

Milk Solids Test May Broaden Dairy Research in Non-Fat Field

Research on the production by dairy cattle of essential non-fat food constituents in milk will be greatly aided by a portable testing kit designed to measure the total solids content of small milk samples, the U. S. Department of Agriculture said today. This

solids test is used in conjunction with the well-known test for butterfat.

The portable testing equipment developed by USDA dairy scientists, is a useful instrument for fundamental research under field conditions. Eight of the kits have been used in cooperative dairy breeding and management experiments in Louisiana, Michigan, Minnesota, Tennessee, Virginia, and Wisconsin to determine the usefulness and accuracy of the device as a research tool.

The new method of testing made possible with this equipment may become the basis for expanded research under a cooperative plan involving several States and Canada's Province of Ontario.

Consumer interest in the solids other than fat contained in milk has been increasing. Among these non-fat solids are protein, lactose, casein, albumin, sugar, and several minerals — all having a place in the human diet. In addition, some of these milk constituents are in demand for industrial uses.

Dairy researchers and the milk industry are interested in the possibility of breeding strains of dairy animals that would produce milk of the greatest all-around food value. Portable equipment for making tests for non-fat solids has not been available to aid in accurately evaluating progress, except under laboratory conditions. This lack has not only handicapped breeding programs that might have been undertaken to produce more desirable animals, but it has also held up studies needed to determine the effect of inheritance, environment, and nutrition on the non-fat solids content of milk itself.

The lactometer has long been used as a means of determining total solids in milk. However, its use has been restricted largely to the laboratory.

USDA dairy chemist Paul D. Watson has devised a lactometer

requiring three to four ounces of milk for each test, and developed a mathematical formula to use with this instrument for more accurately measuring the percentage of milk solids. Also in the interest of greater accuracy, both the lactometer and the formula are adjusted for use with milk at 102° F., the temperature at which milk fat is in a liquid state. Accessories needed for convenience of operation and portability of the kit were designed by dairy scientist Fred M. Grant of the USDA research staff at Beltsville.

As used in the kit, the lactometer is an elongated glass blub weighted at the bottom so it will float upright. It is fitted with a thermometer-like stem at the top, calibrated to measure the specific gravity of milk varying solids content. Another part of the equipment is a rectangular tank in which water is placed and heated by electricity under thermostatic control. The tank is fitted with a removable rack in which there are 45 holes of suitable size to hold small cylinder-like containers for the milk samples to be tested.

To use the device, water in the tank is heated to 102° F. — approximately the normal body temperature of a cow — and is held at that level. Each sample of milk to be tested is poured into a separate cylinder. Testing begins when the milk reaches the desired temperature. This is necessary for speedy calculations of the solids content of each sample, because calibrations on the lactometer and the mathematical formula used in making the calculation area adjusted to each other at 102° F.

The tests are made by placing the lactometer — stem up — in a cylinder of milk, reading the calibration at the top of the meniscus (curved upper surface of liquid column), and applying the formula to determine the percentage of total solids. The result, after subtracting the butterfat percentage as determined by the Babcock test, provides the non-fat solids percentage of the sample.

In tests for accuracy, the new small lactometer has given results satisfactorily comparable to tests with large lactometers and with gravimetric determination. It has proved as reliable for non-fat solids content tests as the Babcock tester is for determining butterfat content. The tests for accuracy have been made by Federal and State dairy scientists at Beltsville, Michigan State College at East Lansing, the University of Wisconsin at Madison, and Virginia Polytechnic Institute, Blacksburg.

Accuracy of the device and its potentialities have been discussed at a recent symposium sponsored by the American Dairy Science Association. A committee of this organization is currently developing plans for interstate cooperation as a means of studying milk quality on the basis of variations in non-fat solids as they may be influenced by climate, environment, and heredity.

Wednesday New York Egg Market

By Urner-Barry

Nearby Whites	
Extra Fancy Heavyweights	48
Mediums	45
Pullets	40
Peewees	28 29
Nearby Browns	
Extra Fancy Heavyweights	48
Mediums	44 45
Pullets	41
Peewees	28 29
Midwestern Mixed	
Fancy Heavyweights	46
Mediums	42 -42½
Pullets	40
Standards	44½
Checks	38
Midwestern Whites	
Fancy Heavyweights	47
Mediums	43
Midwestern Browns	
Fancy Heavyweights	46½-47

NEW YORK, Dec. 4 — Market improved under a moderate increase in buying interest. All grades showing in the improvement, and mediums still show surprising strength.

Weekly Egg Price Review

	Nov 28	Nov. 29	Dec. 2	Dec 3
NBW WHITE				
Ex Fcy Hywts	49½-50	48	47½	47½
Mediums	44	42½	44	44
Pullets	39 -39½	39 39½	39½	39½
Peewees	28 -29	28 -29	28 -29	28 -29
NBW BROWN				
Ex Fcy Hywts	49½-50	48	48	48
Mediums	44	43	44	44
Pullets	40½-41	40½-41	41	41
Peewees	28 29	28 -29	28 -29	28 -29
Holiday.				

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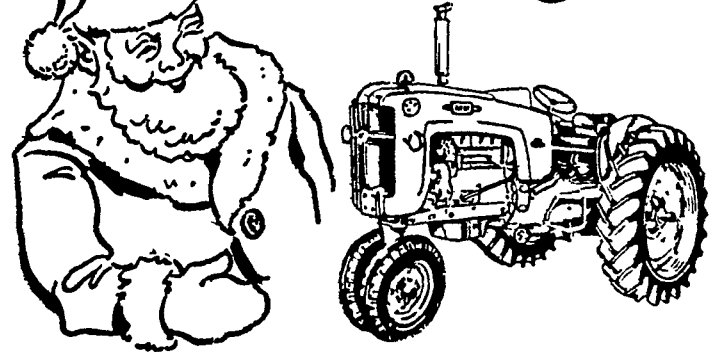
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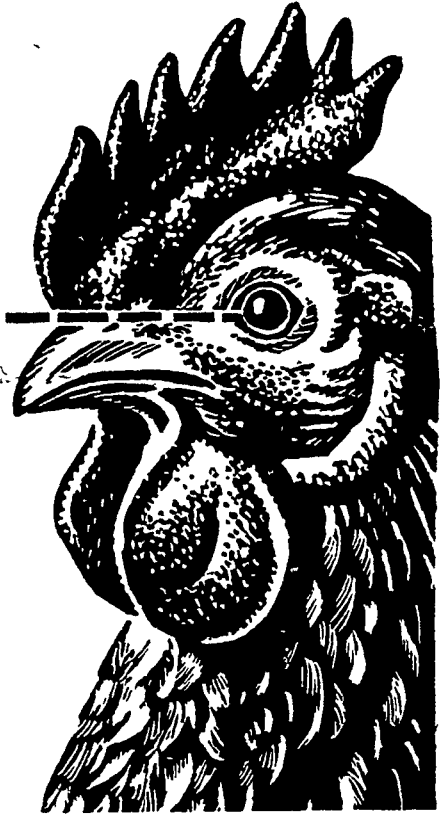
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