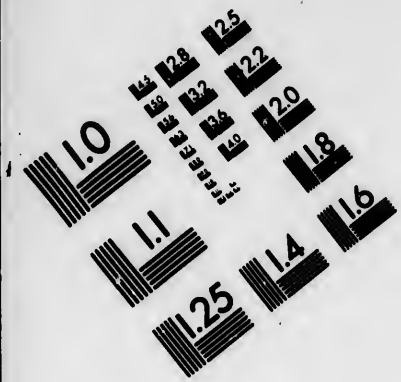


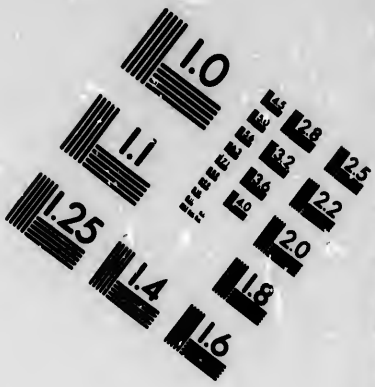
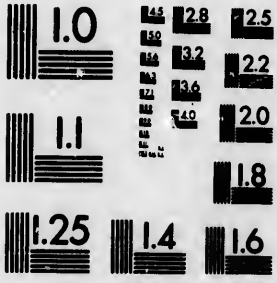
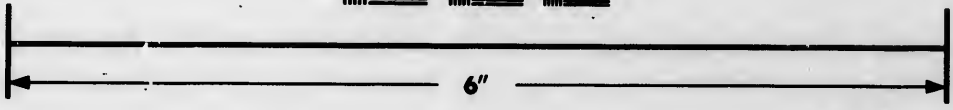
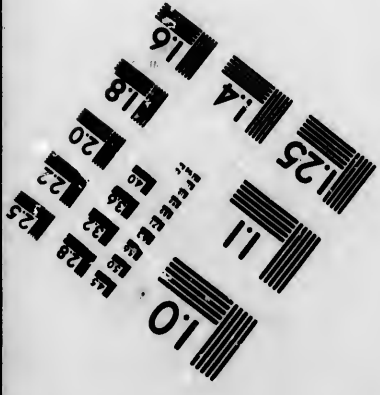


IMAGE EVALUATION
TEST TARGET (MT-3)







Photographic
Sciences
Corporation

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- ☐ Coloured covers/ Couverture de couleur
- ☐ Covers damaged/ Couverture endommagée
- ☐ Covers restored and/or laminated/ Couverture restaurée et/ou pelliculée
- ☐ Cover title missing/ Le titre de couverture manque
- ☐ Coloured maps/ Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black)/ Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations/ Planches et/ou illustrations en couleur
- ☒ Bound with other material/ Relié avec d'autres documents
- ☒ Tight binding may cause shadows or distortion along interior margin/ La reliure serrée peut causer de l'ombre ou de la distortion le long de la marge intérieure
- ☐ Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/ Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- ☐ Additional comments:/ Commentaires supplémentaires:

- ☐ Coloured pages/ Pages de couleur
- ☐ Pages damaged/ Pages endommagées
- ☐ Pages restored and/or laminated/ Pages restaurées et/ou pelliculées
- ☒ Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- ☐ Pages detached/ Pages détachées
- ☒ Showthrough/ Transparence
- ☐ Quality of print varies/ Qualité inégale de l'impression
- ☐ Includes supplementary material/ Comprend du matériel supplémentaire
- ☐ Only edition available/ Seule édition disponible
- ☐ Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image/ Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
				✓							

The copy filmed here has been reproduced thanks to the generosity of:

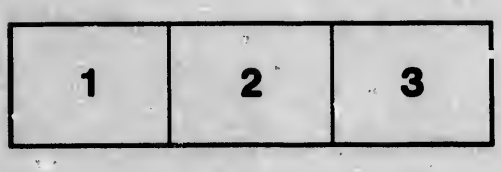
Library
Agriculture Canada

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol → (meaning "CONTINUED"), or the symbol ▽ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

Bibliothèque
Agriculture Canada

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole → signifie "A SUIVRE", le symbole ▽ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

ONTARIO AGRICULTURAL COLLEGE

EXPERIMENT STATION.

BULLETIN XC.

