

More Milk Solids Possible in Bread Dough, Tests Show¹

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The mixograph shown in Figure I is an apparatus extensively employed by cereal chemists to measure the mixing requirements of doughs, and has been utilized by Dr. Helge Shipstead, University of California, to evaluate the baking quality of milk solids. The mixogram or curve made by this machine while mixing a dough, tells when the dough will attain optimum development and elas-

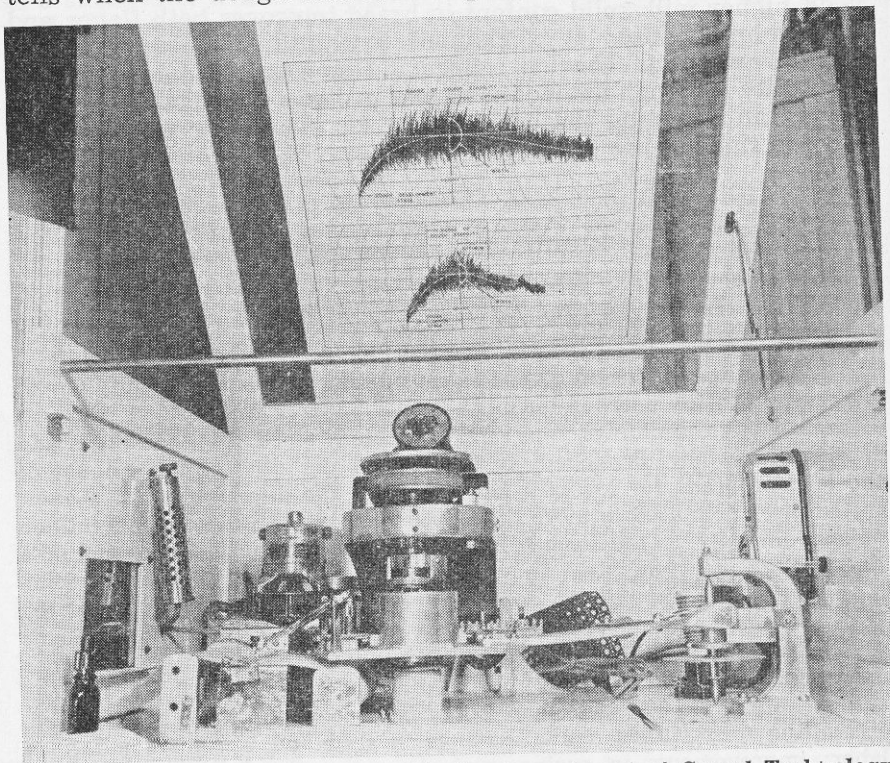


Fig. 1—The mixograph employed in the Department of Cereal Technology for determining the mixing requirements of promising new hard red spring wheat varieties. Humidifying and temperature control devices are shown at rear left and right respectively. Mixing head and bowl are in center foreground, with mixing time control switch immediately above.

Above the mixer assembly are shown mixograms obtained from a strong wheat (top) and a weak wheat (below). Commonly measured properties of the curves are shown, with indicated method of estimation of these. Dough development is the most important single factor in measuring mixing requirements since it best differentiates between strong and weak varieties.

¹ Condensed from Food Engineering, June, 1951, issue.

² Cereal Technologist.

ticity, as well as its stability during mixing. Different lots of milk processed under variations of heat treatment have been tested in the mixograph to ascertain which was most suitable for the typical bakery.

These tests have revealed that 12 to 14 per cent of milk may be used in bread doughs rather than the 4 to 6 per cent which is about the maximum in common bakery practice. Ratios of 25 per cent milk powder to 75 per cent of flour are used in the test dough because this ratio magnifies the effects of possible faults in the milk powder.

A higher milk solid content in bread improves both flavor and nutritive properties. It is claimed that milk also increases the keeping quality of the loaf. Specially processed powders confer uniformity in dough development and provide the baker with more freedom in adjusting the operation of his oven. The new test can be made right in the bakery.

AGRICULTURAL ENGINEERING

The following are examples of recent benefits from agricultural engineering research, as cited by J. D. Long of Bureau of Plant Industry, Soils, and Agricultural Engineering:

The role the engineers played as consultants for the Commodity Credit Corporation in the purchase of more than a hundred million dollars worth of grain-storage buildings, bins, and equipment since 1948; the plans and specifications they developed, at a cost of 4 per cent of the amount of the loan program, for low-cost farm housing; the development of a seed-cotton drier now used in more than 5,000 gins, which has added 20 million dollars annually to the income of cotton growers; the development of a lint-flue cleaner now used in some 1,500 gins, which has added some 5 million dollars annually to growers' income; tests of tractor tires at the U. S. Tillage Laboratory, Auburn, Ala., suggesting design improvements that may bring a saving of 10 per cent annually in fuel costs for tractor operations; improved machinery for seeding sugar beets which has reduced seeding rates from 20 to less than 4 pounds per acre and labor by one-third, accounting for \$250,000 annual savings in seed and 7 million dollars in labor; improvements in curing methods and equipment for bright leaf tobacco, reducing costs by 50 per cent, a potential saving of 10 million dollars annually.

Then there are many new electrical farm machines developed since World War II and now available to replace hand labor, such as the crop drier, gutter cleaner, automatic poultry feeder, portable elevator, and silo unloader. In the research "mill" are an electric haymow conveyor designed to distribute partly cured, chopped hay uniformly over the ducts or slatted floors of forced-air curing systems; an electric metering device to regulate the flow of three different materials into a feed grinder; an electric system of drying grain by heat; and electric ventilating equipment to control temperature and humidity in animal shelters and poultry houses.—USDA.