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# Why Milk Tests Vary

By **Burdell Alfke**, assistant in dairy science,  
and **Hollis D. Hall**, extension dairyman

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## Why Milk Tests Vary

Many factors may cause variation in the fat content of milk. Fat tests have been known to vary as much as 2% from one milking to the next. Under poor management and rough handling they may vary even more. There will be less variation in a well-managed herd than in one where the management changes often or is poor. Milk from a fairly large herd is reasonably constant in its fat content from day to day because it is a mixture of milk from many cows, but it may show some seasonal changes.

### A number of physiological factors affect the fat content of milk:

The breed of the cow affects the milk fat test. Tests vary not only between breeds but among individual cows within breeds.

Table 1. Variations in Fat Content of Milk from Cows of the Same Breed

Breed	Lowest percent fat*	Highest percent fat*	Average test
Ayrshire .....	2.92	5.66	4.0
Guernsey .....	3.65	7.66	5.0
Holstein .....	2.60	6.00	3.5
Jersey .....	3.28	8.37	5.4
Brown Swiss .....			4.1

\*Percentages taken from Illinois bulletin No. 325.

The stage of lactation has some influence on fat tests. Tests usually decrease the first 2 or 3 months of the lactation and then increase until the end of the lactation.

As a cow becomes older, the milk fat test can be expected to decrease slightly.

Cows in good flesh tend to test higher; however, excessive flesh does not result in a marked increase in the fat content of the milk.

Most diseases that are severe enough to raise the body temperature or to reduce the appetite will cause a decline in milk and an increase in fat content. Heat periods seem to affect the test in much the same way. Mastitis, on the other hand, tends to decrease the fat content.

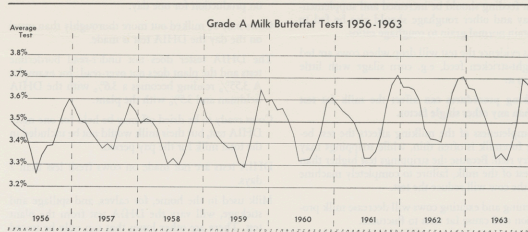
Exercise tends to increase the fat content of milk. Because of this nights' milk usually tests higher than mornings'. The shorter the interval between milkings, the richer the milk is.

### Weather, temperature and humidity have some effect on milk fat tests.

Weather conditions and the season of year play an important role in milk fat tests. Tests increase during the fall and winter and decrease in spring and summer. Abnormally high or low temperatures during any season of the year will affect the volume of milk produced and fat test. In general, conditions which increase volume lower the test and vice versa.

The environmental temperature to which cows are exposed affects the milk's test. Research work has indicated that lower temperatures cause a rise in fat content and vice versa. Seasonal variations may be

Figure 1. Seasonal and Weather Effects on Milk Fat Tests\*



\*Sioux Valley Milk Producers' Association, information acquired through Federal Milk Marketing Orders on Grade A milk.

largely due to environmental temperatures and relative humidity.

When cows are exposed to stormy weather, extremely hot weather or other discomforts, the test is reduced.

#### Feeding practices can affect the milk test.

It is generally accepted that recommended feeding practices do not appreciably affect the fat test. When a cow is adequately fed, no long range change can be made in the fat content of milk; but unbalanced rations will cause extreme and varied fluctuation in tests.

When cows are underfed to the extent that they have to draw upon stored body fat, there is usually a temporary increase in test; however, along with the increased test will be a decreased milk yield.

Feeding finely ground hay and grain, and very high levels of grain that will reduce forage intake drastically, will lower fat tests. Cows limited to 6 pounds or less of hay per day with adequate energy provided by concentrates may decline rapidly in milk fat tests. Roughages normally furnish energy at lower costs than grains and should be fed liberally. Cows should consume about 2 pounds of dry matter per 100 pounds of body weight daily in the form of roughage (see fact sheet 158).

Generally spring pastures increase the volume of milk production, accompanied with a drop in milk fat tests. Grazing succulent immature grass in early spring may actually restrict dry matter intake of the cows to such an extent that milk production from high producers will fail. In hot weather cows may not eat enough roughage from dried up pastures. Grain feeding should be increased and supplemental hay and other roughage should also be fed to maintain normal grain to roughage ratios.

There is evidence the test will drop when cows are fed drought-stricken feed, e.g. corn silage with little corn in it.

**Milking procedures can affect the milk fat test more than any other single factor.**

The completeness of the milking affects the test because foremilk is often thin, while strippings may be very rich. Because the strippings test higher than the rest of the milk, failure to completely machine strip the cow will reduce the test.

Frightening and exciting cows will decrease milk production and cause fat tests to fluctuate.

Prepare the cow for milking by washing the udder with a warm sanitizing solution and checking each

**Table 2. Variations in Test of Milk from Same Cow\***

Milk sample	Fat content percent
First stream .....	1.1
First quart .....	1.4
Second quart .....	2.0
Third quart .....	3.1
Fourth quart .....	4.0
Strippings .....	7.6
Composite .....	3.26

\*H. H. Sommers, "Market Milk and Related Products"

quarter for mastitis with a strip cup. This practice will save time in milk letdown and bring about faster milking.

Place the machine on the cow within 1 minute of preparation. Longer delay will decrease milk and fat production. Abnormally slow milking may decrease fat tests.

Keep the milking procedure uniform. If the milking procedure is hurried, important details such as proper machine stripping may be neglected, resulting in lower fat tests.

It is recommended that DHIA fieldmen do not check-test milk processing plants. This practice may lead to misunderstandings. DHIA and plant tests cover different time periods and are conducted under different conditions. DHIA and plant tests will generally agree; however, variation in these tests can be attributed to the following reasons:

Plant tests are obtained from a composite sample of all milk marketed; whereas the DHIA test is based on production for one day.

Cows may be milked out more thoroughly than usual on the day the DHIA test is made.

The DHIA tester does not under-read borderline tests and the plant does not over-read; for example; A 3.55% reading becomes a 3.6% with the DHIA fieldman and 3.5% with the plant.

Cows ready to be dried off may be held for one more DHIA test, but their milk would not be included in the total milk for the pay period.

DHIA tests are not made on cows fresh less than 7 days.

Milk used in the home, for calves, and spillage and stickage, will vary the DHIA test from the plant test. There are other losses that can only be traced to on-the-farm milk users and milk handling procedures.

Using milk from low-testing cows in the home will raise the plant test.

Skimming part of the cream from the milk will reduce the test. For example, the removal of one quart of top cream testing about 25% from a 10-gallon can of milk will reduce the test about 0.6% based on 4% milk.

High or low testing milk fed to calves will affect com-

posite tests. Fat test disputes have occurred when this fact was forgotten.

Overfilling milk cans causing stickage of cream to top and lids results in loss of fat.

Milk in bulk tanks should be agitated for 5 minutes before pickup and sampling to prevent cream stickage at top of tank and allow for a representative sample to be taken.

High butterfat test and high volume milk production are important requirements for successful dairying. Good dairy management can improve the gross income from dairy farms in South Dakota. This is why it is important to understand some of the known factors that can affect butterfat tests and volume.

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