EXPERIMENTS WITH WINTER WHEAT.

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

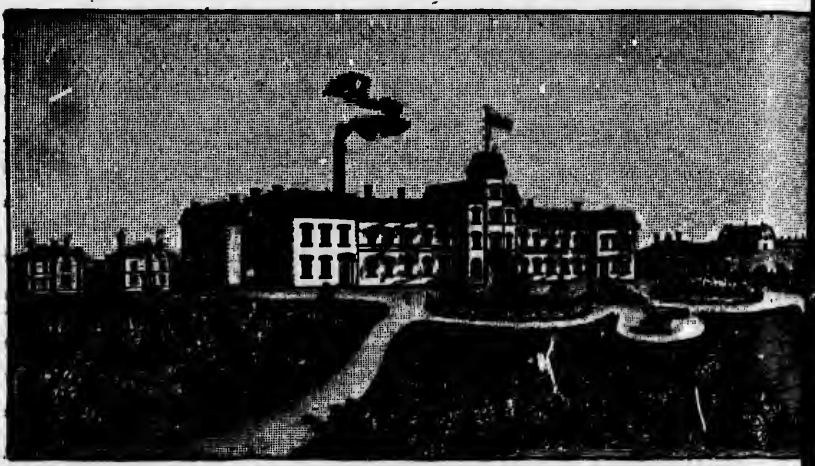
PUBLISHED BY THE DEPARTMENT OF AGRICULTURE
August 21, 1893.

TORONTO:
PRINTED BY WARWICK & SONS.

MINISTER OF AGRICULTURE

HON. JOHN DRYDEN, TORONTO.

Ontario Agricultural College and Experimental Farm, Guelph, under control of the Minister of Agriculture.



JAMES MILLS, M.A. .. .. President
THOMAS SHAW.. .. .. Professor of Agriculture and Farm Superintendent
A. E. SHUTTLEWORTH, B.A. Sc. .. .. Professor of Chemistry
J. HOYES PANTON, M.A., F.G.S. Professor of Natural History and Geology
J. H. REED, V.S. .. .. Professor of Veterinary Science
H. H. DEAN, B.S.A. .. .. Professor of Dairy Husbandry
JOHN MCCRAE. .. .. Assistant Resident and Mathematical Master
CAPTAIN WALTER CLARKE.. .. .. Instructor in Drill and Gymnastics
C. A. ZAVITZ, B.S.A.. .. .. Experimentalist
A. MCCALLUM. .. ..Bursar

ADVISORY BOARD.

C. C. JAMES, M.A., *Secretary* .. .. Deputy Minister of Agriculture, Toronto
JOHN I. HOBSON, *Chairman* .. .. Mosborough, County of Wellington

BULLETIN XC.

EXPERIMENTS WITH WINTER WHEATS.

The principal object of this bulletin is to furnish information to the farmers in an easily accessible form, which they can turn to good account when determining the varieties of winter wheat to be sown the present season. This information relates to the behavior of certain varieties of winter wheat grown at this station for one, two, three and four years respectively and under similar conditions. It furnishes important particulars relating to various characteristics and peculiarities of growth which have an important bearing on the adaptability of soils to certain varieties. These particulars are probably of more value than the comparative yields, which are also given in the bulletin.

It has been our aim during recent years to grow all the Canadian and American varieties of any promise, the seed of which we have been able to obtain. The question has in consequence been raised as to the advantage that can accrue from continuing the test with so many varieties, many of which are not likely to come into prominence. We answer that our principal aim is to prevent them from coming into prominence, and by so doing to furnish a safeguard to the farmers. Whenever the attempt is made by designing men to palm off a variety as new and superior, we have a ready means of comparison at hand for detecting the imposture as to name and properties. Could this work have been done years ago the Red Lion wheat swindlers could not have taken such large sums from unsuspecting

farmers as they did in certain counties of Ontario. Many farmers at the time paid as high as $15.00 per bushel for the seed. In our experience it has proved one of the least satisfactory of all the varieties grown. If farmers will but heed carefully the work that is being done at the experiment stations in this country, the trade of the seed grain swindler cannot flourish again.

