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ONTARIO AGRICULTURAL COLLEGE

EXPERIMENT STATION.

BULLETIN LXXXIV.

XPERIMENTS WITH SPRING GRAINS

BY THOMAS SHAW, PROFESSOE OF AGRICULTURE, AND C. A. ZAVITZ, B.S.A., EXPERIMENTALIST.

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BULLETIN LXXXIV.

EXPERIMENTS WITH SPRING GRAINS.

(140 Varietics grown side by side for four years.)

The great difference in point of yield of different varieties of grain of the same species has been observed by farmers everywhere. The wisdom of growing only the best varieties at all times will also be generally conceded, and more especially in times when prices rule low and margins are close, will such a line of action be in a sense imperative. In former years the husbandman was restricted in his choice to but few varieties, but now through the work of the Agricultural Experiment Stations, the best varieties that can be obtained are being made easily accessible to every one.

This Bulletin relates to spring grains, foreign and native, grown under similar conditions for the past four years, and it gives imporant comparisons with reference to them. These comparisons relate. (1) to the yield of grain per acre; (2) weight of grain per measured bushel; (3) weight of straw per asre; (4) date of maturity; (5) strength of straw; (6) length of plant, and (7) color of grain and ther peculiarities of growth. Important particulars are also given in reference to results obtained from sowing various kinds of grain at different dates. As rust prevailed to a considerable extent, we have taken it into account when speaking of spring wheat and oats. During 1892, 67 varieties of barley, 63 of spring wheat, 116 of oats and 61 of peas, were grown upon the station grounds and under the ame conditions. Full particulars relating to these will be found in the Annual Report. The information contained in the bulletin has been obtained from tests made with 37 varieties of barley, 22 of wring wheat, and 81 of oats. These have been grown side by side or the past four years and under similar conditions. It also indudes the results obtained from 6 leading varieties of peas, out of 10 varieties grown for two years. The plots varied from one fiftieth wone-hundredth of an acre in the different years.

In the tables given below, the yields of grain per acre are estinated from the yields per plot. The standard weight per measured bashel was used with the different classes of grains, and when this alletin is compared with the corresponding one of last year, viz., uxi, it will be observed that some varieties in the list for 1891 have dropped out and others have taken their places. It will also be noticed that the remarks on the different varieties vary slightly, wing to a difference in behavior, caused doubtless by variations in toil and climate.

n, Guelph, .



.. President Superintendent or of Chemistry. ory and Geology. cerinary Science. hiry Husbandry. ematical Master. and Gymnastics. Experimentalist. sistant Chemist. Bursar

culture, Toronto

Oats. Table I relates to the ten varieties of oats which have given the highest yields for the four years ending with 1892.

Variety.	Color of grain.	Amount of rust, 1892.	Height of plant, average, 4 years.	Date of maturity, 1892.	Weight per mea- sured bushel, 3 years.	Straw per acre, 4 years.	Grain per acre, bushel 34 lb., 4 years.
Joanette Black. Chenailles Black Black Etampes Siberian Houdan Black Danebrog. Oderbrucker 'mproved Besthorne Probsteier Pringle's Progress	Black White Black White	None "" Slight None Very slight. Sli; ht. Very slight. Average Slight.	in. 41.0 44.0 40.8 54.0 41.8 54.8 49.0 50.3 53.8 47.3	Aug. 7 6 7 6 8 8 7 8 8 4	lb. 35.8 35.8 36.4 36.7 36.4 33.7 30.2 33.5 33.0 30.1	tons 2.7 2.8 2.6 2.5 2.1 2.4 2.5 2.0 2.5 2.3	bush. 83.0 79.1 79.0 77.2 77.1 75.4 75.1 74.7 74.5 74.5

The varieties grown in 1889 and 1890 were sown April 22nd, those grown in 1891, April 29th, and those grown in 1892, April 18th. It should be borne in mind that all the leading varieties, except the last mentioned, that is Pringle's Progress, are foreign. They were imported for our station from Europe in 1889. Of the 81 varieties grown during the four years mentioned, 15 only were from a Cana-The dian source, and these include nearly all the old varieties. Joanette Black, Chenailles Black, Black Etampes and Houdan Black, are very much the same in all essential characteristics. So much so that the three first mentioned appear to be one and the same variety, though probably grown for some time past in different localities in France. These varieties are therefore more suitable for sowing on good rich land. They stand up fairly well, are not coarse, and are almost entirely free from rust tendencies. They are also inclined to shell easily when ripe. The hull is unusually thin, and is easily removed in threshing. The 81 varieties grown for four years gave an average yield in 1892 of 53 bushels per acre. Of these the 10 which gave the highest yields for four years made an average of 76.9 bushels per acre, and the 10 which gave the lowest yields 44.2 bushels. The fourteen best yielding varieties for the four years have all a spreading head. Of the 27 varieties grown for two years only, the Golden Giant and Magnet stand first and second respectively. The former gave an average yield of 89 bushels per acre, and the latter 86.4 bushels. Vick's American Banner came third, with an average yield of 86.3 bushels per acre. Of the 8 newly obtained varieties which have been tested for one year only, the American Beauty stands first. It gave 76.7 bushels per acre.

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22nd, those April 18th. except the They were 81 varieties om 'a Cana-The ieties. and Houdan ristics. So one and the in different suitable for e not coarse, ey are also ly thin, and wn for four er acre. Of ears made an e the lowest ties for the es grown for st and second bushels per Banner came Of the 8 e year only, per acre.

Spring Wheat. Table 11 relates to the varieties of spring wheat which have given the highest yields for the four years ending 1892.

Variety.	Seed for 1889. obtained from.	Bearded or hald.	Height of plant, average, 4 years.	Strength of straw, avoraçre, 3 years.	Date of maturity.	Weight per measured bushel, 3 years.	Straw per acre, 3 years.	Grain per acre (bush. 60 lb. 4 years.
Herison Bearded Pringle's Champion Saxonka Holben's Improved Bart Trimenia Summer Urdinary Bearded Mareh Konisburg Odessa Ghirka Nenhert	France (Jermany Russia Germany Greece Gerniany France Russia Germany	Bearded " Bald Bearded " Bald	in. 40.5 42.2 40.6 38.5 36.8 38.3 40.5 40.3 43.4	Medium Medium Strong . Strong . Strong . Strong . Medium Strong .	Aug 11 11 12 16 13 11 13 13 14 16	lb. 63.5 60.8 60.2 59.0 62.8 57.6 58.1 62.1 59.9 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55.0 56.0	tons 1.7 1.8 1.5 1.7 1.5 1.6 1.6 1.6	bush. 26.0 23.6 22.6 21.8 20.1 20.6 20.4 20.2 18.6

The varieties grown in 1889 were sown April 18th, those in 1890 d 1891, April 25th, and those in 1892, April 23rd. While the lerison Bearded comes first in point of yield, stands, fairly stiff in estraw, and has been almost entirely free from rust, the clubaped heads are somewhat uneven. Pringle's Champion produces fairly strong straw, has a well shaped head, is not much liable to st, and produces a fine sample of grain. The 22 varieties grown four years gave an average of 19.2 bushels per acre in 1892. Of ese the 5 which gave the highest yields for four years made an erage of 23.2 bushels per acre, and the 5 which gave the lowest elds, 13.1 bushels. Of the 21 varieties grown for three years, the d Fern comes first. It has given a yield of 31.4 bushels per acre. e White Russian, with a yield of 28.7 bushels, comes second. Of 10 varieties grown for two years the McCarlin stands first. It given a yield of 29.7 bushels per acre. The Rio Grande, with a d of 28.4 bushels, comes second.

Hulless Barley.—Six varieties of Hulless barley have been grown three years. The average yield per acre for that time has been 8 bushels, of 60 pounds per measured bushel, or 44.78 bushels of pounds per bushel. If we compare the three leading varieties in the three best sorts possessed of hull, we find there is an advantin yield of 1.3 bushels per acre in favor of the former. The age yields respectively, are 54.8 bushels per acre, and 53.5 heis. The Hungarian, from Hungary, as the name would indi-, stands first on the list, and in several respects it is a very mising variety. Barley.—Table III relates to the ten varieties of barley which gave the highest yields for the four years ending 1892, and it gives the results obtained from the common six-rowed variety of Ontario.

	*							
Variety.	Seed for 1889, obtained from.	No. of rows per head.	Height of plant, average, 4 years.	Strength of straw, average 3 years.	Date of maturity, 1892.	Weight per mea- sured bushel, 3 years.	Straw per acre, 4 years.	Grain per acre bush. (48 lb.) 4 years.
Mandscheuri French Chevalier. Empress. Scotch Improved Selected Chevalier. Improved Chevalier. Maina Oderbrucker Hallett's Pedigree Common Ontario, 6- rowed	Russia France England. Contario England. " Germany Sweden Germany Ontario	622622622 622622622 6	inch. 41.0 36.3 39.0 39.0 39.5 38.6 39.0 38.8 37.5 36.3 36.3	Strong Medium Medium Weak Weak Medium Strong Medium	July 30 Aug. 3 7 July 29 Aug. 3 3 July 29 Aug. 3 7 July 29	lb. 50.8 52.0 52.3 51.8 52.0 62.4 52.9 52.6 52.8 53.1	tons 1.8 1.8 2.0 1.3 2.0 1.9 2.0 1.5 1.8 1.7 1.3	bush. 57.6 54.0 62.8 51.3 50.5 50.5 50.5 49.9 49.9 49.9 49.7 46.7

The varieties grown in 1889 were sown April 15; those in 189 and 1892, April 19, and those in 1891, April 30. It will be ob served that the common Ontario six-rowed barley, so universall grown, has the seventeenth place in the order of yield. Of th eleven varieties grown for two years, the Oalifornia Brewing stand first, and it also has first place amid the 63 varieties grown in 1892 when it yielded 61.5 bushels per acre. The Kinna-Kulla, a two rowed variety, imported from Sweden four years ago, and whio possesses the property of standing up well in a remarkable degree, i constantly improving in yield, insomuch that in 1892, it gave 586 bushels per acre, and stands second in point of yield. The Duc bill, which bears a close resemblance to the Kinna-Rulla, is also stil in the straw. The yield in 1892 was 47.8 bushels.

Peas.—Table IV relates to the ten varieties of peas which hav given the highest yields during the two years 1890 and 1892.

Owing to imperfect germination of the seed in 1891, the resul for that year were considered to be incomplete to be of any specie value. The varieties grown in 1890 were sown April 24th, an those sown in 1892, April 23. Only two of the imported varietie viz., the Princess Royal and Early Racehorse, have a prominent plat in the list. The Mummy pea, popular in many parts of Ontarie gave an average of 33.7 bushels for the two years mentioned, and average weight of 63.8 pounds. Of the sixty-one varieties grown in

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Prus Black Prince Whit Multi Early

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3 years.	Straw per acre, 4 years.	Grain Der acre	bush. (48 lb.)	years.
b. .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .8 .0 .2 .9 2.8 .8 .8 .9 .8 .8 .9 .8 .8 .8 .9 .8 .8 .8 .9 .8 .9 .8 .8 .9 .8 .9 .8 .9 .8 .8 .9 .8 .8 .9 .8 .8 .9 .8 .9 .8 .8 .9 .8 .8 .9 .8 .9 .8 .8 .9 .8 .8 .9 .8 .8 .8 .8 .8 .9 .8 .8 .8 .8 .9 .8 .8 .8 .8 .9 .8 .8 .9 .8 .8 .8 .8 .8 .9 .8 .8 .8 .8 .8 .9 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8	tons 1.8 2.0 1.9 2.0 1.9 2.0 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9	303090587	bus 57.0 54.0 52.1 50. 50. 50. 50. 49. 49. 49.	h.5083853997
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891, the resul e of any specia opril 24th, an ported varietie prominent plac rts of Ontario entioned, and a rieties grown i

1892, the Princess Royal gave the largest yield, viz., 46.2 bushels, and the Early Racehorse the heaviest weight per measured bushel, fiz., 62.8 pounds.

