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Stevens D., Bibiloni R.

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The emerging dairy sheep industry in New Zealand

D. Stevens[1,*] and R. Bibiloni[2]

[1]Invermay Research Centre, AgResearch Ltd, Private Bag 50034, Mosgiel (New Zealand)
[2]Ruakura Research Centre, AgResearch Ltd, Private Bag 3123, Hamilton (New Zealand)

*Email: David.Stevens@agresearch.co.nz

Abstract. Sheep milking has not featured strongly in New Zealand. However, the importation of the East Friesian and Awassi breeds has provided an opportunity to enter the sheep milking industry. During the late 1990's some sheep milking occurred though progress was slow due to limited marketing opportunities. Recent developments are providing further impetus for expansion. Three major enterprises have emerged at very different scales and targeting different markets. Each one has their own infrastructure and supply chain. The first are small cheese makers with flocks of 100-300 ewes. These are profitable intensive operations selling sheep cheese into local markets. The second enterprise is a mixed sheep and beef farm of 2200 ha farming approximately 20,000 stock units. Of these, between 3,000 and 6,000 ewes are milked and products include yoghurt and raw milk, sold locally and to Australia. The third enterprise produces ice cream, cheese, milk powder and infant formula for export from a flock of 25,000 ewes. The establishment of significant scale and reliable supply chains has provided a base for the instigation of a research programme to support the further development of the industry. This research programme is jointly funded by both Government and the industry enterprises to address industry-identified issues and opportunities. The programme includes elements of functionality of sheep milk, processing and product composition, sheep production and environmental impact.

Keywords. Dairy sheep – Environment – Feeding – Product composition – Product functionality – Research.

L'émergence de l'élevage des brebis laitières en Nouvelle-Zélande

Résumé. *Jusqu'à récemment, la traite des brebis n'était pas très développée en Nouvelle-Zélande. Cependant, l'importation des races Frisonne Orientale et Awassi a été l'occasion de débuter l'industrie laitière ovine. Pendant la fin des années 1990, la quantité de lait de brebis produite s'est accrue, même si les progrès étaient lents à cause du peu de possibilités de commercialisation. Les développements récents ont fourni un élan nouveau à l'expansion. Trois principaux types d'entreprises s sont apparus à des échelles très différentes et ciblant des marchés différents. Le premier est constitué de petits fromagers avec des troupeaux de 100 à 300 brebis. Il s'agit d'exploitations intensives rentables vendant du fromage de brebis aux marchés locaux. Le deuxième est constitué d'exploitations mixtes d'ovins et de bovins à viande de 2200 ha et d'environ 20 000 têtes de bétail. Dans celles-ci, entre 3000 et 6000 brebis sont traites et les produits, incluant yogourt et lait cru, sont vendus localement et en Australie. Le troisième type d'élevage produit des crèmes glacées, du fromage et de la poudre de lait (y compris du lait pour nourrissons) pour l'exportation à partir d'un troupeau de 25.000 brebis. L'atteinte d'une taille significative et la mise en place de chaines de distribution fiables ont permis le démarrage d'un programme de recherche visant à développer l'industrie davantage. Ce programme de recherche est financé conjointement par le gouvernement et les entreprises de l'industrie, pour aborder les problèmes et opportunités identifiées par l'industrie. Le programme comprend des éléments de fonctionnalité du lait de brebis, de transformation et composition des produits, de production ovine et d'impact environnemental.*

Mots-clés. *Ovins laitiers – Environnement – Nutrition – Composition des produits – Fonctionnalité des produits – Recherche.*

I – Introduction

The New Zealand sheep industry has a long history of innovation, pioneering the first successful frozen meat shipments in 1882 (Hewland, 1958). Sheep milking, however, has not featured strongly in our past. Most recently, the importation of East Friesian (Allison, 1995) and Awassi sheep has provided an entry point as an opportunity to enter the sheep milking industry. During the late 1990's some sheep milking flocks were formed though progress was slow due to limited marketing opportunities. Some recent developments are providing further impetus for expansion. This paper describes the current sheep dairy industry in New Zealand and outlines a research plan to support the future growth of the industry.

II – Description of the New Zealand dairy sheep flocks

Currently the sheep milking flock numbers approximately 30,000 of the 21,000,000 breeding ewes in New Zealand (Agricultural Statistics, 2013). The industry has a range of scale of operation, with several small enterprises (100-300 ewes), one medium enterprise (3,000-6,000 ewes) and one large enterprise (25,000 ewes). The East Friesian breed is the base of all of the milking flocks and average milk production is between 120 and 130 l/ewe/annum. One estimate of the potential of the industry suggests that it may build to more than 2 million ewes (10% of the national flock) within 10 years (Anon, 2013).

The small enterprises primarily provide milk for boutique cheese production and are often vertically integrated with the cheese-making operation. There are less than 10 of these enterprises throughout New Zealand. An example of this type of enterprise, Kingsmeade Cheese, milks 220 ewes on 11 ha and employs 5 staff. Lambs are reared on their mothers for 6 weeks before weaning. Product is available through specialist food outlets nationwide.

The large enterprise (Blue River Dairy) produces ice cream, cheese, and milk powder for export from a flock of 25,000 ewes. The company started milking sheep in 2000, and expansion began with further investment in 2002. There are between 1,000 and 3,000 ewes lambing for 10 months of the year supplying 3 farms of approximately 350 ha each. Lambs are removed from their mothers at birth and artificially reared. Ewes are primarily pasture-fed with some supplementation during the late autumn, winter and early spring. Ewes are intensively recorded and these records are used in a significant genetic improvement programme. Approximately 80% of the milk powder is exported with markets including China, Indonesia, Malaysia, Singapore, and the United States, with a developing market in Korea. A new product, infant formula is about to be launched. Blue River is vertically integrated, owning its farms, milk, and sheep, transporting its milk to the factory, processing the milk into cheese, ice-cream and milk powder, and marketing its products. It employs approximately 70 staff.

The second biggest producer in New Zealand is an order of magnitude smaller, and milks between 3,000 and 6,000 ewes from an available pool of 13,000 ewes and hoggets. The Waituhi Kuratau Farm Trust farms 2715 ha in the Central North Island and has been milking sheep since 2005. Mating is staggered over four months to provide a milking season of approximately 5 months from October to February (spring and summer). Lambs are weaned onto a concentrate diet at approximately 1 month of age before the ewe enters the milking flock. The flock is milked in an 80 bale rotary shed. The milk is either frozen for export to Australia as a raw material for further processing or made into yoghurt for the national market. As demand for yoghurt increases then a greater proportion of the current production will be locally processed. These three enterprises collectively produce 97% of the NZ sheep milk.

III – A research programme for the future

The establishment of significant scale and reliable supply chains has provided a base for the instigation of a research programme to support the further development of the industry. This research programme is jointly funded by both Government and the industry enterprises to address industry-identified issues and opportunities. The programme includes elements of functionality of sheep milk, processing and product composition, feeding and health and environmental footprint and whole farm analysis.

The proposed research program will contribute to growing exports from the emerging NZ dairy sheep industry by providing new science-based evidence of (1) the nutritional and functional characteristics of sheep milk necessary for product development, marketing, and regulatory purposes; (2) optimal nutrition systems to increase net volume and value of harvested milk, and improved early weaning outcomes; and (3) criteria to ensure the environmental sustainability of sheep dairying in the New Zealand grazed pasture environment.

The underpinning methodologies deployed across the entire value chain integrate innovative farm systems research to improve feeding systems and the environmental sustainability of sheep dairying with analytical and functional food research designed to optimise milk production and processing, and substantiate claims for sheep milk-derived ingredients. Results will support the development of products tailored to market and consumer demand for quality and safety. On-farm benefits and associated profitability will assist existing farmers, and promote sheep milking as a compelling choice for new entrants to this industry. The program will contribute to the development of guidelines for sustainable dairy sheep farming to ensure that the industry can operate within the regulatory framework.

IV – Conclusions

In summary, there is enormous potential for growth in the sheep milk industry. Conservative estimates by industry partners suggest that a $200M industry could be created by having between 200,000 and 500,000 ewes in milk. This equates to 2.5% of the national breeding ewe flock and could be achieved by 2030 if, on average, 14 sheep farms (average flock size: 3,500) convert annually to dairy. A holistic value-chain approach to providing research to support sustainable sheep dairying will result in a more attractive industry to new entrants and suppliers, further boosting its growth.

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