DESIRABLE QUALITIES. The qualities to be sought in winter wheat include the following: (1) Ability to give good yields; (2) the quality of the grain, including weight per bushel and value for milling purposes; (3) strength of straw; (4) non-ability to rust; (5) earliness in maturing; (6) the presence or absence of beards.

LOCATION AND SOIL. All the varieties, both native and foreign, were grown side by side in ranges separated only by temporary roads. The plots in these ranges contained each exactly one one-hundreth of an acre. The yield per acre is estimated from the actual yield of the plots. The land may be termed level, and yet it was somewhat elevated, occupying as it did the highest part of a field, the whole of which may be said to be high-lying. The soil may be designated a mild clay loam.

PREPARATION OF THE SOIL. The soil was prepared on the bare fallow system to secure uniformity of condition. This was the only bare fallow that we had upon the farm except a small portion also under preparation for experimental work. The cultivation given was much the same as is usually put upon bare fallows. Barnyard manure was applied at the rate of 15 tons per acre in the spring of 1890, and a crop of rape was grown and pastured off upon the land the same year. In 1891 a grain crop was grown. No manure has been put upon it since 1890.

SELECTION OF VARIETIES. In selecting varieties to sow, those kinds should be preferred which have given the most satisfaction during a term of years rather than for one year. Sometimes varieties do well for one year or more, and then cease to do so well thereafter

We are now able to give facts relating to the behavior of a considerable number of varieties for four years, as shown in Table II. The aim should also be to adapt the variety to soil conditions, the more rugged and less refined varieties being better adapted to the less productive soils than the more refined sorts.

THE VARIETIES GROWN. There were in all 153 plots grown at this station during the present year, including 70 varieties. Of these, 11 of the leading varieties were grown in triplicate plots. Of the 70 varieties grown, 52 were Canadian and American, and 18 were foreign. The foreign varieties which were imported originally from Germany, England, France and Russia in 1889, are all from last year's seed. As none of these kinds have as yet proved equal to some of the best of the Canadian and American varieties, and as many of them do not ripen sufficiently early to be reported upon in the bulletin with the latter, we do not feel justified as yet in recommending the farmers to grow them. This bulletin therefore gives the particulars relating to 52 Canadian and American varieties grown under the same conditions.

MANNER AND TIME OF SEEDING. The seed was sown by hand at the rate of $1\frac{2}{3}$ bushels per acre by weight. The plots were all sown on September 3rd with the exception of Nos. 45, 46, 48, 50 and 52, which were sown on September 9th.

THE CONDITIONS OF SEASON AND WEATHER. These varieties, speaking in general terms, came through the winter exceptionally well. The spring following was cold and backward, insomuch that growth was hindered somewhat seriously for a time. Eventually, however, the growth was rapid and the ripening early rather than late. During the ripening period the best development of the grain was hindered by unduly warm weather.

Table 1 gives the characteristics of 52 varieties of winter wheats:

	Nature of head.	Color of		Date of maturity.	Height of plants.	Comparative amount of rust. (0—none. 100 much.	Per cent. of straw lodged at harvest.
		Chaff.	Grain				
				July	Inch.		
1 Surprise	Bald	White	White	22	50.5	30	30
2 Early Red Clawson	"	Red..	Red..	20	49.0	35	60
3 Golden Drop	"	"	"	20	48.0	35	60
4 Golden Cross or Volunteer	Bearded	"	"	24	51 0	50	10
5 Red Velvet Chaff	Bald	White	Red..	23	54.0	25	20
6 Rogers	"	"	"	25	53.5	45	15
7 Hybrid Mediterranean	Bearded	Red..	"	22	51.0	55	3
8 Bonnell or Landreth	Bald	White	White	25	53.0	28	10
9 Manchester	"	"	Red..	26	51.0	45	5
10 Martin Amber	"	"	White	27	52.5	43	5
11 Standard	"	Red..	"	25	50.0	55	10
12 Lancaster	Bearded	"	Red..	23	50.0	33	80
13 Seneca or Clawson	Bald	"	White	24	48.5	45	10
14 Red Lion	Bearded	"	Red..	24	51.0	40	80
15 New Monarch	Bald	White	"	23	52.0	50	10
16 American Bronze	"	"	"	23	52.5	58	3
17 Egyptian	Bearded	"	"	22	50 5	48	10
18 Jones' Winter Fife	Bald	"	"	21	49 5	33	3
19 Bulgarian	Bearded	"	White	23	48.5	33	3
20 Canadian Velvet Chaff	Bald	"	"	25	48.0	33	0
21 Garfield or Natural Cross	"	"	"	25	53.0	43	3
22 Winter Pearl	"	"	"	27	48.5	35	0
23 Democrat	Bearded	"	"	21	48.0	43	0
24 Dawson's Golden Chaff	Bald	Red..	"	23	46.0	60	0
25 Mediterranean	Bearded	White	Red..	22	46.0	43	3
26 Reliable	"	"	"	22	45.5	40	0
27 Deitz Longberry	"	"	"	21	47.5	48	0
28 Coryell	Bald	Red.	"	20	40.5	48	0
29 Russian Amber	Bearded	White	"	23	42.5	33	0
30 Rutherford	"	Red..	"	23	46.0	58	0
31 Red Wonder	"	White	"	22	47.5	45	0
32 Walker's Reliable	"	"	"	22	44.0	63	5
33 Fulcaster	"	"	"	25	45.0	43	0
34 Rumsey	"	"	White	22	45.0	43	0
35 Valley	"	"	Red..	22	44.0	40	0
36 Longberry Red	"	Red..	"	23	44.5	33	5
37 Fultz	Bald	White	"	21	43.5	53	0
38 Velvet Chaff	Bearded	Red..	Red..	22	40.0	60	0
39 Genesee	"	White	White	23	46.0	63	0
40 Monette	Bald	"	Red..	25	41.5	40	3
41 Hybrid Delhi	"	"	White	26	42.0	50	0
42 Manilla	"	"	"	27	43 5	45	0
43 Scott	"	"	Red..	25	44.0	43	0
44 Red Russian	"	Red..	"	25	44.0	43	0
45 South Sea	"	"	White	22	45.0	25	0
46 White Leader	"	White	"	24	48.0	68	0
47 Eureka	"	"	"	22	50.5	58	0
48 Soule's	"	"	"	24	49.0	58	0
49 Stewart's Champion	"	"	Red..	24	54.0	53	0
50 White Star	Bearded	Red..	"	24	48.0	38	0
51 Treadwell	"	White	White	24	49.0	50	0
52 British Columbia	Bald	Red..	Red..	26	47.0	75	0

It will be observed that of the 52 va..eties in the above table the Early Red Clawson, Golden Drop and Coryell were the first to mature. Only seven days elapsed between the maturing of the earliest and the latest varieties. The amount of rust, generally speaking, was slightly greater than last year. A majority of the varieties did not lodge to any extent, and yet the Lancaster and Red Lion were badly lodged. The Early Red Clawson and Golden Drop also lodged considerably. The Surprise crinkled down much more than in previous years, and this complaint seems somewhat general the present season, in regard to this variety.

Table II gives yields of 15 varieties for four years :

Varieties.	Straw per acre (tons).		Weight per measured bushel (lb.)		Grain per acre. (bush. 60 lb.)	
	1893	Average 4 years, 1890-93.	1893	Average 4 years, 1890-93.	1893	Average 4 years, 1890-93.
1 Surprise	2.7	2.72	57.8	59.90	42.6	45.43
2 Early Red Clawson	3.2	2.72	56.5	59.05	40.3	44.36
3 Golden Drop	3.3	2.73	60.5	61.70	42.7	42.66
4 Golden Cross or Volunteer	2.9	2.61	59.3	60.80	41.5	41.81
5 Red Velvet Chaff	3.6	2.77	56.8	59.80	36.3	41.20
6 Rogers	2.8	2.60	59.5	60.70	34.9	41.15
7 Hybrid Mediterranean	3.0	2.78	59.3	60.16	40.6	40.55
8 Bonnell or Landreth	2.6	2.72	56.9	59.75	33.7	39.90
9 Manchester	2.4	2.46	58.5	61.13	34.7	39.55
10 Martin Amber	2.4	2.60	58.3	60.48	33.8	38.50
11 Standard	2.4	2.64	55.7	59.08	31.4	38.30
12 Lancaster	2.6	2.80	60.2	62.00	35.5	38.23
13 Seneca or Clawson	2.3	2.66	57.8	59.60	33.6	37.96
14 Red Lion	2.6	2.75	60.0	61.28	36.7	37.89
15 New Monarch	2.4	2.47	58.1	59.98	30.9	33.21

s the facts given in Table II relate not only to results of this year's op, but also to the average obtained for the past four years, they y be regarded as of special importance. The average yield of grain r acre of these fifteen varieties was 30.9 bush. in 1890, 51.6 bush. 1891, 41 bush. in 1892 and 36.6 bush. in 1893. For the four ars the average was 40 bush. The average weight per bush. in 90 was 60 lb.; in 1891, 63.3 lb.; in 1892, 60 lb., and in 1893,

58 lb. For the four years the average was 60.4 lb. The Surprise again heads the list among 15 varieties grown for four years, and also stands second among the 44 varieties grown in 1893. It will be remembered that this variety is possessed of good milling properties. The Early Red Clawson follows closely with an average yield of 44.4 bush. per acre. Its earliness in ripening is a strong point in its favor. The Golden Drop which stands third in the above table gave the highest yield per acre of all the Canadian and American varieties grown in 1893, and in 1892 it stood at the head of the list in point of yield along with Dawson's Golden Chaff, the yields of the two being equal. The Golden Drop as already stated is also one of the earliest varieties.

Table III gives yields of 8 varieties for three years :

Varieties.	Straw per acre. tons).		Weight per measured bushel (lb.)		Grain per acre. (bush. 60 lb.)	
	1893	Average 3 years, 1891-93.	1893	Average 3 years, 1891-93.	1893	Average 3 years 1891-93
16 American Bronze..	3.0	2.85	55.1	59.10	36.0	46.9
17 Egyptian	2.9	2.71	58.6	61.33	38.2	46.3
18 Jones' Winter Fife	2.4	2.23	58.0	60.47	35.9	43.3
19 Bulgarian	2.2	2 28	61.1	62.37	34.7	42.8
20 Canadian Velvet Chaff ..	2.5	2.42	56.8	58.13	34.0	41 5
21 Garfield or Natural Cross.	2.0	2.46	57.0	59.40	26.6	41.1
22 Winter Pearl.....	2.1	2.48	59.7	60.37	30.5	40.7
23 Democrat	2.1	2.31	59.5	61.97	29.3	39.3

These varieties have been grown here for three years, and li those of the previous table, under the same conditions. The avera yield obtained from them in 1891 was 55 3 bush. per acre ; in 189 39.9 bush. ; in 1893, 33.2 bush. ; for the three years 42.8 bush. T averag weight per measured bush. in 1891 was 63 2 lb. ; in 1892, 59 lb. ; in 1893, 58.2 lb. ; for the three years, 60.4 lb. The Americ Bronze, although still at the head of the list, does not seem well a to maintain the relative position which it gained in 1891. Its lig

weight per bushel and its rust tendencies tell somewhat against it, but it is a vigorous grower and stands up well. The Egyptain, though an old variety, has done very fairly. The Jones' Winter Fife which comes third in point of yield stands higher relatively this year than previously. First class milling properties are claimed for it. The Bulgarian, which bears considerable resemblance to the Democrat, yields fairly and weighs well. The Canadian Velvet Chaff gave a fair yield per acre but the grain was exceptionally light in weight.

Table IV gives yields of 21 varieties for two years :

