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Trade Increases the wealth and glory of a country; but its real strength and stamina are to be looked for among the cultivators of the land—*Lord Chatham.*

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What Variety of Wheat Do You Favor?

At Guelph Nearly 300 Varieties Tested in 29 Years—The Varieties That Have Stood the Test—*Dr. C. A. Zavitz*

NEARLY 300 varieties of winter wheat and many selections and crosses have been grown under experiment at the Agricultural College within the past 29 years. Nearly all of the varieties have been carefully tested in each of five years, after which the inferior kinds have been discarded and those which have given the best results have been continued in the experiments. Of the named varieties 14 have been grown in each of 22 years, and the results of these are of special value. The table in border gives for each of these 14 varieties the average weight per measured bushel for 21 years, and the average yield of both straw and grain per acre for the 22 year period.

The average results of the fourteen varieties for the whole period are as follows: yield of grain per acre 44.3 bushels, yield of straw per acre 2.9 tons, weight per measured bushel 60.9 pounds.

The Dawson's Golden Chaff is still the most extensively grown variety of winter wheat in Ontario according to information secured through correspondence with practical farmers. This variety, in the results at Guelph for 22 years, has given an annual average yield of grain per acre of exactly three bushels over the next highest variety, and of practically nine bushels per acre over the lowest yielder of the 14 varieties included in the test, all of which were grown under similar conditions. The Dawson's Golden Chaff was originated in Ontario 37 years ago. It produces a very stiff straw of medium length, beardless heads with red chaff, and white grain which weighs about the standard per measured bushel. It is probable that the Dawson's Golden Chaff is improving slightly for bread production.

The above table gives the average yield per acre for nine years of each of twenty-eight varieties.

Comment on Varieties.

It will be noticed that each of the six highest yielding varieties have beardless heads, red chaff and white grain. The seven highest yielding varieties are white, and with one exception the fourteen lowest yielding varieties are red grained.

The American Banner is identical in all essential characteristics with Dawson's Golden Chaff.

The variety of winter wheat known as "No. 6" closely resembles in appearance the Dawson's Golden Chaff except that the head is less tapering and the upper portion of the straw is somewhat colored. In the average of nine years' experiments at the College it has yielded fully equal to the Dawson's Golden Chaff and has produced grain which is of somewhat better quality for bread production. The No. 6 variety was originated by Ira W. Green, at Avon, N.Y., and it is at present the most popular winter wheat grown in the Genesee Valley, New York State. This wheat is also grown under different names including "Gold Coin."

With the object of originating better varieties than those already in cultivation, crosses have been made between the Dawson's Golden Chaff and some of the varieties of particularly high quality for bread production, such as Tasmania Red, Crimean Red, Turkey Red, Buda Pesth, Bulgarian and Imperial Amber. In the average tests for five years crosses between the Dawson's Golden Chaff and the Tasmania Red, Turkey Red and Bulgarian have each surpassed in average yield of grain the highest yielder of all the named varieties.

A cross made between Dawson's Golden Chaff and the Bulgarian has furnished a new variety which in five years has surpassed both its parents in average yield per acre, and is about equal to the Bulgarian in bread production. This variety has been given the name "O.A.C. No. 104," and has been distributed throughout Ontario in connection with the co-operative experiments in each of the past two years. It is not yet obtainable in large quantities, but will be used in the cooperative experiments again this autumn. It proved to be one of the hardiest varieties in the tests of the past year.

