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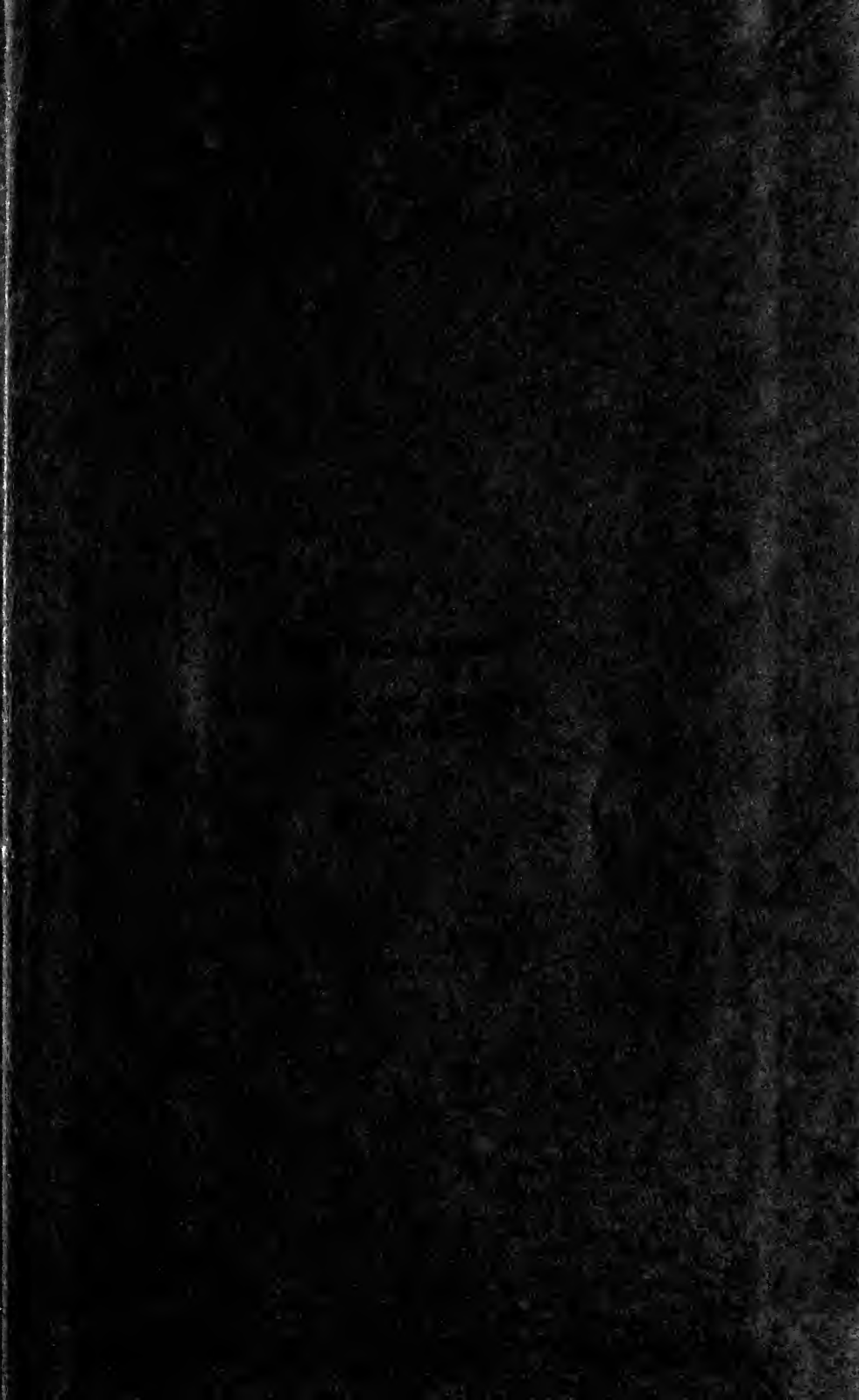
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AGRICULTURE





UNIVERSITY OF ILLINOIS,  
Agricultural Experiment Station.

CHAMPAIGN, AUGUST, 1892.

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BULLETIN NO. 22.

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EXPERIMENTS WITH WHEAT, 1891-92.