	Varieties.	Straw per acre. (tons.)		Weight per measured bushel. (lb.)		Grain per acre. (bush. 60 lb.)	
		1893.	Average 2 years, 1892-93.	1893.	Average 2 years, 1892-93.	1893.	Average 2 years, 1892-93.
24	Dawson's Golden Chaff,	2.3	2.90	57.4	58.5	38.1	45.66
25	Mediterranean	3.0	3.19	61.0	61.4	30.4	40.65
26	Reliable	2.1	2.62	60.2	61.2	31.6	39.76
27	Deitz Longberry	1.9	2.63	61.5	61.7	30.2	39.46
28	Coryell.....	1.7	2.27	62.7	62.1	31.6	38.89
29	Russian Amber.....	2.0	2.59	60.7	61.2	29.0	37.83
30	Rutherford	1.8	2.73	58.2	59.0	29.1	37.64
31	Red Wonder	1.7	2.94	61.2	62.0	25.7	37.26
32	Walker's Reliable.....	2.1	2.39	59.6	60.0	31.3	37.08
33	Fulcaster.....	1.5	2.39	61.2	62.9	23.4	36.94
34	Rumsey	1.8	2.57	59.7	60.6	27.5	36.30
35	Valley	1.8	2.19	58.7	60.1	26.1	34.90
36	Longberry Red	1.7	2.53	60.0	60.5	27.2	34.79
37	Fultz.....	1.2	2.14	60.9	61.7	20.0	33.72
38	Velvet Chaff	1.5	2.26	60.7	61.9	26.1	33.30
39	Genesee	1.5	2.47	58.5	59.8	22.1	32.94
40	Monette	1.5	2.41	58.0	58.5	22.7	32.38
41	Hybrid Delhi.....	1.2	2.04	56.1	57.8	19.5	31.17
42	Manilla	1.5	2.54	54.0	56.4	22.1	30.34
43	Scott.....	1.5	2.08	57.8	59.4	22.9	27.71
44	Red Russian	.8	1.99	56.1	58.8	7.9	24.64

The varieties in Table IV have been grown here for but two years. Considerably more than half the number were imported from the United States. The average yield per acre in 1892 was 44.7 bush. ;

in 1893, 25.9 bush.; for the two years, 35.3 bush. The average weight per measured bushel was 61.3 lb., and in 1893, 59.8 lb.; for the two years, 60.5 lb. The Dawson's Golden Chaff, originated in 1881, by Robt. Dawson of Paris, Ont., comes first in point of yield. It is exceptionally strong in the straw, but has some rust tendencies. The average yield per acre for two years has been 5 bush. in advance of the variety next on the list. The old Mediterranean, imported from the United States, comes second in point of yield, showing that it still retains its old time vitality. The Coryell, previously mentioned as one of the three earliest varieties, gave the heaviest weight per measured bushel of the 52 varieties grown in 1893.

Table v gives yields of 8 varieties for one year only:

Varieties.	Straw per acre 1893. (tons.)	Weight per measured bushel, 1893. (lb.)	Grain per acre 1893. (bush. 60 lb.)
45 South Sea	1.1	60.0	31.0
46 White Leader	1.7	54.6	30.1
47 Eureka	1.9	56.1	27.7
48 Soule's	1.9	54.0	26.2
49 Stewart's Champion	2.5	56.	25.8
50 White Star	.9	58.8	25.1
51 Treadwell	1.2	57.1	16.5
52 British Columbia	1.5	53.3	15.0

The eight varieties in table v were grown here this year for the first time in these comparative tests. None of them have given very high yields. The South Sea variety bears a very close resemblance to the Seneca or Clawson, insomuch that they be one and the same sort. The White Leader, very recently introduced, stands second in point of yield. It is one of the lightest weighing wheats in the list of varieties mentioned in the above table. The Soules and Treadwell will be remembered as old standard varieties. The behavior of neither of them was such as to sustain the old time prestige, more especially the Treadwell, with which the yield was very low.

Table VI gives comparative summary of results:

Classes of grain.	Number of varieties.	Average yield of straw per acre. (tons.)		Average weight per measured bnshel. (lb.)		Average yield of grain per acre. (bush. 60 lb.)	
		1893.	Average 2 years, 1892-93.	1893.	Average 2 years, 1892-93.	893.	Average 2 years, 1892-93.
Bald	24	2.24	2.77	57.8	58.7	31.0	35.6
Bearded	20	2.14	2.66	60.0	60.8	30.8	38.2
White Chaff	30	2.15	2.66	58.7	59.6	29.9	36.1
Red Chaff	14	2.30	2.83	58 9	59 8	33.0	38.3
White wheat	15	2.10	2.67	57.8	58.7	30.7	35.3
Red wheat	29	2.24	2.74	59.3	60.2	31.0	37.5

It will be observed that the average per measured bush. of the 20 bearded varieties for two years was 2.1 lb. more than that of the 24 bald varieties. The 29 varieties of red wheat weighed on an average 1.5 lb. per measured bushel more than the 15 varieties of white wheat. During the two years the bearded varieties gave an average yield of 2.6 bush. per acre more than the bald varieties; the red chaff varieties 2.2 bush. per acre more than those with white chaff; and the red wheats 2.2 bush per acre more than the white wheats. These years have not been really first-class wheat years, and this doubtless has had an important bearing on these results.

