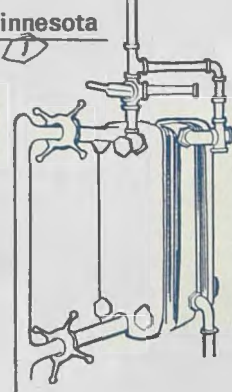


MINNESOTA DAIRY PRODUCTS PROCESSOR



Editor - V. S. Packard

April 1969 No. 34

WE ARE TRYING A NEW LOOK

This is still it, your "Dairy Products Processor," but we thought it was time for a new look and decided to modernize a bit. We hope you like it, and that, possibly, the round file might collect fewer of them.

THE MILKO-TESTER

We had an opportunity to work with Roy Ginn of the Minneapolis-St. Paul Quality Control Laboratory on an analysis of the Milko-tester. The results are in and we thought you might be interested in them.

HERE'S WHAT WE DID

Milk samples were collected daily from 47 producers shipping grade B can milk to a single dairy plant over a 31-day period. Samples were brought back to the lab; a portion was composited using corrosive sublimate as preservative and the remainder was tested "fresh" by both the Babcock and Milko-tester methods. Composite samples were tested by the two methods after one 15-day and one 16-day composite period. Eventually, all the data were placed on punch cards and analyzed by computer.

CALIBRATION OF THE MILKO-TESTER

After the initial calibration, the Milko-tester was used 1 month prior to initiation of this study. The data are interesting and tell something about the kind of results you might expect from the equipment. During the month of pretesting (and during the study itself) the calibration setting was not changed. In all, before the experiment was started, 1,189 "fresh" milk samples were analyzed. Of these, 18 samples varied from the Babcock results by slightly more than 0.1 percent, 107 samples varied by 0.1 percent, and the rest (1,064 samples) were either identical to or varied from Babcock results by no more than 0.05 percent. As the saying goes, "That ain't bad." And it was only upon completion of this month-long test period that we began our study.

RESULTS OF THE STUDY

As mentioned previously, the data were collected and analyzed by computer. We have statistics for those of you who may be interested, and we will gladly mail them or visit with you about them. But for the present, let's look only at differences between Milko-tester and Babcock results. Table I shows the average test and differences between the two methods for fresh and preserved milk. The latter includes two composite periods.

Table I. Summary of Milko-tester and Babcock results on fresh and preserved milk samples

Test	<u>Fresh milk</u>			<u>Preserved milk</u>		
	No. samples	Avg. test	Difference (percent)	No. samples	Avg. test	Difference (percent)
Babcock	1,457	3.7888		94	3.7473	
Milko-tester	1,457	3.8099	0.0211	94	3.6881	-0.0592

You will notice that preserved samples averaged 0.0592 percent lower on the Milko-tester than by the Babcock test. This suggests that you would do well to calibrate the Milko-tester on preserved milk if you intend to concentrate primarily on preserved samples. Otherwise it would be best to gear up for fresh samples.

FRESH MILK TESTING

After gathering all the data we decided to see what would happen if we selected at random four fresh samples from each producer, and compared the average of these four samples against the average of the 31 fresh samples. We did this, but selected the samples on a stratified basis. That is, one sample was chosen from each of the 4 weeks making up the month.

There were a total of 188 samples tested by each of the two procedures. With the Babcock method, butterfat test averaged 3.7979 percent, and with the Milko-tester, 3.8192 percent. These values on 31-day samples were 3.7888 and 3.8099 respectively. The difference now was 0.0213 percent. Compare that with the 31-day average which was 0.0211 percent and the difference is negligible. In other words, four fresh samples taken at random (one sample each week) throughout the month, would give an excellent accounting of the total butterfat in the supply.

SUMMARY OF THE DATA

Tables II and III are a summary of the data showing the Milko-tester variations from Babcock results.

Table II. Extent of variation of Milko-tester results from Babcock results on (A) 1,457 fresh milk samples collected daily over a 31-day period and (B) 4-day fresh samples selected on a random stratified basis

Range of difference (percent)	(A) Percent of Milko-tester determinations	(B) Percent of Milko-tester determinations
0.00 -0.010	22.4	14.9
0.011-0.020	21.4	21.3
0.021-0.030	14.9	19.1
0.031-0.040	12.8	21.3
0.041-0.050	9.6	8.5
0.051-0.060	9.6	0.0
0.061-0.070	4.3	4.3
0.071-0.080	2.1	0.0
0.081-0.090	0.0	8.5
0.091-0.100	2.1	0.0
0.110-0.120	1.1	2.1

Table III. Extent of variation of Milko-tester results from Babcock results on 188 composite milk samples collected over two test periods totaling 31 days

Extent of difference (percent)	Percent of Milko-tester determinations
0.000	4.2
0.025	12.8
0.050	38.3
0.075	23.4
0.100	12.8
0.125	8.5

AOAC ADOPTION

The Milko-tester has received "first action" adoption by the Association of Official Agricultural Chemists for butterfat testing of raw, unhomogenized milk. This puts it well on its way to being recognized as an official testing procedure. That fact, along with our findings in Minnesota, would make it appear desirable that we give consideration to the Milko-tester as an official test in our state, at least as an alternative to the Babcock procedure which has served us well, but which now, as progress goes on, should make way for new developments.

Mention of commercial names does not imply endorsement nor does omission imply criticism by the Minnesota Agricultural Extension Service.

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