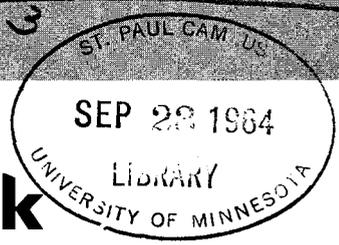


MN 2000 FSDI 8



Handling Milk in Bulk

DAIRY INDUSTRIES NO. 8

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Making a success of a bulk milk operation is the job of producer, hauler, and processor. Accurate measurement of milk and effective sampling are keys to this success. If hauler and producer have a mutual understanding of problems involved, a healthy working relationship and fair treatment of all are assured.

Purposes of this fact sheet are to: (1) provide a guideline for haulers in pickup procedures, and (2) explain the problems in the hope of promoting better understanding.

STEPS IN BULK PICKUP

At the Plant

1. Before starting on route, check the sample case. Be sure it is well iced during summer months.

Samples taken from a bulk tank must reflect the true condition of milk as it is received at the plant. The producer is not responsible for changes that take place in transit or during storage of samples prior to testing.

2. If you use a sampling dipper, be sure fresh sanitizer is present and of correct strength. Every precaution must be taken to prevent contamination of milk through sampling devices.

At the Farm

1. Wash hands after bringing hose in through milkhouse port. Your hands constantly contact potential sources of undesirable contamination. While you work, transfer of bacteria from hands to milk is readily possible.

2. Check milk for abnormal odor, color, physical condition, or foreign matter. If some question concerning odor exists, warm a small sample to about 70°F. Any off-odor is more readily apparent at that temperature.

This is the only opportunity to assess milk quality before the tank load is mixed with other loads in the truck.

Dairymen should have a well ventilated milk room to make this task as easy as possible. Under the best conditions odor evaluation is not easy. Barn odors mask off-odors of milk.

3. Check temperature of milk and level of tank. Milk temperature should be below 40°F. Bacterial quality is directly related to holding temperature. A quick check can assure you that the compressor is operating normally. An upward trend in temperature can indicate potential refrigeration problems.

Level must be determined to assure accurate measurement of milk. Tanks do settle out of level.

4. Before measuring, be sure milk is not surging. If you must shut off the agitator, wait at least 3 minutes for milk to quiet. On some tanks a 10-minute wait may be necessary. This waiting period cannot be slighted. An overreading of many pounds results if milk is rippling when measuring stick is inserted.

5. Remove measuring stick. Wash thoroughly in warm water with cleansing agent. Dry thoroughly with a disposable tissue.

Milk creeps up on a dirty or wet measuring stick. If measuring stick is warm, air moisture will not condense on it. Milk rooms must be equipped with hot and cold running water.

6. Insert stick, remove, and read. Take reading only if milk line is absolutely flat. An irregular or sloped line indicates a dirty or moist stick or a lopsided tank level. The reading will be in error.

Good agreement between volume measurement of milk in bulk tanks and check weights of

delivered milk in trucks can only be obtained by handling and reading measuring stick in the above manner.

7. Record reading and make conversion to weight by use of chart. Be sure charts have no printing errors. Producer's receipt should list stick measurement, pounds, odor, temperature, date, and time of pickup.

8. Start agitator and note time. At least 3 minutes of agitation are necessary to secure a representative milk sample. When milk level is very low or very high or agitation is not efficient, a longer duration is necessary.

Check installations initially to determine agitation efficiency. Take samples from four corners and center of tank. To meet 3-A standards, these should agree within 0.2 percent (2 points) by the Babcock test after 5 minutes agitation.

9. Take sample. For fat testing a 10 milliliter sample is required for daily pickup, 20 milliliters for every-other-day pickup. A uniform sample size is acceptable unless wide daily variations in test and weight occur. In such cases use "proportionate" sampling. Increase sample size uniformly with increasing amounts of milk.

If the sample is to be used for bacteria test, use sterile bottles and sampling technique.

Filling sample bottles or tubes full or nearly full helps prevent churning. And samples to be checked for rancidity must not receive excessive agitation enroute--full bottles minimize foaming agitation which causes rancidity.

10. Place sample in refrigerated compartment immediately. Cold temperatures retard tendency to churn. Churned milk cannot be sampled accurately for butterfat testing.

Bacteria numbers and rancidity must not increase. Samples that arrive at the plant must fairly represent milk condition.

11. Pump all milk into truck.

12. Disconnect hose as soon as tank is emptied. Soon the tank must be rinsed out. With the hose unattached, rinsings do not get into the milk. Added water is adulteration. And rinse water may contain bacteria that can contaminate the load unless this precaution is observed. Quality tests cannot account for bacteria added after sampling!

13. Rinse tank and floor free of milk.

14. Before departing, be sure agitator is shut off and rear compartment in tank truck is closed.

MANAGEMENT CHECKS

For accounting purposes and for discovering routes in which losses are excessive, check-weighing is necessary. Increase accuracy of check-weighing by:

- Inspecting scales regularly.
- Balancing scales daily.
- Not weighing on snowy or rainy days.
- Not weighing in the open on a windy day.
- Waiting for tank to stop surging.
- Having a good man operating scales.
- Not inserting sticker until scale stops moving.

Check farm butterfat test against tank truck milk test--they should closely agree. This can be done as follows:

<u>Farm</u>	<u>Test</u> <u>(percent)</u>	<u>Pounds of</u> <u>Milk</u>	<u>Pounds of</u> <u>Butterfat</u>
A	4.0 x	3,200	= 128.00
B	3.0 x	2,400	= 72.00
C	3.5 x	4,000	= 140.00
D	4.0 x	<u>2,800</u>	= <u>112.00</u>
	Totals	12,400	452.00

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Then $\frac{452}{12,400} \times 100 = 3.6$ percent average producer test. This should check closely with truck milk test.

OTHER CONSIDERATIONS

Occasionally, yellow flakes may be seen floating on the surface of bulk milk--these may be churned butterfat. High temperatures and excessive agitation can cause churning. Mastitis may result in an unstable milk with possible appearance of yellowish particles that are not butterfat.

Considerable churning would have to occur before the butterfat test would be altered. To lower the test on 1,000 pounds of milk 1 point (0.1 percent) from 4.0 percent to 3.9 percent requires the loss of 1 pound of butterfat. It is doubtful that losses ever reach that magnitude.

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