

Varieties of Wheat and their Adaptation to Localities

Large Variety of Wheat Grown in Ontario Owing to Variety of Conditions.

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The Ontario wheat crop has been harvested under very different weather conditions to that of last year and it will not be surprising if the flour made from it differs in its baking qualities. In 1915 there was so much hot wet weather that a very large percentage of the wheat was sprouted. This year we have had the heat without the rain. As the hot dry weather set in before harvest, it caused, in many cases, a too rapid ripening of the grain and, consequently, a shrunken kernel and a decreased yield. The grain was, however, harvested under good conditions and the kernels are hard and dry. This will probably mean that the wheat will be richer in gluten than it would otherwise have been, but whether this will result in a corresponding improvement in the quality of flour has yet to be proven. There are so many factors that influence the strength of flour that quantity of gluten alone does not form a sufficient basis upon which to pass judgment. We have not been able to make any baking tests on this year's crop as yet, but the chances are that it will be of good quality.

Factors Influencing Quality of Crop.

Aside from weather and soil conditions, there are several factors that influence the general quality of the crop. One of these is the variety of wheat grown. In the older provinces, unfortunately in some ways, we grow a greater number of varieties of wheat than the farmers on the prairies. It is possible, however, that our more varied soil and climatic conditions justify this, and that as time goes on the suitability of certain districts to the production of a certain quality of wheat may become established and lead the farmers to confine themselves to one or two varieties that have been found to do best in their locality.

During the last twenty-six years the Field Husbandry Dept. of the Ontario Agricultural College have had under experiment on the college trial grounds about two hundred and eighty-five varieties of winter wheat and a large number of selections and crosses. A limited number of the varieties that have given the best results in a number of years trials have then been given out for co-operative experimental work in nearly every part of the Province. In this way new varieties have been brought into general cultivation, and while this may have helped to increase the number of varieties grown, it does afford an opportunity for the farmers of one locality to find out the best variety for their particular district.

The miller is familiar with the fact that one district will produce a much better quality of wheat than another. If, combined with this known difference due to climate, soil, or whatever it may be, we could gradually confine the wheat grown in a district to one or two varieties that have proven themselves to be the best for that particular section of country, it would be of great assistance to the miller in both grading and milling the wheat and should result in greater profit to the grower.

Experiments With Turkey Red.

From experiments and observations it appears that the soil and general climate of this Province is not adapted to the production of a hard wheat and that it is useless for us to try to grow a hard winter wheat; some years ago the Dominion Millers procured several car loads of Turkey Red wheat from Kansas and sold it to farmers in different parts of this Province. The yield of grain procured by the farmer was disappointing and the straw was short and weak. On the other hand, the milling and baking qualities of the wheat was excellent, almost equal to that of our Western spring wheat. Time has shown, however, that where this variety has been grown continuously, the straw has gradually become stiffer, the yield of grain has increased and its baking softer as the yield in bushels per acre increased, until the baking tests made with this variety during the last two or three years shows

that the flour is away below its former quality. There are indications that the same change is taking place in the Crimean Red and Tasmania Red and this of the harder varieties.

Dawson's Golden Chaff

On the other hand, Dawson's Golden Chaff has been

steadily improving. This variety was originated in Ontario about 35 years ago and for a long time was so soft and poor in quality that the millers were united in condemning it as being detrimental to the milling industry. The farmer, however, found it a good variety to grow as it had an abundance of good stiff straw and was a good yielder. Today we hear very little complaint of this wheat and it is the most widely grown wheat in Ontario. In our baking tests of the varieties grown on the experimental plots at Guelph the Dawson's Golden Chaff is somewhat inferior to Turkey Red, but it makes a good loaf of bread. It is rather low in total protein, but contains gluten of a good quality.

