

New Zealand Society of Animal Production online archive

This paper is from the New Zealand Society for Animal Production online archive. NZSAP holds a regular annual conference in June or July each year for the presentation of technical and applied topics in animal production. NZSAP plays an important role as a forum fostering research in all areas of animal production including production systems, nutrition, meat science, animal welfare, wool science, animal breeding and genetics.

An invitation is extended to all those involved in the field of animal production to apply for membership of the New Zealand Society of Animal Production at our website www.nzsap.org.nz

[View All Proceedings](#)

[Next Conference](#)

[Join NZSAP](#)

The New Zealand Society of Animal Production in publishing the conference proceedings is engaged in disseminating information, not rendering professional advice or services. The views expressed herein do not necessarily represent the views of the New Zealand Society of Animal Production and the New Zealand Society of Animal Production expressly disclaims any form of liability with respect to anything done or omitted to be done in reliance upon the contents of these proceedings.

This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).



You are free to:

Share— copy and redistribute the material in any medium or format

Under the following terms:

Attribution — You must give [appropriate credit](#), provide a link to the license, and [indicate if changes were made](#). You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

NonCommercial — You may not use the material for [commercial purposes](#).

NoDerivatives — If you [remix, transform, or build upon](#) the material, you may not distribute the modified material.

<http://creativecommons.org.nz/licences/licences-explained/>

PRELIMINARY OBSERVATIONS ON THE MILK SUPPLY OF THE EWE

by

C.R. Barnicoat, Massey Agricultural College, Palmerston North.

While cow's milk is of direct commercial value to this country, ewe's milk, because of its influence on lamb production, is also of very great importance. Nor is the amount secreted inconsiderable, for the twenty million breeding ewes of this country yield annually well over 500 million gallons of a product considerably richer than cow's milk; or in other words ewes yield milk equal to half the quantity obtained from our dairy herds.

The objects of an investigation on the milk supply of the ewe are mainly as follows:

- (a) To find whether there is a correlation between the milk supply of the ewe and the rate of lamb growth, if such a correlation exists.
- (b) To find suitable simple methods for estimating the milk production of ewes.
- (c) To compare milking capacities of ewes of different breeds and (possibly) strains.
- (d) To find the effect of various management conditions on the milk supply of the ewe and therefore on the resulting lamb growth.

If it can be shown that the milk of the ewe is an important factor in determining the rate of growth of the lamb, it would of course be advantageous for fat-lamb producers to select their ewes on the basis of milk yielding capacity in addition to the other characteristics considered desirable at present.

There are numerous references to ewe's milk in the literature but many of these are merely lists of chemical analyses, though some workers have made attempts to correlate the ewe's milk supply with the rate of growth of the lamb. In particular Neidig and Idings (U.S.A. in 1919) and Bonsina (South Africa in 1939) have carried out critical studies, that of Bonsina, working with Merino crossbreds and using statistical methods of interpretation, being most comprehensive.

Pierce (Australia in 1934), working with Merinos, has also given detailed analyses of ewe's milk. In New Zealand the only records traced have been Gill's thesis on "Pulpy Kidney", in which analyses made by Aston, James and Simpson are listed.

The present investigation is now in its third season and the results so far obtained are encouraging and support the findings of other workers.

Experimental: Measuring the Yield: The method used for measuring the milk supply is that of weighing the lamb before and after suckling at five definite intervals during a 24 hour period, the total gains by the lamb being taken as the daily output of its ewe. In the case of twins, however, it is necessary to average their combined result because the actual intakes are greatly influenced according to which of the pair is the first to suckle.

In 1941, using crossbred Southdown ewes - 7 with twins, 4 with singles - the correlation between the milk yield of the ewes and the gains in the eighteen lambs at 12 weeks, was 0.788, a highly significant value. This accords quite well with Bonsina's results with South African Merino crossbreds (0.812 for 11 weeks).

Lactation curves for ewes have also been obtained for the 1941 and also for the 1942 seasons, using a group of 60 lambs. It is similar to the lactation curve for dairy cows, rising slightly to a maximum (during the second to fifth weeks), thereafter falling steadily, and at 100 days (near weaning) the average daily yield is only about 23 ounces, in contrast with about 53 ounces obtained at the peak period. (It is questionable whether the later results really indicate the "milk supply of the ewe", but rather the "appetite of the lamb", for many of the lambs refuse to avail themselves of the whole supply even after an overnight fast.)

Analyses of Ewe's Milk: Ewe's milk is considerably richer than cow's milk as shown by the following results (average of 12 milks) in comparison with the mixed herd milk of cows, obtained at the same period during the 1941 season.

Comparison of Ewe's and Cow's Milk

	<u>Ewe's Milk</u>	<u>Cow's Milk</u>
Fat	6.15%	4.10%
Protein (N x 6.38)	5.15%	3.30%
Ash	0.88%	0.77%
Lactose (by difference)	<u>4.21%</u>	<u>4.23%</u>
<u>Total Solids:</u>	<u>16.39%</u>	<u>12.40%</u>
Calories / 100 c.c.	93	67

By means of hand-milking usually little more than half of the milk present can be obtained, however, and as the percentage of fat rises steadily as the milk is drawn, it is considered that the true fat percentage is considerably higher than recorded here and by numerous other workers (except those dealing with the proper milking ewes found mainly in the Mediterranean countries).

At the present time work is being carried out using injections of pituitrin to promote a more complete ejection of the milk in order that a true estimate of the fat - the principal nutrient - can be arrived at.

Ewe's Milk Fat: Analyses of the fat from mixed ewe's and cow's milk shows that ewe's milk fat is paler and softer than cow's milk fat, and that it contains more unsaturated but less volatile fatty acids. Although much paler and consequently poorer in carotene (Vitamin A precursor) than cow butterfat, the total Vitamin A content of the two milks is similar.

Digestibility: The digestibility of ewe's milk and cow's milk both proved to be similar. The coefficient of digestibility of the fat, protein and sugar were high, all above 96%.

The work is proceeding along several lines and it is hoped to carry out more extensive work, comparing various breeds, during the next two seasons.

DISCUSSION

Dr Filmer: Emphasised the importance of the study of lactation in the ewe as this was probably the most important single contribution of the ewe to the production of a fat lamb, and consequently was one of, if not the most important character in the genetic make-up of the ewe from the economic standpoint.

Mr Ward: Asked whether it would be possible to obtain complete information on the butterfat production of milking ewes as Dr Barnicoat had indicated some extremely interesting facts about the fat production. For instance, there seemed to be a strong suggestion that fat production was