Some of the results of experiments tried with wheat in the season 1891-92 are here given, with reference also to like experiments of previous years.

These experiments are reported:

- No. 53. Effect of time and manner of harvesting on yield of wheat.
- No. 65. Quantity of seed.
- No. 66. Time of sowing.
- No. 67. Depth of sowing.
- No. 62 and 69. Effect of fertilizers.
- No. 116. Test of varieties.

SUMMARY.

The following is a summary of some experiments with wheat made at the Agricultural Experiment Station of the University of Illinois, Champaign, on fertile, dark colored prairie soil, for the season of 1891-92; and of experiments made at Flora, Odin, Belleville, and DuQuoin, to test the effect of manures on wheat.

The year 1891 was one of unusual drouth, continuing until November. The winter was rather mild, with a fair rain-fall. The spring of 1892 was characterized by unusually heavy rains.

## TEMPERATURE AND RAINFALL, JULY, 1891, TO JUNE, 1892.

	1891 and 1892.		Average for 10 years.	
	Rain-fall.	Temperature.	Rain-fall.	Temperature.
July, 1891.....	1.41	70.1	2.73	77.5
August.....	2.86	74	3.45	74.6
September.....	.41	69.2	3.27	66.5
October.....	1.29	51.3	3.27	54.6
November.....	5.58	35.7	2.76	40.6
December.....	1.53	37	2.47	27.1
January, 1892.....	.79	19.2	1.54	22.8
February.....	2.64	33	3.42	29.7
March.....	2.59	36.1	2.61	39
April.....	6.45	48.6	3.19	52.4
May.....	7.86	57.9	4.45	64.6
June.....	5.36	70.6	5.04	71
Total.....	38.77	.....	38.20	.....

The experiments at the Station were made on soil which had grown a crop of oats in 1891. The land was plowed in August, was disked twice, harrowed, and rolled before seeding. The wheat made but feeble growth in the autumn. The growth of straw in the spring was heavy. Much of the wheat lodged badly.

*Variety Tests.* Sixty varieties were sown on one-tenth acre plats, and 12 of Carter's cross-bred wheats in smaller plats. None of these last were worth harvesting. Several other varieties, generally of foreign origin, failed.

Fifty-six plats, representing 48 varieties as named, gave an average yield of 29 bu. per acre. The largest yield was at the rate of 35.4 bu.; the smallest, 16.3 bu.; the next smallest, 22 bu. Twenty-two plats yielded at the rate of over 30 bu.; six, less than 25 bu. each. All of the wheat was light in weight; 58 lb. a bushel being the highest, 51.25 lb. the lightest weight; the wheat from 18 plats weighing less than 55 lb. a bu.

Twenty-five plats of bearded wheat gave an average yield of 30.8 bu.; 28 plats of bald wheat an average of 27.5 bu. an acre. Six varieties were classed as white wheat. These gave an average yield of 25.8 bu. an acre, the largest yield being 30.3 bu.

Of the red bearded varieties the following gave yields of 30 bu. or more an acre, averaging over 33 bu.: Hindustan, Diehl Mediterranean, Deitz, Tuscan Island, Lehigh, Crate, Tasmanian red, velvet chaff, nigger, golden cross, new longberry Wabash, and Lebanon.

Of red bald varieties Poole, Currell's prolific, longberry, and improved rice gave yields of 30 to 32 bu. an acre.

Of white bald varieties golden prolific gave 30 bu., and of the white bearded Democrat gave the same yield.

These plats were drilled at the rate of six pecks an acre, from Sept. 25th to Sept. 29th.

*Thickness of Seeding.* Seeding at the rate of 4 pecks an acre gave yields of 24.7 bu. an acre; 5 pecks, 29 bu.; six, 28 bu.; eight, 27.8 bu. In a series of years seeding at the rate of from 5 to 6 pecks an acre has given the best results.

*Time of Sowing.* Wheat sown Sept. 2d gave a yield of 29 bu.; Sept. 11th, 28.5 bu.; Sept. 20th, 28.7 bu.; Oct. 5th, 27.2 bu.; Oct. 13th, 21.7 bu. The yield of straw steadily decreased from earliest to latest sowing. In trials for several years no material difference has been found in the yields of wheat sown any time in September.

