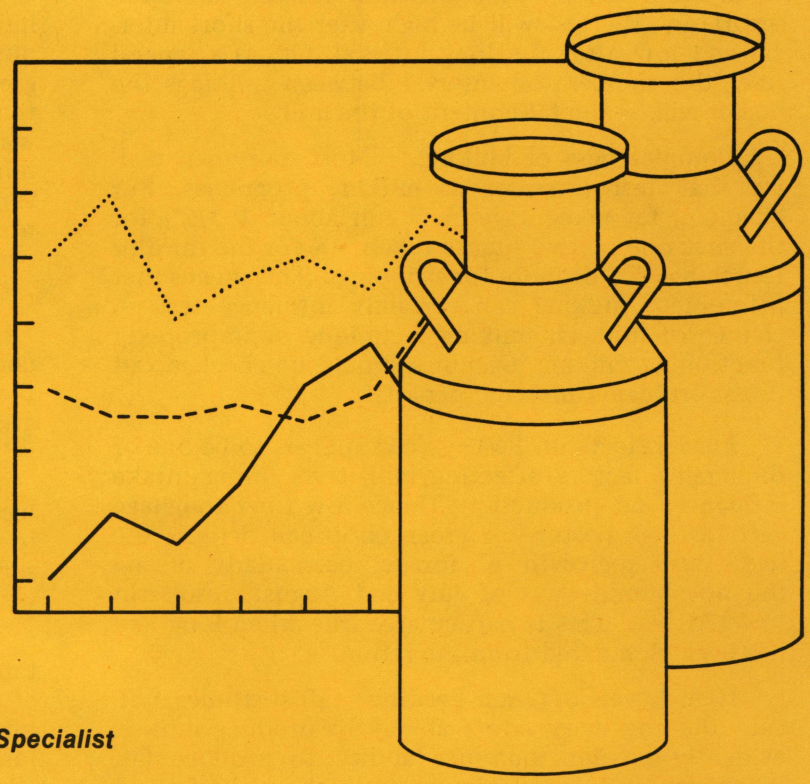
University of Idaho
College of Agriculture
Cooperative Extension Service
Agricultural Experiment Station

Current Information Series No. 396
May 1977

Why Milk Tests Vary



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Dairymen who market their milk to milk plants frequently complain about variations in the milk fat test. Percent fat in milk probably has been of interest and a source of controversy since the first cow was milked. Complaints about low milk fat tests have been leveled at milk plants and DHIA testers for many years. In most cases, testing is not at fault; other factors are to blame.

Variations in fat tests of milk are the rule rather than the exception. Variations will occur under what we call normal conditions. Information from a DHIA report from Oregon shows a daily test check on a herd in Oregon varied as much as 1.2% over a 31-day period.

Some of the factors involved in fat test variations are discussed in the paragraphs below:

Heredity — Heredity is one major controlling factor, and major emphasis is placed on it in our sire selection programs. Fat test has a heritability coefficient of about 60% which means that about 60% of the variation among cows is due to inheritance.

Breed — Animals of various breeds vary a great deal in fat production. Jersey, Guernsey, Ayrshire, Brown Swiss, Shorthorn and Holstein breeds rank from highest to lowest in that order for fat content of milk.

Stage of Lactation — Cows usually test high the first month or two after calving, then decline to a low point and increase again during the last half of the lactation. Conditions may affect this typical picture. Cows that are fatter at calving time have higher initial fat tests. Cows in poor condition will tend to have lower tests, regardless of stage of lactation.

Temperature — Sudden temperature changes can cause variations in milk fat tests. High temperatures tend to lower test and low temperatures usually increase the test. Although stage of lactation complicates the picture, DHIA studies show higher tests in winter than in summer. However, if the temperature is so high that milk production is markedly reduced, fat test may go up.

Diseases or Infections — A disorder such as ketosis can cause a decrease in milk production with a marked increase in test. Any other infection that causes the cow to go off feed can result in above normal fat test. In contrast to ketosis, mastitis usually will cause a decrease in both milk production and test.

Age — Age has a minor effect with test declining slightly as the cow grows older.

Milking Interval — Milking at unequal intervals will cause no change in overall test compared with equal intervals. However, if each milking is tested separately, the test will be high after the short interval and low after the long interval. Or, as a general rule, the shorter the interval between milkings the higher will be the fat content of the milk.

Completeness of Milking — Most dairymen realize that test increases as milking progresses. For example, fat percentages will run about 1 1/2% for the first one or two quarts taken, 4% for the third or fourth and 7% or more for strippings. This means that incomplete milking can certainly influence test. A change of milkers, milking technique or improperly functioning milking machines should be checked out if test problems arise and persist.

Feed Effects on Test — Feed appears to be one of the major factors affecting milk tests. Fiber intake influences fat production. Hence low fiber roughage such as lush pasture or green chop can depress the test. Lush regrowth of forage, particularly during the hot humid days of July and August, results in lowered test. This is particularly true when long hay has been eliminated from the ration.

High Levels of Grain Feeding — Most studies indicate the the dairy cow's ability to produce milk is evidently greater than her ability to produce fat. When you push for maximum production, the fat test may drop slightly. The test can usually be raised by decreasing grain and increasing roughage, but production will likely drop. When a cow is on a high concentrate ration she is quite likely to cut back on roughage. Concentrate levels below 60% of the total ration, on a dry matter basis, will not decrease fat test.

Pelleted Concentrates — Feeding pellets causes small decreases in test. Most studies show between 0.1% and 0.2% decrease if the hay is not restricted with the pellets. From a practical standpoint, pelleting grain for dairy cows has some advantage in terms of ease of handling and fast consumption by cows.

Grinding or Pelleting the Hay — Finely ground hay as a sole source of roughage, whether pelleted or not, reduces fat percentages. The effect appears to be greater when more concentrate is fed together rather than separately. Apparently milk fat is depressed when finely ground hay is fed because the feed is more rapidly fermented in the rumen and the proportion of volatile fatty acids is changed. This effect is observed only when hay is finely ground and does not occur with chopped hay or hay wafers.

Rations Low in Roughage, High in Concentrates — Fat test will drop when roughage is restricted and concentrate is fed at high levels. In general, the lower the fiber content in either grain or roughage, the greater the depression of milk fat test.

Special Additives — Additives such as sodium bicarbonate and magnesium oxide have been shown to improve fat tests. Fat test increased 0.3% when sodium bicarbonate was fed at 0.9 pound per day or with magnesium oxide at 0.4 pound per day.

Other products such as lard, urea, sodium acetate and thyroprotein have not been practically effective. There seems to be some depression of intake, as well as a lack of information on the effects of long term feeding of these materials. Therefore, adding fiber to the ration is the most practical solution to the problem.

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