TABLE VII gives yields of four varieties of Winter wheat sown at four different dates:

Dates of seeding.	Weight of grain per measured bushel. (lb.)				Yield of grain per acre. (bush. 60 lb.)			
	Dawson's Golden Chaff.	Early Red Clawson.	American Bronze.	Surprise.	Dawson's Golden Chaff.	Early Red Clawson.	American Bronze.	Surprise.
August 26th	57.5	57.3	57.8	57.3	31.1	26.3	24.2	22.3
September 2nd	57.3	56.1	57.5	55.8	28.6	19.4	24.4	15.3
September 9th	55.3	55.8	55.6	54.3	25.8	21.5	20.8	15.1
September 17th	48.8	50.1	47.8	49.8	15.1	14.3	10.9	10.8

In the above table four leading varieties of winter wheat were sown at different dates, to test the effect upon the yields. It will be

noticed in almost every instance the first date of seeding, viz.: 26th August, gave the best yields, and that these yields decreased, generally speaking, with each seeding, at a later period. These results may have been influenced by the soil, which had grown grain for two years previously. It should also be borne in mind that latitude has much to do in determining the best season at which to sow winter wheat. The varieties in this list have given the following average yields per acre from all the different dates of seeding, viz: Dawson's Golden Chaff, 25.1 bush.; Early Red Clawson, 20.4 bush.; American Bronze, 20.1 bush., and Surprise, 15.9 bush. The average yields per acre from the different dates of seeding are as follows: August 26th, 26 bush.; September 2nd, 21.9 bush.; September 9th, 20.8 bush., and September 17th, 12.8 bush. The average weight per measured bushel at the above dates was as follows: August 26th, 57.5 lb.; September 2nd, 56.7 lb.; September 9th, 55.3 lb., and September 17th, 49.1 lb.

Distribution of Seed.

No varieties of winter wheat are kept for sale this year at the Experiment Station.

In the subjoined table will be found the different sets of varieties of wheats which will be sent free by mail, in half-pound lots of each variety, to farmers applying for them, who will be able to test them carefully and report the results after harvest. The seed will be sent out in the order of the applications received so long as the supply lasts.

Two Sets of Winter Wheat for Co-operative Tests.

I.	II.
Dawson's Golden Chaff.	Dawson's Golden Chaff.
Golden Drop.	Surprise.
Early Red Clawson.	Jones' Winter Fife.
Bulgarian.	White Leader.
American Bronze.	Early Genesee Giant.

Each farmer wishing one of these sets will please write to the Secretary, C. A. Zavitz, Experiment Station, Guelph, *mentioning which set he desires*, when the grain, with instructions for testing and blank forms on which to report will be forwarded free of cost to his address, until the limited supply becomes exhausted.

Conclusions.

The results of the experiments may thus be summarized :

1. That the average yields per acre of the 52 Canadian and American varieties grown in 1893 were straw 1.9 tons, grain 30 bush., and weight per measured bushel, 58.2 lb.

2. The five best yielding varieties for 1893 were the following : Golden Drop, 42.7 bush. per acre ; Surprise, 42.6 bush. ; Golden Cross 41.5 bush ; Hybrid Mediterranean, 40.6 bush., and Early Red Clawson 40.3 bush.

3. The five varieties which gave the heaviest weights per measured bush in 1893 were the Coryell, 62.7 lb. ; Daitz Longberry 61.5 lb. ; Fulcaster, 61.2 lb ; Red Wonder, 61.2 lb., and Bulgarian 61.1 lb.

4. That in our experience of the past four years, the average yields per acre of the white and red wheats have been almost exactly the same

5. That in our experience of the past three years we have found that the red wheats average from $1\frac{1}{2}$ to 2 lb. more per measured bushel than the white wheats.

6. That in our experience the past year, in sowing varieties of wheat at different dates, we have found that in every instance the earlier sown plots have given the best results.