*Depth of Seeding.* Little difference in yield was found when the wheat was covered one inch or three inches. That covered five inches yielded considerably less.

*Effect of Fertilizers.* Application of stable manures, bone meal, and blood and bone fertilizers gave little or no increase in yield of wheat on the Station grounds. In trials in southern Illinois stable manures produced a marked effect and the other fertilizers sufficient yields to make further trials advisable.

*Effect of Time of Harvesting.* Harvesting at different stages of ripeness showed a constant increase in both yield and size of berry from earliest up to latest. At the latest date the wheat was "dead" ripe.

*Experiment No. 65. Wheat, Quantity of Seed.*

For four successive years an experiment has been tried to test the effect of sowing different quantities of seed per acre. In 1891 six plats were drilled Oct. 6th as nearly as practicable at the rates indicated in the table, which also gives the results. These show that the largest yield of both grain and straw came from seeding at the rate of five pecks per acre.

The average results from duplicate plats for each of the four years are given in a second table. In no year has there been any remarkable variation in yield caused by difference in rate of seeding, unless 1891 be an exception. In that year there was an extreme difference of over seven bushels per acre.

For two years the stubs after cutting have been counted on several square feet on each plat. Considerable variation has been shown, but the numbers have not in all cases varied with the rate of seeding.

YIELD OF WHEAT FROM DIFFERENT AMOUNTS OF SEED, 1891-2.

Plat No.	Rate of seeding.	Wt. 100 kernels, grams.	Stubs per sq. ft.	Lb. per bu.	Yield per acre.	
					Straw, lb.	Grain, bu.
62	6 pecks per acre.....	2.4	54	53	2,950	25.8
63	6 pecks per acre.....	2.76	61	54	3,140	26
64	5 pecks per acre.....	2.82	54	55.25	3,357	29
65	4 pecks per acre.....	2.8	41	55	2,575	24.7
66	8 pecks per acre.....	2.86	.....	55	2,670	27.8
46	6 pecks per acre (small seed)	2.58	46	55.25	3,230	26.8

YIELD OF WHEAT FROM DIFFERENT AMOUNTS OF SEED, 1888-9 to 1891-2—  
DUPLICATE PLATS.

Seed per acre, pecks.	Yield per acre.									
	1888-9.		1889-90.		1889-91.		1891-92.		Average.	
	Straw, lb.	Grain, bu.	Straw, lb.	Grain, bu.	Straw, lb.	Grain, bu.	Straw, lb.	Grain, bu.	Straw, lb.	Grain, bu.
3	.....	.....	2,215	24.6	4,140	22	.....	.....	3,177	23.3
4	4,560	36.2	2,620	28.2	4,400	23.7	2,575	24.7	3,539	28.2
5	4,700	38.3	2,740	26.3	4,080	22.2	3,357	29	3,719	28.9
6	4,750	36.3	2,200	24.5	4,980	28.3	3,045	25.9	3,822	28.8
8	4,540	35.4	2,740	28.3	5,100	26.8	2,670	27.8	3,762	29.6

*Experiment No. 66. Wheat, Time of Sowing.*

Trials of the influence on yield of grain and straw of sowing wheat at different dates have been made for four years. In the trials for 1891-92, the land used had produced a large crop of oats in 1891. It was plowed during August. Each plat was disked twice, harrowed, and rolled just before the wheat was drilled in. While all the plats made but feeble growth during the autumn because of the drouth, the earlier sown made the best growth and appeared most vigorous in the spring.

\* YIELD OF WHEAT FROM SOWINGS AT DIFFERENT DATES, 1891-92.

Plat No.	Date of sowing.	When har- vested.	Stubs per sq. ft.	Wt. 1,000 kernels, grams.	Lb. per bu.	Yield per acre.	
						Straw, lb.	Grain, bu.
76	Sept. 2.....	July 7.....	51	27.6	56	3,495	29.1
77	Sept. 11.....	July 7.....	55	26.6	55	3,238	28.4
78	Sept. 21.....	July 13.....	57	27.6	55	2,861	26.7
79	Oct. 5.....	July 13.....	50	27	55	2,658	27.2
80	Oct. 13.....	July 13.....	47	.....	55.5	2,003	21.7

YIELD OF WHEAT FROM SOWINGS AT DIFFERENT DATES, 1889 to 1892.