Varieties.	Bearded or Bald.	Color of Chaff.	Color of Grain.	Yield per Acre. Average 9 Years. Bushels Grain.
American Banner	Bald	Red	White	57.3
No. 6	Bald	Red	White	56.2
Dawson's Golden Chaff	Bald	Red	White	56.0
Prize Taker	Bald	Red	White	54.9
Superlative	Bald	Red	White	54.8
Forty Fold	Bald	Red	White	52.2
Early Genesee Giant	Bearded	Red	White	51.3
Egyptian Amber	Bearded	White	Red	50.2
Russian Amber	Bearded	White	Red	50.2
Imperial Amber	Bearded	Red	Red	50.1
Paramount	Bald	Red	Red	49.9
Genesee Reliable	Bearded	White	Red	49.6
Turkey Red	Bearded	White	Red	49.1
Treadwell	Bearded	White	White	48.7
Harvest King	Bald	Red	Red	48.5
Rudy	Bearded	White	Red	48.4
McGarvin	Bald	Red	Red	48.3
Kentucky Giant	Bearded	White	Red	48.0
Michigan Amber	Bearded	White	Red	48.0
Buda Pesth	Bearded	White	Red	47.9
Early Red Clawson	Bald	Red	Red	47.9
Amherst Isle	Bearded	White	Red	47.7
Geneva	Bearded	White	Red	47.4
Economy	Bald	White	Red	46.7
Bulgarian	Bearded	White	White	45.6
Tuscan Island	Bearded	White	Red	45.3
Tasmania Red	Bearded	Red	Red	44.9
McPherson	Bald	White	Red	44.6

For nine years in succession experiments were conducted in treating winter wheat in different ways to prevent the development of stinking smut and the results have been very satisfactory. In the average for five years, untreated seed produced 4.2 per cent. of smutted heads, while seed which was immersed for 20 minutes in a solution made by adding one pint of formalin to 42 gallons of water produced a crop which was practically free from smut. We have found this treatment to be simple in operation, comparatively cheap, effectual in completely killing the smut, and productive of the highest yield of grain.

The results of twelve separate tests made at the College show an average increase in yield of grain per acre of 6.8 bushels from large as compared with small seed, of 7.8 bushels from plump as compared with shrunken seed, and of 35.6 bushels from sound as compared with broken seed. Seed which was allowed to become thoroughly ripened before it was cut produced a greater yield of both grain and straw and a heavier weight of grain per measured bushel than that produced from wheat which was cut at any one of four earlier stages of maturity.

In each of two years when winter wheat was sprouted in the fields, germination tests of the grain were made. The following results show the average percentages of germination from each selection: Skin over germ, unbroken, 94; skin over germ, broken, 76; sprouts one-quarter inch long, 30; and sprouts one inch long, 18. Not only were the sprouted seeds low in germination, but the plants produced were very uneven in size.

In the average of eight separate tests, land on which field peas were used as a green manure yielded 6.5 bushels of wheat per acre more than land on which buckwheat was used as a green manure.

In the Experimental Department, winter wheat which has been grown on clover sod has yielded much better than that which has been grown on timothy sod.

In the average of five years' experiments varieties of winter wheat gave practically the same results when sown separately as when sown in combination.

According to the Monthly Bulletin on Agricultural Statistics for the Dominion of Canada for June, 1918, the number of acres of winter wheat in Ontario is given as 277,200 in 1918, and as 656,500 in the year previous. This reduction is largely due to adverse weather conditions at the time of seeding last autumn and to the exceptionally severe winter which caused much killing. It is estimated that 56 per cent. of the winter wheat of Ontario was ploughed in the spring of the present year. According to the Reports of the Bureau of Industries for Ontario the average number of acres of winter wheat for the past thirty-six years has been 825,923. To sow the normal acreage this autumn will require about one and one-quarter million bushels of seed wheat.

Variety Tests of Winter Wheat at the O. A. C.

Variety.	Color of grain.	Pounds per Measured Bushel. 21 years.	Yield per Acre. Average 22 years. Tons Straw.	Bushels Grain.
Dawson's Golden Chaff	White	59.9	2.9	50.2
Imperial Amber	Red	61.1	3.1	47.2
Early Genesee Giant	White	60.1	3.0	45.9
Egyptian Amber	Red	61.5	3.1	45.5
Early Red Clawson	Red	58.9	2.8	45.4
Rudy	Red	61.4	2.7	44.5
Tasmania Red	Red	61.6	2.8	43.6
Tuscan Island	Red	61.2	2.8	43.4
Geneva	Red	62.0	3.0	43.1
Kentucky Giant	Red	61.0	2.8	43.0
Turkey Red	Red	61.3	2.7	42.7
McPherson	Red	61.9	2.6	41.9
Bulgarian	White	60.7	2.8	41.8
Treadwell	White	59.8	2.8	41.3