

Comparing yield and quality of milk from dairy cows fed stockpiled annual ryegrass (*Lolium multiflorum* L.) and cereal rye (*Secale cereale* L.)

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Introduction Stockpiling annual ryegrass and cereal rye provides a low cost substitute to hay and creates an excellent source of feed during winter (Kallenbach *et al.*, 2003). In addition to lowering feed costs, grazing increases the conjugated linoleic acid (CLA) content of milk compared to feeding hay. Previous research suggested that forage species might differ in their ability to alter milk CLA content during the growing season (Wu *et al.*, 1997). However, research is needed to determine if different forage species used for winter and early spring grazing impacts the CLA content of milk. The objective of this experiment was to compare yield and quality of milk when cows graze annual ryegrass or cereal rye in late winter and early spring.

Materials and methods Thirty dairy cows in early lactation grazed for 14 weeks from 3 March to 3 June 2004 on two forage treatments (annual ryegrass and cereal rye). Treatments were replicated three times in six, 1.6 ha pastures that were subdivided into sixteen paddocks of equal size. Animals were rotated between paddocks on a 12-h grazing schedule. Additional cows were added as needed to maintain equal forage availability between treatments. In addition to forage, cows received 6.35 kg of grain supplement per day. Available forage was estimated weekly from each paddock using a rising-plate meter, which was calibrated every 21 d by clipping ten, 0.81 x 4.57 m strips from pre- and post-grazed paddocks. The mass from the harvested strips was used in a multiple regression equation to estimate available forage (Sanderson *et al.*, 2001). Forage and grain supplements were sampled weekly for quality analyses. Milk yield and quality was monitored on a weekly basis. Milk quality was measured from composite milk samples collected at consecutive a.m. and p.m. milkings. The composite samples were weighted based on milk yield of individual cows.

Results Cereal rye produced forage earlier in the season and sustained nearly 33% more animals than annual ryegrass from March to May (Figure 1). Annual ryegrass growth in early spring was slower and thus a two-week rest period in early April was needed to allow it to recover. However, over the entire season, annual ryegrass provided 76 days of grazing, which was 14 days more than cereal rye. There were no significant differences ($P > 0.05$) among treatments for pasture intake or yield of milk, milk fat, or milk protein. Milk yield, fat, and protein for annual ryegrass and cereal rye was 30.0 and 30.8 kg, 4.04 and 4.04 g/kg, and 3.17 and 3.26 g/kg for treatments, respectively. However, averaged over the 14-week experiment, annual ryegrass contained 10.4 mg CLA/g of fat, 20% more CLA than milk from cows grazing cereal rye ($P < 0.02$) (Figure 2).

Conclusions Our results show that cereal rye and annual ryegrass are practical forages for late winter/early spring on pasture-based dairies. While cereal rye was better for late winter, annual ryegrass persisted longer into spring. This study also stresses the importance of further research on CLA content of milk when different forage species are used.

References

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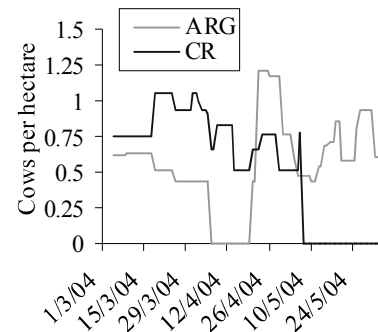


Figure 1 Stacking rate (454 kg cow basis) for annual ryegrass (ARG) and cereal rye (CR) pastures

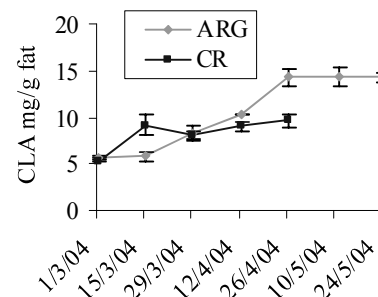


Figure 2 CLA content of milk from cows grazing annual ryegrass (ARG) and cereal rye (CR) pastures