Date of Sowing.	1889.			1890.			1891.	1892.			Average		
	Straw, lb.	Grain, bu.	Wt. 1,000 kernels, gr.	Straw, lb.	Grain, bu.	Wt. 1,000 kernels, gr.	Grain, bu.	Straw, lb.	Grain, bu.	Wt. 1,000 kernels, gr.	Straw, lb.	Grain, bu.	Wt. 1,000 kernels, gr.
Sept. 2.....	.....	.....	.....	.....	.....	.....	30.9	3495	29.1	27.6	.....	30	.....
Sept. 11-12.....	.....	.....	.....	3750	32.4	34.3	36.1	3238	28.4	26.6	3494	32.3	30.4
Sept. 21-23.....	4570	38.2	36.4	3170	29.1	34.5	34.5	2861	26.7	27.6	2650	32.1	32.8
Sept. 29-Oct. 5.....	4505	40.4	34.8	2450	20.8	33.6	36.4	2658	27.2	27	3204	31.2	31.8
Oct. 8-15.....	3905	36.1	33.9	1710	12.1	30	34.1	2003	21.7	.....	2539	26	31.9

The table gives the dates of seeding and the yield of each plat, both of straw and of grain, the weight of 1,000 kernels from each plat, and like facts from the trials in previous years. In no year was there any remarkable difference in yield of grain between the plats sown any time



in September. (The yield of the earliest sown plat in 1891 was somewhat decreased by the effect of shade of trees near by.)

The yield of straw has generally decreased from the first to the last sowing.

*Experiment No. 67. Wheat, Depth of Sowing.*

To compare the growth and yield of wheat sown at different depths nine rows 12 in. apart, each one rod long, were planted Oct. 8, 1891, each row with 198 kernels of selected seed wheat, or one kernel to each inch in the rows. The seed in rows 1, 2, and 3 was covered one inch deep; in rows 4, 5, and 6, three inches; in 7, 8, and 9, five inches. An extra row was planted on each side of the plat. The wheat made but feeble growth in the autumn and April 1st was in poor condition. It was cut July 14th, when it was all ripe and all standing.

The table gives details of the results.

There were considerable variations in the rows covered to the same depth. In no case did much more than one-third of the kernels produce plants which came to maturity. The average number of straws in each stool was low, five being the highest in any one row. While the yields of adjoining rows varied more than the yields from planting at different depths, slightly the best results came from the three rows covered one inch deep. A like result was found in the year previous.

The unsatisfactory results usually obtained from experiments in which only small numbers of plants or animals are used is well illustrated in this table.

YIELD OF WHEAT FROM SOWINGS AT DIFFERENT DEPTHS, 1891-92.

Row No.	Depth planted.	No. stools.	No. smut heads.	No. straws.	Wt. straw, grams.	Wt. grain, grams.	Wt. 1000 kernels, grams.
1	One in.	58	10	304	501.8	205.4	27
2	"	72	23	324	554.8	242.4	28
3	"	70	29	350	613.8	267.8	28
4	Three in.	71	20	348	604.5	268	27
5	"	58	21	243	423.9	185.5	27.8
6	"	47	16	303	583.4	241.6	27.1
7	Five in.	44	18	181	333.1	133.4	26.3
8	"	56	19	260	491.2	202.8	28.2
9	"	39	7	168	343.5	141.6	27.2

*Experiment No. 62. Wheat, Effect of Fertilizers. [At Station.]*

The effect of different kinds of manures on wheat has been tried on the Station grounds for four years.

For the season of 1891 eight plats were used, each one-fourth of an acre in extent. On each of two plats 100 lb. bone meal was applied; on each of two others 100 lb. bone and blood. These manures were sown broadcast by hand Oct. 7th, immediately before the wheat was sown. In January, 1892, five loads of rather coarse and strawy manure mostly from the horse stables, was applied to one plat. On three plats no manure was applied. No appreciable difference in the condition of

the wheat on the different plats was observed either in the autumn or early spring. The table gives the results.

