

## *Fresh Cow vs. Stripper Butter.*

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The object of this experiment was to study the effect of the period of lactation on butter flavor. The statement is often made that it is necessary to have part of the milk from fresh cows in order to produce butter of good flavor. This subject we investigated by making a comparison of butter made from milk of fresh cows and from those so far advanced in the period of lactation, as to be termed strippers. Considerable difference of opinion exists as to when a cow may be termed a stripper. In this experiment cows that had been milked six months or more were considered strippers. The milk used was furnished by the Farm Department of the College and was the product of the farm herd. The milk was from cows of four breeds: Short-horn, Holstein, Jersey, and Red Poll. The herd was divided into two lots, the first being those that had given milk over six months, and included the following cows:

No.	Name	Breed	Days from Calving
706	Paula Groot 2nd.....	Holstein	277
110	Chinkilela .....	"	254
114	Sout Frankje 2nd.....	"	249
105	Clothilde Metji.....	"	199
710	Euphrosyne 2nd.....	"	192
172	Frankje's Grand Daughter....	"	185
160	Thelerne .....	"	185
206	Proud Duke's Ideal.....	Short-horn	263
292	College Lady.....	"	225
354	Favorella .....	Jersey	186
352	Nicolette .....	"	185
301	Jenny .....	"	356
490	College Silvia 2nd .....	Red Poll	254
407	Fitz Roy Belle 2nd .....	"	240
703	Princess of Black Hawk.....	Holstein	339

Average..... 239 days.

The second lot composed of those which had given milk for less than six months was as follows:

No.	Name	Breed	Days from Calving
243	College Ideal.....	Short-horn	51
152	Metje 4th .....	Holstein	35
190	Sybil Clothilde .....	"	101
103	Grinnell's Harpke .....	"	169
425	Chief's Beauty 2nd .....	Short-horn	94
104	Senora Grankje .....	Holstein	66
710	Belle of Ames .....	"	129
286	Sappho .....	Short-horn	72
209	Belle of Squaw Creek .....	"	177
402	Willow Crocus 2nd .....	Red Poll	139
403	College Silvia .....	"	173
38	Grade .....	Gr Short-horn	141
21	Grade .....	"	72
155	Frankji 3rd.....	Holstein	73
330	Nicolette 2nd .....	Jersey	128
106	Grinnell's Pride.....	Holstein	132
213	Proud Duke's Reward .....	Short-horn	30
24	Grade .....	Gr Short-horn	151

Averags period of lactation..... 107 days.

During this experiment the cows were on a good blue grass pasture and were being fed in addition one quarter pound of cottonseed meal at the beginning of the period. The cottonseed meal was gradually increased, until at the end of the period of experiment, they received one pound each per day. Each milking was done under our personal supervision that no error might be made from mixing the milk from the the two lots. After being milked and strained into cans the milk was hauled direct to the creamery. When the evening milk was taken to the creamery it was aerated and put in an ice box which was filled nearly to the top of the cans with ice and water. This kept the milk in good condition. In the morning, the morning's milk and the evening's milk from the ice box were separated in a large Alpha machine, and the cream put in the ice box. The following morning the cream separated, was added, and the whole lot ripened in a small vat.

The milk from the fresh cows was separated and cared for in the same manner as that from the strippers, care being taken at all times that the two lots were kept separate. The amount of milk received averaged 210 lbs. per day for the strippers and 230 lbs. for the fresh cows. In each lot of cream churned one-half of the amount had been kept in the ice box for 24 hours. This, we found, somewhat of a disadvantage in attempting to produce butter of a high flavor. We have found that the best butter is usually produced

when sufficient cream is separated to begin ripening at once. In order to make a closer connection between flavor and period of lactation we used in ripening all but two of the strippers lots, a starter of skim milk prepared from the mixed milk from cows No. 703 and 301, the period of lactation of which was shown in the table as, 339 and 356 days. The milk used as a starter was set in a common pail over night, skimmed in the morning and when the skim milk was sufficiently soured it was added to the cream. As a starter for the cream from the fresh cows we used the milk from No. 213, which had been milked thirty days.

The cream from the strippers was churned first on June 22nd, and the second lot from the same cows on June 24th, and from that on through the experiment the cream from the fresh cows one day and from the strippers the next. The conditions were made as nearly constant as possible. When each churning was completed a ten pound tub was filled with the butter and sent to W. S. Moore, No. 2, Clark street, Chicago, official scorer for the Elgin Board of Trade. He knew nothing of the nature of the experiment. Some difficulty was experienced in shipping these small lots. A few of the first lots were reported heated, owing to the train being late, but as both lots were shipped together they would both be subject to the same disadvantage.

Unfortunately Mr. Moore's scores on the first four lots were misplaced by his stenographer and he was unable to return them to us, but as the first two were both strippers there was but one comparison lost. The butter was all examined here before being sent and there was no difference noticed between the two lots. The scores of the others are shown in the tables. The butter was scored according to the numbers on the tubs. Some difficulty was experienced in making such small lots. The highest score in both lots was the same, being ninety-five each as will be seen by the score. The butter made from stripper milk averaged a little higher than that from fresh cows, but this was mainly due to the difference in the acidity. The following tables show the conditions of manufacture and the scores.

The scores as returned by Mr. Moore are given below.

No.	Lot	Starter used	Temp. ripened	Temp. churned	Acidity	Minutes churned	Salt used per lb.
No. on tub—5	Fresh	5 lbs No. 213	68°	50°	32	30	$\frac{7}{8}$ oz. of Diamond Crystal
No. on tub—6	Strippers.	6 lbs No. 703, 301.	68°	54°	32	20	$\frac{7}{8}$ oz. of Genesee

	Flavor	Body	Color	Salt	Package	Total
No 5 .....	30	30	9	10	5	84
No 6 .....	37	30	10	9	5	91

No.	Lot	Starter used	Temp. ripened	Temp. churned	Acidity	Minutes churned	Salt used per lb.
No. on tub—7	Fresh	7 lbs No 213	68°	50°	31	18	$\frac{7}{8}$ oz. of Genesee
No. on tub—8	Strippers.	12 lbs No. 703	75°	49°	36	28	$\frac{7}{8}$ oz. of Genesee

	Flavor	Body	Color	Salt	Package	Total
No 7 .....	35	28	10	10	5	88
No 8 .....	39	30	9	9	5	92

No.	Lot	Starter used	Temp. ripened	Temp. churned	Acidity	Minutes churned	Salt used per lb.
No. on tub—9	Fresh	10 per ct. butter-milk	72°	53°	34	30	$\frac{7}{8}$ oz. of Genesee
No. on tub—10	Strippers.	None	75°	54°	33	20	$\frac{7}{8}$ oz. of Genesee

	Flavor	Body	Color	Salt	Package	Total
No 9 .....	40	30	10	10	5	95
No 10 .....	40	30	10	10	5	95

From this and similar experiments as reported in Bulletin No. 32, it would seem that the period of lactation has no effect on the flavor of butter. That is when the milk is handled by the separator system. Under a gravity system there may be some difference as so many dairymen claim and the following is a possible explanation. The fat globules, as is well known, are smaller in advanced periods of lactation and when cream from such milk is raised by the gravity process, more time is required for the cream to rise than when the milk is from fresh cows whose milk contains globules of much larger size. We have found that cream or milk when kept at a low temperature for sometime develops a somewhat bitter flavor. There seems to be an organism which grows at that low temperature and which gives a flavor to the cream and to the butter. It is possible that this is why strippers milk is generally considered as inferior for the production of butter.