

# Milk Production of Fall Calved Cows Fed Total Mixed Rations in Early and Mid/Lactation Followed by Grazing Grass or Grass-Clover Pastures in Late Lactation

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## Introduction

Intensive rotational grazing can be an economic way of feeding dairy cows. Achieving high milk yield in early lactation, however, is difficult. To better capitalize on the potential economic advantage of grazing, as well as the cow's milking potential in early lactation, a fall calving strategy was employed. Cows were fed a total mixed ration under confinement for the first 200–225 days of lactation to maximize milk production. This was followed by grazing for the latter stage of lactation.

Most unimproved pasture in the northern United States consists of grass species, with a small proportion of legumes. Inclusion of legumes can increase the nutritive value of pasture. In addition to the fall calving strategy, milk production response to frost seeding of red clover in the pasture was measured.

## Materials and Methods

The experiment was carried out for two years using pasture located at the U.S. Dairy Forage Research Farm in Prairie du Sac, Wisconsin. In year 1, the pasture had two distinct types of paddocks, one containing mixed grasses only and one containing mixed grasses, white clover, and red clover. Red clover and white clover accounted for 26% of the forage in the mixed paddocks. Kentucky bluegrass, quackgrass, and smooth bromegrass were the principal grasses. In year 2 all paddocks were similar, containing almost all grass, with only negligible clover. For both years, cows calved during September and October. Fall-calving was achieved by synchronizing for breeding using GnRH and PGF<sub>2a</sub>. After calving, cows were fed a total mixed ration, then grazed from April to August when pasture was available. Grazing lasted 11 weeks in year 1 and 18 weeks in year 2. At the beginning of grazing, cows averaged 220 (SD 15) days in milk in year 1 and 203 (SD 17) days in year 2.

A supplement mix consisting mainly of high moisture ear corn and roasted soybeans was fed during grazing. The amount of supplement dry matter fed was 6.2 kg/d in year 1 and 7.9 kg/d in year 2. This accounted for approximately 35 to 40% of total dry matter intake. In year 2, cows were administered bST every 2 weeks. In each year, 40 cows (20 primiparous in year 1 and 12 primiparous in year 2) were grazed. Of the 40 cows in year 1, 27 (14 primiparous) grazed the grass paddocks and 13 (6 primiparous) grazed the mixed paddocks. In year 2, all 40 cows grazed grass paddocks as one group. Intensive rotational grazing was practiced by using electric fences to allocate grazing areas. Fresh paddocks were provided every 24 hr.

## Results and Discussion

Milk yield declined upon turning cows out to pasture (Fig. 1). The decline was less in year 1 with the grass-legume pasture than for the all grass pasture. The decline in milk production upon turning cows out to pasture in year 2 was even more evident (Fig. 2). This may reflect the higher milk production level when cows were placed on pasture, probably due to the use of bST, as well as the absence of legume species in the pasture. Total lactation yields for a 308 day lactation were: (year 1) 19,520 lb for cows on all grass, and 20,120 lb for the mixed grass-legume pasture; (year 2) 22,120 lb for all cows given bST and on all grass pasture.

## Conclusions

Total milk production was about 4,000 lb higher in this study for fall calved cows pastured in late lactation compared to spring calved cows pastured in early lactation (Dhiman and Satter 1996). While milk production still declined in late lactation upon turning cows out to pasture, the cumulative loss was much less than the early lactation cows experienced.

## Reference

Dhiman, T.D. and L.D. Satter. 1996. U.S. Dairy Forage Research Center 1996 Research Summaries, U.S. Department of Agriculture, Agricultural Research Service. pp. 106-107.

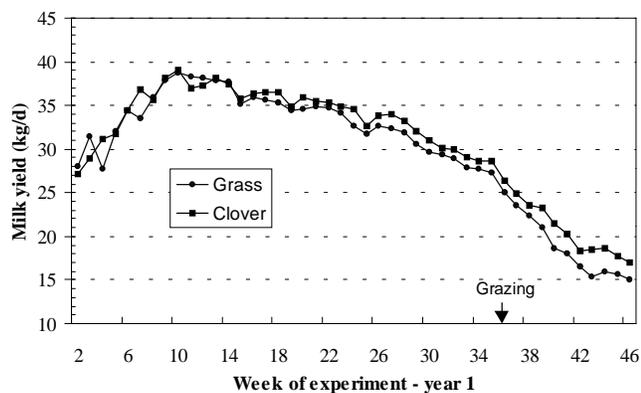


Figure 1. Milk yield of cows grazing grass pasture or grass-clover pasture during wk 36 to 46 of year-one experiment.

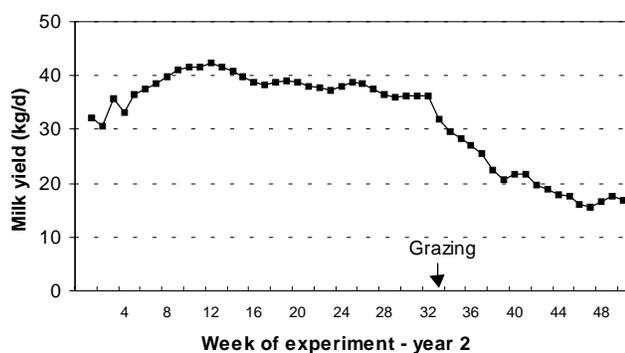


Figure 2. Milk yield of cows grazing grass pasture during wk 33 to 50 of year-two experiment.