While there are considerable differences in the yields of the plats, these are believed to be owing more to the differences in soil than to the effect of manures applied. The plats were each 2x20 rods. Plats 68 and 72, 69 and 73, 70 and 74, and 71 and 75 were side by side. Except in plats 70 and 74 there was in no case a difference of one bushel per acre in the yield of the plats of any pair of plats. In this case the plat to which nothing had been applied yielded at the rate of 3.2 bu. per acre more than the adjoining plat on which manure had been applied. The wheat on the plat to which barn yard manure was applied lodged much more than that on the adjoining plat.

The application to wheat of no form of the commercial fertilizers yet tested at the Station has proved profitable.

Samples of the two commercial fertilizers used, as analyzed by E. H. Farrington, Chemist of the Station, had the following composition:

	Bone meal.	Bone and blood.
Nitrogen.....	3.42	5.67
Total phosphoric acid.....	26.23	15.48
Available .....	10.03	7.14
Insoluble .....	16.25	8.34

YIELD OF WHEAT FROM FERTILIZED PLATS, 1891-92.

Plat No.	Fertilizer.	Per cent standing at harvest.	No. of stubs, per 1 sq. ft.	Grain per acre, bu.
68	100 lb. bone meal....	67	50	25.3
72	5 loads barnyard manure....	25	46	25
69	Nothing.....	75	54	26.7
73	100 lb. bone meal....	50	56	27.2
70	100 lb. bone and blood	0	54	26.1
74	Nothing.....	5	56	29.3
71	Nothing.....	100	38	23
75	100 lb. bone and blood	100	45	22.8

*Experiment No. 69. Wheat, Effect of Fertilizers.* [Southern Illinois.]

For four years past trials of different commercial fertilizers for wheat have been made at different places in the southern part of the state, Flora, Odin, Nashville, Belleville, and DuQuoin. With the exception of the land near Belleville, all the trials have been on the level, light colored soils, with very compact sub-soils, characteristic of central southern Illinois.

For 1891 and 1892 the experiments were tried on the farms of W. W. Bowler, Flora; A. M. Woodward, Odin; H. Horn, DuQuoin; and Fred Helms, Belleville. Mr. Helms' farm is naturally very fertile.

In each case eight one-fourth acre plats were laid off side by side in fields to be sown with wheat. The plats were long and narrow.

The fertilizers were applied as follows:

To plat No. 1, 5 loads stable manure.

" " " 2, nothing.

" " " 3, 100 lb. bone meal.

" " " 4, 100 lb. blood and bone.

" " " 5, nothing.

" " " 6, 100 lb. bone meal.

" " " 7, 100 lb. blood and bone.

" " " 8, nothing.

The bone meal and blood and bone were the same as used in Experiment No. 62,

In general the soil of the different tracts seemed uniform. Aside from the fertilizing, the treatment of all the plats was the same throughout.

The table gives the results, which are not uniform at the different places, nor in accordance with the experience in previous years. As in former years, the plats with barnyard manure gave the best results, except at Flora. At Odin the yield from the plat to which stable manure was applied was at the rate of 14 bu. in excess of the plats to which the commercial fertilizers were applied, and nearly 17 bu. more than the average of the plats to which nothing was applied. In all four cases the stable manure produced a marked increase of yield over that from the unmanured plats, the average yield from the four plats treated with stable manure being at the rate of 28.5 bu. per acre, while that from the 12 plats having no manure was at the rate of 18.8 bu. per acre. The average yield of the 16 plats to which commercial fertilizers had been applied was at the rate of 24 bu. per acre; the yield of the eight plats receiving blood and bone averaged 25.1 bu. per acre; that of the eight plats receiving bone meal averaged 22.8 bu. per acre.

A considerable variation is shown in the yield of the different plats treated with the same fertilizers, as well as in the plats without any fertilizer.

At Odin the two plats to which bone meal was applied gave a less yield than the three to which nothing had been applied, while each of the two plats to which bone and blood had been applied gave a much larger yield than either one of those to which nothing had been applied.

As a whole these results are more favorable to the use of these commercial fertilizers than those in any other years. As in each of the former years, these results emphasize the great value of stable manure.

YIELD PER ACRE, BU., FROM FERTILIZED AND UNFERTILIZED PLATS, 1891-2.

