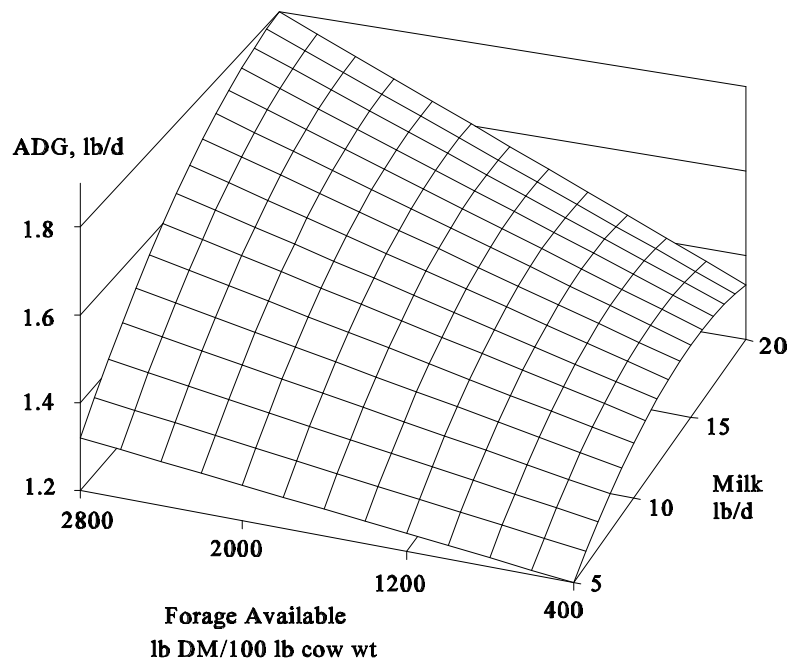


Figure 1. Influence of milk consumption and forage availability on calf average daily gain.