The following table taken from a pamphlet issued by the Field Husbandry Department of the Ontario Agricultural College gives an idea of the comparative yield of a number of leading varieties. The yield per acre for 1915 and the average for 20 years are included in the table:

VARIETY.	Color of Grain.	Pounds per Measured Bushel 19 years.	Yield Per Acre.—		
			Bushels Grain 1915.	Tons Straw.	Average 20 yrs.— Bushels Grain.
Dawson's Golden Chaff	White	60.0	57.0	2.9	51.4
Imperial Amber	Red	61.1	57.4	3.2	48.5
Early Genesee Giant	White	60.1	57.7	3.0	47.1
Egyptian Amber	Red	61.6	56.1	3.2	46.9
Early Red Clawson	Red	59.0	55.8	2.8	46.6
Rudy	Red	61.5	61.0	2.7	45.8
Tasmania Red	Red	61.8	54.8	2.9	44.9
Kentucky Giant	Red	61.2	63.5	2.8	44.2
Tuscan Island	Red	61.1	61.7	2.9	44.2
Geneva	Red	62.3	50.8	3.0	44.2
Turkey Red	Red	61.3	57.4	2.8	43.7
McPherson	Red	61.6	63.4	2.7	42.9
Treadwell	White	60.0	56.6	2.8	42.4
Bulgarian	White	60.7	56.9	2.8	42.3

It must be remembered that the above results were obtained on the College trial grounds and are not an average for the Province. Another section of the country might have given slightly different results. Notice too the heavy yields in 1915 as compared with the average of twenty years. Dawson's Golden Chaff heads the list in the average column, but there are seven varieties that gave heavier yields in 1915.

Baking Results of Ontario Wheats.

Baking tests have been made on all varieties grown on the Guelph plots for some years past. To show the relative quality of the flour from the various varieties, I have selected the results obtained from baking tests made with the flour from the varieties of wheat named in the above table. We thus have

the yield and the quality. The baking tests were made on the 1914 crop. Each kind of flour was given the treatment which experience shown would bring out the best results. Exactly the same weight of flour was used in each test. The standard used was a mixed winter wheat flour made from the 1914 crop. The water absorbed is given in percentage, the weight of the loaf in grams and the size in cubic centimeters. The color, texture, and general appearance of the bread is indicated by giving the standard 100 points and then marking the others above or below according as they are better or worse than the standard. Incidentally the results show how much better the 1915 crop was than that of 1914. Next month perhaps we shall be able to show how the 1916 crop compares with that of 1915.

Results of Baking Tests on Varieties.

VARIETIES.	Absorption Per Cent.	Loaf Grams	Loaf (C.C.)	Color.	Texture.	Appear- ance.	Protein Per Cent.
Standard	47.1	467	1500	100	100	100	8.50
Dawson's Golden Chaff	48.4	467	1600	102	102	102	7.36
Imperial Amber	51.1	487	1870	110	110	110	8.15
Early Genesee Giant	47.1	456	1850	102	106	109	8.88
Egyptian Amber	50.5	477	1920	103	108	108	7.45
Early Red Clawson	46.0	462	1500	102	101	101	8.72
Rudy	50.6	475	1840	102	103	103	9.70
Tasmania Red	51.8	475	1930	102	108	108	8.89
Kentucky Giant	48.8	466	2000	102	108	103	9.83
Tuscan Island	51.8	472	1870	97	105	108	9.15
Geneva	51.8	478	1950	102	103	104	9.74
Turkey Red	48.2	472	2160	100	104	105	10.81
McPherson	46.0	473	1750	105	115	109	8.81
Treadwell	49.4	464	2000	103	110	110	8.86
Bulgarian	50.0	465	2000	102	108	110	8.83

Special Wheats for Different Localities.

Considering the positions the Amber wheats hold in the table giving yield in bushels of grain per acre, the above results help to explain why these varieties are so popular with both the farmer and miller in this part of the Province. The Dawson's Golden Chaff yields well here, but the quality of the flour is not so good as that obtained from wheat grown in some other parts of the country. That brings us back to the point mentioned earlier. No one variety will give the best results all over the Province. On the question of the adaptation of

crops and varieties of these crops to particular soils and districts, we are still a long way behind the older countries. This is a much broader question than the growing of wheat; for it affects all phases of agriculture. Something is being done along these lines in specializing in fruit, potatoes, tobacco, etc., on special soils and localities and the day may come in this country as it has in the European countries when the miller can confidently buy wheat from certain sections of the country knowing full well the characteristics of the wheat raised there.