No. of plat.	1	3	6	4	7	Average.	2	5	8	Average.
Fertilizer.	Barnyard manure.	Bone meal.		Blood and bone.			Nothing.			
Flora.....	19.3	20.5	15.3	22.3	19	19.3	16.6	13.3	12.9	14.3
Odin.....	31.7	15.1	13.3	23.3	19	17.7	15.9	15.7	12.7	14.8
DuQuoin.....	24.5	24	21	24	22	22.7	16.	17	14	15.7
Belleville.....	38.5	35.9	37.8	35.2	36.3	36.3	28.7	32.1	30.2	30.3
Average.....	28.5	22.8		25.1		24				18.8

*Experiment No. 116. Wheat, Test of Varieties.*

To compare the yield and other qualities of varieties, 62 plats of one-tenth of an acre each were sown from Sept. 25 to Sept. 29, 1891, with what were named as varieties, with duplicates, and with four mixtures, each of several varieties possessing similar qualities. These plats were in the same field as that in which all the other experiments with wheat at the Station were tried, and the preparation of the soil was the same as reported in those experiments. The rate of seeding in each case was six pecks per acre, as nearly as practicable.

Most of the varieties were obtained from the Ohio Agricultural Experiment Station, at Columbus. A few came from the Pennsylvania Agricultural Experiment Station, at State College, and a few from different individuals. In a number of cases samples of wheat received under different names very closely resemble each other, not only in kernel but in stalk, head, time of ripening, and yield.

In addition to these varieties twelve cross bred varieties, originated by Carter, of London, England, the seed of which had been received in 1890 and sown that autumn, were sown in smaller plats. The seed as received from England was very attractive, the kernels being large, plump, and of good color. The product at the first harvest was unsatisfactory, all the varieties maturing too late to make them desirable, and the kernels being much shriveled. All the varieties failed almost entirely in the second season's trial. No one of the plats was worth harvesting and in several of them scarcely any heads were produced.

The tables give the results of these trials. The date of ripening, yields both of straw and grain, and the weight per bushel of nearly all the varieties tested here are given from the reports of the trials of the same varieties for the same season at the Ohio Station, at Columbus, and for ten varieties from the report of the tests at the Indiana Station, at LaFayette. It is noticeable that without exception the time of ripening of any given variety was several days later at this Station than at either of the others, in several cases the difference being from ten to thirteen days. The wheat harvest in this vicinity was unusually late in 1892. In the case of a number of varieties the yields at the different stations are quite uniform; in others, there are striking differences.

At this Station the average yield of the plats was good, 56 plats giving an average yield of 29 bu. per acre. The largest yield was 35.4 bu. per acre. With one exception, no plat gave less than 22 bu. per acre. Twenty-two plats gave yields of over 30 bu. per acre each, only 6 less than 25 bu. each. The wheat was all of inferior quality as judged by appearance as well as weight, that from no plat exceeding 58 lb. per bu. The weight of these varieties, as grown at the Ohio and Indiana stations, averaged somewhat higher, but was less than the weights in other years.

Twenty-five plats of bearded wheat gave an average yield of 30.8 bu. an acre; 28 plats of bald wheat, an average of 27.5 bu.

Six varieties were classed as white wheat. These gave an average yield of 25.8 bu. an acre, the largest yield being 30.3 bu.

Of the white bald varieties, golden prolific gave 30 bu. and of the white bearded, Democrat gave the same yield.

Of the red bearded varieties, the following gave yields of 30 bu. or more an acre, averaging over 33 bu.: Hindustan, 35.4; Diehl Mediterranean, 35.1; Deitz, 34.5; Tuscan Island, 34.1; Lehigh, 34.4; Crate, 33.7; Tasmania, red, 33.4; velvet chaff, 33.4; Nigger, 31.6; golden cross, 32.2; new longberry Wabash, 30.7, and Lebanon, 30.6. Of the red bald varieties, Poole, Currell's prolific, longberry, and improved rice gave yields of 30 to 32 bu. an acre.

Four mixtures designated in the table (p. 118) as *a*, *b*, *c*, and *d*, were made of varieties which, in appearance and in description of other characteristics, seemed much alike. These mixtures were composed of equal parts of the following varieties:

Mixture *a*, velvet chaff [Penquite's] Lehigh, Hindustan, Tasmanian red, Nigger, Diehl Mediterranean, Tuscan Island, Miami Valley, long berry Wabash, bearded monarch, and Fairfield.