Variety.	Seed of 1890 obtained from.	ed of 1890 bbtained from. Date of maturity.		Straw per acre.	Grain per acre.	
Prussian Blue Black Eyed Marrowfat Princess Royal White Eyed Marrowfat Multipliers Early Racehorsc	Ontario England Ontario England	Aug. 11 " 17 " 15 " 15 " 21 " 12	lb. 62.7 61.2 60.7 62.1 61.8 63.5	tons. 1.94 1.66 1.45 1.82 1.69 1.45	bush. 43.39 39.90 39.15 88.78 87.90 35.89	

Dates of Seeding.—Table v relates to the average results from eding oats, spring wheat, barley and peas at different dates in 891 and 1892.

	Oats.		Spring wheats.		Barleys.		Peas.	
Dates of Seeding.	Weight per measured bushel.	Grain per acre(bu34 lb).	Weight per measured bushel.	Grain per acre(bu60 lb).	Weight per measured bushel.	Grain per acre (bu 48 1b).	Weight per measured tushel.	Grain per acre (bu 60 lb).
	lb.	bush.	lb.	bush.	lb.	bush.	lb.	bush.
April 22nd May 1st May 9th May 18th May 26th	33.0 31.9 29.2 27.5 24.4	52.7 56.9 53.7 41.8 25.3	60.7 58.8 56.7 54.2 53.0	$14.4 \\ 12.2 \\ 8.6 \\ 5.4 \\ 3.9$	48.7 47.0 46.0 42.7 41.9	26.1 27.9 27.2 18.3 11.8	$57.9 \\ 59.2 \\ 60.7 \\ 61.0 \\ 61.2$	19.5 21.1 21.8 18.5 9.7

In every instance, except that of the peas, which were grown only 1892, and of which but two varieties were used, the figures repreat the average of two varieties sown in 1891, and also in 1892, nce they represent the average results of four experiments with same kinds of grain. It will be observed (1) that oats, spring est and barley gave the heaviest weights per measured bushel m the first seeding, and there was a gradual decrease in weight h each successive seeding. With peas the results were exactly reverse, as the weight of the grain continually increased with h seeding. (2) That while in the case of spring wheat, the highest ds were obtained from the first seeding, in that of oats and barthese came from the second seeding, and in that of peas from the d seeding. But when the tests for 1892 only are compared, we that the best yields obtained in every instance came from the seeding, except with peas.

Remarks.—The soils where these plots were grown may be termed a mild clay loam, with a somewhat open sub-soil. The field containing the plots grown in 1889 and 1890 was low lying, and that in which the plots were grown in 1891 and 1892 was elevated.

Conclusions.

1. That considerably higher yields may be expected from several of the foreign varieties of oats, than from the old varieties.

2. That of all the varieties of oats grown for four years, the Joanette Black stands first in point of yield among the black varieties and the Siberian among the white varieties.

3. That the Herison Bearded and Pringle's Champion still retain first and second places in point of yield, among all the varieties grown for four years.

4. Thut fifteen imported varieties of barley have given a larger yield for four years than the common six-rowed variety.

5. That of all the varieties of barley grown for four years, the Mandscheuri and French Chevalier still hold first and second place respectively, in point of yield.

6. That of twenty varieties of peas grown for two years the Prussian Blue stands at the head of the list in point of yield, and o sixty one varieties grown in 1892, the Princess Royal gave the larges yield per acre, and the Early Racehorse the heaviest weight per measured bushel.

7. That while it is important that cereal spring grains should as a rule be sown as soon as possible after the ground has become sufficiently dry in the spring, it is more important relatively in the cas of spring wheat than in that of oats and barley, while no special advantage seems to follow very early the sowing of peas.

Distribution of Seed.—We have a limited quantity of seed for di tribution, and will supply any of the following varieties at moderate prices, and in the order in which the applications are received, viz Oats—Joanette Black, Black Etampes, Siberian, Probsteier, Polan White, Improved Waterloo, Bavarian, White Abundance and Golde Giant. Peas—Prussian Blue, Tall White Marrowfat, Canada Clus ter, Prince Albert and D'Auverne. Barley—Mandscheuri and Ode brucker. Apply to the Professor of Agriculture, Guelph, Ont.

Some of the varieties will be distributed in smaller lots, throug the medium of the Ontario Agricultural and Experimental Union For circulars apply to the Secretary, O. A. Zavitz, Experimental St tion, Guelph.



