

Effect of Period of Lactation on Milk and Quality of Butter.

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During the month of January, 1897, we completed our third experiment with milk from strippers and fresh cows, for butter making.

The test for fresh cows' milk was taken from four that had been milked for a period of sixty-two days from calving.

The strippers, seven in number, had been bred for a period of six and a half months, on an average. Special precautions were taken that the milk in no way could become mixed, as one of our men went night and morning to the barns to see the cows milked, and the milk put in its proper place after it was thoroughly aerated. It was then taken to the creamery and kept until it was separated. Both lots of cows were fed on the following rations: To each cow were given daily: Sheaf oats, 8 pounds; clover hay, 6 pounds; corn, 6 pounds; barley meal, 3 pounds; and sugar butts, 5 pounds.

Total amount of milk from fresh cows, separated, was 972 pounds, and that from strippers was 886 pounds.

Date	Kind of milk used	Amount of milk Separated	Temp cream ripened at	Per cent of fat in cream	Acidity of cream when churned	Temp. churned at	Time occupied in Churning	Amount of fat in Buttermilk
Jan 12.....	Fresh cows	166	70	16	39.6	54	22	.15
" ".....	Strippers	149	70	15	44	55	75	.3
Jan 14.....	Fresh cows	160	75	18	38	48	35	.2
" ".....	Strippers	160	75	22	36	56	45	.3
Jan 16.....	Fresh cows	159	70	17	37	49	26	.1
" ".....	Strippers	147	75	25	36	53	28	.15
Jan 19.....	Fresh cows	162	72	20	35	48	25	.1
" ".....	Strippers	145	73	23	38	54	29	.15
Jan 21.....	Fresh cows	167	70	21	36	52	26	Trace
" ".....	Strippers	134	72	22	37	54	28	.1
Jan 26.....	Fresh cows	158	71	20	36	53	23	.1
" ".....	Strippers	133	74	22	37	56	29	.2

For ripening the above cream a 7 per cent starter of sour skimmed milk was used.

The following are the scores by W. D. Collyer:

Kind of Butter	No. of Tub	Flavor	Body	Color	Salt	Total
Fresh	1	41	29	14 $\frac{1}{2}$	10	94 $\frac{1}{2}$
Strippers	2	39	28	13	10	90
Fresh	3	41	28	14	9 $\frac{1}{2}$	92 $\frac{1}{2}$
Strippers	4	41	29	14	9	93
Fresh	5	41	28	13	9	91
Strippers	6	42	28	14	9	93
Fresh	7	36	28	15	9	88
Strippers	8	41	29	13	10	93
Fresh	9	41	28	14 $\frac{1}{2}$	9 $\frac{1}{2}$	93
Strippers	10	41	28	14 $\frac{1}{2}$	9 $\frac{1}{2}$	93
Fresh	11	41	29	13	10	93
Strippers	12	42	28	14	9	93

Some difficulty was experienced in working small lots of butter, which largely accounts for the quality.

The low score in tub No. 7 was on account of the cream being heated too rapidly, which seemed to give it a cooked flavor.

From the above experiment, and the two former ones published in Bulletins 32 and 33, it would seem that the period of lactation had no direct influence on the flavor of butter. Prof. Dean, of the Guelph Experiment Station, reports the following experiment along the same line: The average score in flavor of the butter made from cows milking under six months was 40.9; for those milking over six months, the score was 41.7; and for fresh milkers the average score of flavor was 41.8.

Prof. F. L. Kent, of Corvallis Station, Oregon, informed the writer of a similar experiment he has conducted, where there was practically no difference found in the scoring of the butter.

We have heard frequent complaints about the difficulty experienced in churning, when cows are far advanced in the period of lactation, especially where cream is raised by the gravity system. These complaints usually occur in the late fall or early winter, when the cows are fed on dry food, of a character to make hard butter.

Frequently improper ripening of the cream accompanies these conditions. We have found no cream but what would readily yield up its fat with proper treatment.

As the cows advance in the period of lactation, the fat globules become much smaller, and the cream becomes more viscous. Where this occurs, some food of a succulent nature should be given that will cause the secretion of milk to be of greater amount and not so viscous.

A strong starter of sour milk will be beneficial to the cream. Considerable amount of acidity should be developed within a reasonable time. It is possible that some of the difficulties experienced with strippers' milk, in the past, has been due to keeping the cream at such a low temperature that it is not favorable to the growth of lactic acid germs, but is favorable to the growth of a bitter putrifactive fermentation product in the cream. In our experiments we used starters in all cases, which possibly accounts for experiencing no difficulty in making good butter from the milk of stripper cows.