Mixture *b*, Wyandot red, Poole, Witter, Sheriff, Hicks, Fultz, Currell's prolific, Oregon, long berry, and early ripe.

Mixture *c*, Russian red, improved rice, extra early Oakley, and Crate.

Mixture *d*, Deitz, Lebanon, and Theiss.

In each case the yield of grain per acre from the mixture was greater than the average yield from the varieties composing it, and in all but one the pounds of straw and pounds per bushel were greater. The increased yields from the mixtures over the average yields from their components was 2.5, 2, 2.4, and 2.8 bushels per acre for mixtures *a*, *b*, *c*, and *d*, respectively.

The results of tests of varieties for one year can not be considered at all conclusive. In view of the reasonably close agreement in behavior of varieties treated this year at this Station and at the Ohio Station (p. 116), where a number of the varieties have been grown for several years, the recommendations contained in the report of the Ohio Station for 1892 is given:

"Judging from the experience of this and former years, we recommend the following sorts of wheat as probably the safest for general culture throughout Ohio: Valley, Fultz, velvet chaff [Penquite's] Egyptian, and Nigger. Diehl Mediterranean, under its various names, has given good yields on this farm and in favored localities, but cannot be recommended for general culture, and the same may be said of Martin's amber and its synonyms Landreth and silver chaff. Rudy, Deitz, Poole, Currell's prolific, early red Clawson, Hicks, and Jones's winter fife, are worthy of further trial."

WHEAT—VARIETY TESTS, 1891-92.

Plat No.	Name of variety.	Source of seed.	Ripe, July	Cut, July	Ht., in.	Bearded or bald	Color of kernels.	Wt. 100 kernels, grams.	No. stubs on 1 sq. ft.	Lb. per bu	Yield per acre		Per cent standing at harvest.
											Straw, lb.	Grain, bu.	
1	Currell's prolific.....	Ohio Experiment Station.....	9	9	52	Bald	Red	2.52	52	55.75	2,991	31	50
2	Sheriff.....	"	12	12	49	"	"	2.6	34	52.75	2,871	22.2	100
3	Hicks.....	"	12	12	48	"	"	2.74	47	56.75	3,179	28.6	100
4	Fultz.....	"	9	12	50	"	"	2.44	55	55	3,687	28.6	75
5	Witter.....	"	12	12	57	"	"	2.22	48	52.25	3,453	27.2	50
6	Miller's prolific.....	"	15	14	47	75% bald	White	2.24	42	51.25	1,942	16.3	100
7	Wisconsin triumph.....	"	9	11	48	Bald	Red	2.3	44	55.5	2,127	25.5	100
8	Early ripe.....	"	11	11	51	"	"	2.74	46	55.75	2,923	28	90
9	Wyandot red.....	University farm.....	9	11	48	50% bald	"	2.7	48	55	2,921	30.2	100
10	Ohio early ripe.....	"	11	9	54	Bald	"	2.74	77	53.25	3,769	28.4	67
11	New longberry Wabash.....	Ohio Experiment Station.....	12	12	54	Bearded	"	3.18	60	54.25	3,307	30.7	0
12	Fairfield.....	"	13	12	50	"	White	2.4	47	52.5	3,568	24.2	90
13	Miami Valley.....	"	12	12	55	"	Red	2.7	54	54.75	4,368	28.8	25
14	Velvet-chaff [Penquite's].....	"	6	9	53	"	"	2.54	49	56.25	3,910	33.4	100
15	Nigger.....	"	11	11	50	"	"	3.24	44	54.5	3,212	31.7	40
16	Finley.....	Pennsylvania Experiment Station.....	9	11	54	Bald	"	2.88	45	54.5	2,932	27.3	90
17	Ohio early ripe.....	University farm.....	9	11	54	"	"	2.56	52	54.5	2,889	30.2	90
18	Longberry.....	Ohio Experiment Station.....	9	11	54	"	"	2.62	41	55	3,750	22	100
19	New monarch wheat.....	"	11	11	57	Bearded	"	1.74	45	51.5	3,433	28.1	50
20	German emperor.....	Pennsylvania Experiment Station.....	11	9	56	75% bald	"	2.84	58	55.25	4,128	33.7	33
21	Mealy.....	Ohio Experiment Station.....	9	9	53	Bald	"	2.52	49	55.25	2,759	30.4	33
22	Crate.....	"	9	9	60	Bald	"	2.86	45	54.5	2,811	24.3	95
23	Improved rice.....	"	9	9	46	"	"	2.38	52	55.5	3,562	28.7	90
24	Extra early Oakley.....	"	9	11	54	"	"	2.26	48	56.25	3,095	26.9	100
25	German emperor.....	"	11	11	54	"	"	2.5	49	53.5	3,411	29.3	80
26	Oregon.....	"	19	11	51	"	"	3.74	50	54.5	2,999	27.1	100
27	Big English.....	"	12	12	58	"	"	3.04	51	55.75	2,313	24.1	100
28	Bearded monarch.....	"	12	12	58	"	"	2.76	47	55.75	2,924	28.7	100
29	McGhee's white.....	Pennsylvania Experiment Station.....	9	9	55	Bald	White	3.74	50	54.5	2,999	27.1	100
30	Hybrid Mediterranean.....	"	11	11	54	Bearded	Red	3.04	51	55.75	2,313	24.1	100
33	Red Russian.....	Ohio Experiment Station.....	9	11	50	Bald	"	2.76	47	55.75	2,924	28.7	100



