AGRICULTURE

CHEMICAL PROBLEMS.

Milling Qualities of Utah Wheat.

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Investigations regarding the chemical and milling characteristics of some of the various wheats grown in Utah have been carried on since the season of 1904, but the first report of these investigations has just been published in bulletin form by the Experiment Station of the Agricultural College of Utah.

The wheat industry of the state has received a new impetus during the last few years and many new varieties have been and are being introduced. It becomes important to know how these varieties grown in Utah under various conditions compare in their milling and chemical characteristics with the same wheat in other parts of the country, and to this end the investigations under consideration were begun.

The work reported represents the analysis of ninety-one samples of wheat grown on the several experimental farms, including wheat grown under both irrigated and arid conditions. The varieties include all the more common ones grown in Utah at the present time, as well as a number of other promising wheats which have recently been introduced into the state.

The investigations were conducted by Robert Stewart, chemist, and Joseph E. Greaves, assistant chemist, the wheat being milled on an experimental mill. This mill has two pairs of 7-inch rolls, one pair smooth and the other corrugated, and a small sifter. It is driven by a 10-horsepower electric motor, and, like similar mills, turns out a straight grade of flour that is suitable for analytical purposes. The methods of analysis used were, with very slight modification, those employed by Snyder and included the usual determinations as to protein content, the amount and composition of the gluten, and the percentage of acidity and ash. The results are especially interesting as they show comparisons between common bread wheats and Durum varieties and also between irrigated wheat and that grown under semi-arid conditions.

A distinct variation is shown in the yield of milling products obtained from the various varieties and also in the same varieties from the different experimental farms. The variation between the bread wheats is as high as 10 per cent, while the variation between the Durum varieties is as high as 20 per cent. It is noteworthy, however, that the average yield of flour was higher from the bread wheats than it was from the Durums. The average moisture content of flour from Utah wheats is considerably less than that accepted as the standard for wheat grown elsewhere in the country. As a rule the moisture content of the Durum wheats is higher than that of the bread varieties, although the difference is small.

The protein content of all the wheats is very high, the average for the bread varieties being 16.76 per cent and for the Durum varieties 17.14. The variety grown on irrigated land has the lowest protein content, but when this variety is grown on arid farms its protein content increases. The protein content of the bran and shorts of the bread and Durum wheats is practically the same.

The moist and dry gluten of all varieties are very high, the averages for the bread wheats being 50.49 per cent of wet gluten and 18.52 per cent of dry gluten, and for the Durums 46.69 per cent wet and 17.89 per cent dry.

In this connection, as showing the influence of climatic conditions, it is interesting to note, the differences in the gluten content of Blue Stem and Fife wheat grown in Utah, in the Middle West and in Maine. The western-grown Blue Stem contained 24.07 per cent of dry gluten and 9.99 per cent of wet gluten. The same variety grown in Maine yielded 24.60 per cent of wet gluten and 11.32 per cent of dry gluten, while Utah grown Blue Stem contained 45.59 per cent of wet gluten and 17.39 per cent of dry gluten. The differences in the gluten content of Fife wheat were practically as great, being as follows: