LACTATIONAL PHYSIOLOGY CONTRACT

INTRODUCTION

Lactating ruminants make a large contribution to the wealth of New Zealand. Among them dairy cows are of greatest importance generating over 20% of NewZealand's export earnings. Future expansion of these earnings (other than that derived from a benevolent market place) will depend broadly on 3 approaches.

1. Increased feed grown/increased land area involved in dairying (currently 3-4% of overall land area in New Zealand).

2. Increased efficiency of feed conversion to milk.

3. Reduced costs of milk production and processing (including secretion of new products in milk).

The last two of these approaches can be achieved through the use of 'new' technology to alter milk yield and composition. The acceptability/desirability of these methods has yet to be established. In New Zealand there is a case for not using controversial new technology as the perception of 'clean and green' image can be an advantage in the marketing of agricultural produce. If the new technology is deemed to be unacceptable the challenge for the scientist is then to find other ways of making use of the genetic and physiological knowledge now being produced.

The topic of lactational physiology uses a broad range of scientific disciplines in seeking to understand and describe the process of lactation. The papers in this contract describe three interventions which might be used to alter milk yield and composition: immunological (Aston), transgenic (Wilkins) and hormonal (McCutcheon, Carruthers). The contribution of Wilde *et al.* is of particular relevance to New Zealand dairying as it describes a local control mechanism for the regulation of milk output which is probably responsible for the production loss observed on once-daily milking.

All of these approaches have validity in the context of improving the efficiency of New Zealand dairying. Time will tell whether new methods of modifying or improving animal performance can go beyond the gains offered by traditional genetic selection methods. Predicted increases in human population over the next 50 years may well necessitate that farm animal productivity is maximised and their environmental impact minimised. Consumer perceptions of new technology may then be tempered by a degree of survival instinct.

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