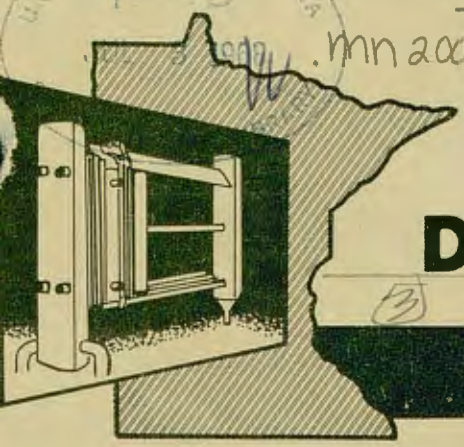

Minnesota Dairy Products Processor

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BUTTERFAT TESTING

With today's narrow profit margins, accurate butterfat testing is more important than ever. While this may seem like "old stuff" a few comments might be in order. Small errors become more meaningful as dairy plants handle ever greater amounts of product.

TEST PROCEDURES

The only official test in Minnesota is the Babcock test. Several states permit the Gerber test as an optional procedure. Generally, the Gerber test is considered slightly more accurate than the Babcock test; it is usually read to within half a point (.05%) while the Babcock may be read to only the nearest point (0.1%). For anybody interested in a test procedure for maintaining composition control of market milk products the Gerber procedure might well be considered. It is both versatile and accurate and can be used on the majority of products handled in market milk plants.

WHAT DIFFERENCE DOES IT MAKE?

In a sense, at least for the present, we are stuck with a procedure -- the Babcock test--which is accurate only to the 0.1% level. This is not a small potential error. Suppose you are receiving a million pounds of fat each year. Suppose also that sloppy testing and inherent errors combine to produce an average error of 0.1% (one point) on the high side. Your loss is 1,000 pounds of butterfat. At 65 cents a pound this is a $650 loss. A large plant might handle 10 million pounds of butterfat, and the loss would be 10,000 pounds of fat or $6,500.

Two points are clear. (1) Accurate testing is essential and (2) there is a need for more accurate, more foolproof methods of testing. The Milk-O-Tester, currently being investigated by Roy Ginn at the Twin City Quality Control Laboratory, shows real promise.

A LOOK AT SOME CAUSES OF ERROR IN FAT TESTING

L. C. Thomsen of the University of Wisconsin lists several causes of error in the Babcock test and their significance. These are:

Procedure	Babcock Test % Too High*	% Too Low*
1. Centrifuge operated too long (38 minutes).	0.09	-----
2. Reading tests too hot (175-180°F.).	0.05	-----
3. Speed of centrifuge too high (200 r.p.m.).	0.02	-----
4. Water bath temperature too low (120°F.).		0.03
5. Centrifuge operated too short a period (4.5 min.).		0.07
6. Speed of centrifuge (20-in.) too low (200 r.p.m.).		0.11

*These are average values.

How long has it been since you took a really close look at your testing technique?

BULK DENSITY

We're into the season when bulk density may be a problem in dry milk operations. A few reminders of factors related to bulk density might be in order.

Bulky powders occur when there is a narrow range in powder particle size (all the particles are of uniform size). Dense powders occur when there is a wide range in powder particle size.

The problem can be likened to a barrel filled with baseballs. This would be a bulky fill. You could get better packing (a more dense fill) if you mixed golf balls with the baseballs, and even more dense fill if you added marbles. The smaller items tend to fill the gaps. The same is true for milk powder.

If your powder is too bulky i.e., you can't get the declared weight of powder into the package, then you must attempt to get a wider range in particle size. This can be done in several ways. In general you will have to alter drying conditions to provide a greater number of large particles. This can be done by:

1) Decreasing the infeed pressure

2) Increasing the viscosity of the condensed milk:

   a. lower the infeed temperature

   b. increase the solids of the condensed

   c. increase the preheat temperature if possible (affects heat treatment of final product)

3) Increasing the nozzle orifice size. This will give bigger particles.

4) Attempting to prevent loss of "fines" (provide conditions that will reduce stack losses)

If your powder is not bulky enough i.e., it compacts too solidily, then you need a more uniform range in particle size. This can be accomplished by:

1) Whipping air into the condensed milk (affects <u>particle</u> density)

2) Sieving out the fines and filling the packages with coarse powder, or perhaps with fines, but you can't mix the two.

3) Lowering the solids of the condensed milk. This will decrease the efficiency somewhat, but you don't have to lower the solids very much. Lowering solids yields a finer spray and a narrower range in particle size.

4) Reducing the nozzle orifice size. Again you get a finer spray.

5) Increasing the condensed feed temperature. This will reduce viscosity and give a finer spray.

Procedures will vary with the type of drier and with other powder standards such as moisture, solubility index, etc. which must be met.

SOME CHANGES IN INSECTICIDE REGULATIONS

A few changes have occurred in the regulations concerning use of insecticides on dairy farms:

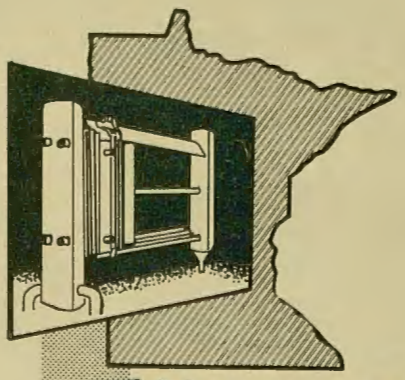
For use on cows:

1) Pyrethrins may be used but not with the synergists piperonyl butoxide or sulfoxide. Synergists are allowed but not the ones indicated. Stocks should be checked to be sure that none of the older formulations are being distributed or used.

2) Thiocyanates (Lethane and Thanite) are no longer permitted for use on cows.

In dairy barns:

There is only one change that should be noted. Bomyl baits are no longer approved inside dairy barns.



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