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VARIATIONS IN RYEGRASS VARIETIES  
IN RESPECT TO MILK PRODUCTION

A thesis presented in partial fulfilment of the requirements for  
the degree of Doctor of Philosophy in Animal Science at  
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#### ABSTRACT

A study was made of some aspects of the nutritive value of ryegrasses with particular emphasis on the relationship between the chemical composition of the pasture and the quantity and quality of milk produced by grazing dairy cattle.

The fat content of the milk from Friesian cattle was shown to be depressed when grazing an annual variety of ryegrass during the winter. Depressions in the solids-not-fat content of the milk, on the other hand, were associated with the grazing of annual perennials ryegrass in experiments carried out in the winter and in the spring. The mechanisms involved in producing these differences in milk composition were investigated in a series of experiments in which various supplements were given to animals consuming pasture. Carbohydrate, protein, and lipid supplements were given to: lactating cows to measure effects on milk production, cattle and sheep with rumen fistulae to measure end-products of rumen fermentation, and dry sheep in metabolism crates to study the digestibility of pasture components.

It was concluded that the nature or levels of the carbohydrate, protein and lipid fractions of pasture may all influence milk composition and that optimum plant composition is likely to vary according to the type of milk product that is required to be produced.