

How fast does raw milk stratify?

The effect of holding time and depth on the butterfat test of samples taken from unagitated transports.

The most common method used to sample in coming transports still involves grabbing a sample off the top of the tank.

For such vital pre-pump off checks on the antibiotic content or microbiology of a load, this has to be done to prevent contaminating your existing supplies.

Because fat and bacteria concentrate on top, it's very important to consider how stratified your loads are before sampling. Taken from a study done in Canada by Dr. Fred van der Voort, Figure 1 shows how quickly, and to what degree, milk stratifies in transports. In this part of the study, samples were taken from various depths in transports which sat for up to 18 hours before pump off. Each line in the graph reflects the tests of the milk at depths ranging from the surface (0) to 36 inches (90 cm.) below the surface.

What does it mean?

An important point of this study is that the test difference in the layers becomes significant after as little as 30 minutes of holding. This means that the old notion that stratification isn't a problem because "my loads are all right in from the farm", probably isn't valid.

Milk stratifies quickly, and you have to be careful interpreting your data - especially if you are taking a dipper sample off the top of the load where fat and bacteria will concentrate.

What can you do?

If you want to go to the trouble and expense, you can try to agitate every load before pump off. Remember however, properly agitating tankers is difficult due to their shape.

Even if you do agitate, -and especially if you don't, using our Pro-Rata Strata™ Sampler* will improve the accuracy and reliability of your pre-pump off samples. By core sampling all the layers in a load, the Strata will help you avoid the sampling problems caused by milk stratification.

The Pro-Rata Strata™ Sampler has been determined to meet the standards for use under the Grade A PMO by the U.S. Food & Drug Administration

How much agitation is needed before sampling?

Although it would be nice to specify a magic length of time when every tank of product has gotten enough agitation, it isn't practical. The type of agitator combined with the volume and type

of product and the shape of the tank makes every situation different. An old 3A standard can be used as a yardstick, however. This rule says that milk is agitated enough when 2 samples from a tank vary by not more than plus or minus 0.1% on an AOAC approved fat test. It would be interesting to know if most pre-pump off samples met this standard!

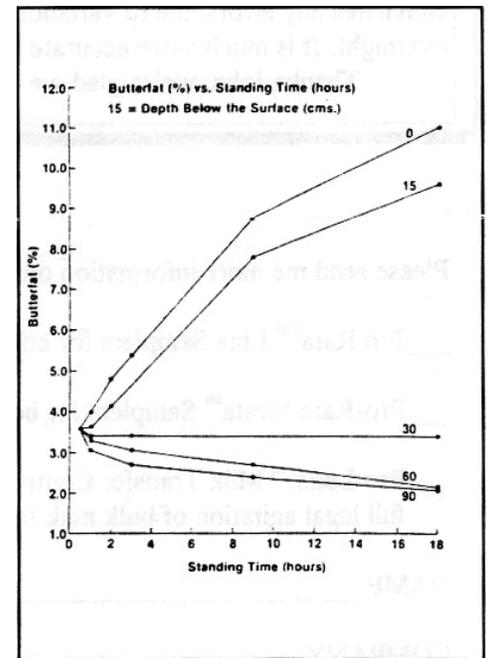


Figure 1. Butterfat vs Standing Time As a Function of depth