## WHEAT—VARIETY TESTS IN ILLINOIS, OHIO, AND INDIANA, 1891-92.

Name.	Illinois.				Ohio.				Indiana.			
	Ripe July 6-14.	Yield, acre.		Lb. per bu.	Ripe, June 30 to July 6.	Yield, acre.		Lb. per bu.	Ripe, June 28 to July 1.	Yield, acre.		Lb. per bu.
		Straw, lb.	Grain, bu.			Straw, lb.	Grain, bu.			Straw, lb.	Grain, bu.	
Currell's prolific	9	2,991	31	55.75	30	3,105	20.9	58.5	.....	.....	.....	.....
Sheriff	12	3,871	22.2	52.75	2	2,345	24.2	59	.....	.....	.....	.....
Hicks	12	3,179	28.6	56.75	1	2,230	22.7	.....	.....	.....	.....	.....
Fultz	9	3,687	28.6	55	2	3,575	30.4	59	28	4,129	34.2	58.5
Witter	12	3,453	27.2	52.25	5	2,700	30	50	.....	.....	.....	.....
Miller's prolific	15	1,942	16.3	51.25	6	1,790	20.2	56	.....	.....	.....	.....
Wisconsin triumph	9	2,237	25.5	55.5	30	2,760	25.7	57	29	3,701	33.1	58
Early ripe	11	3,161	27.3	54.5	30	3,035	26.1	54	.....	.....	.....	.....
Wyandot red	9	2,921	30.2	55	4	2,775	28.7	57.5	28	3,762	35.8	58
New longberry Wabash	12	3,307	30.7	54.25	5	2,555	22.4	55	1	4,919	24.4	55.5
Fairfield	13	3,568	24.2	52.5	3	2,785	25.6	51.5	.....	.....	.....	.....
Miami valley	12	4,368	28.8	54.75	2	2,885	25.2	59.5	.....	.....	.....	.....
Velvet chaff	6	3,910	33.4	56.25	.....	.....	25.4	.....	.....	.....	.....	.....
Nigger	11	3,212	31.7	54.5	1	2,400	30	60	.....	.....	.....	.....
Longberry	9	2,889	30.2	54.5	2	2,490	25.2	57	29	4,051	32.1	59
New monarch	11	3,750	22	55	30	2,675	22.1	58	30	3,905	36.4	58
German emperor	11	3,122	26.2	54.75	4	2,635	27.7	56.5	.....	.....	.....	.....
Mealy	9	3,355	25.6	51.5	2	2,355	26.6	55.5	.....	.....	.....	.....
Crate	9	4,128	33.7	55.25	2	2,360	24	58	.....	.....	.....	.....
Improved rice	9	2,759	30.4	55.25	30	3,055	25.7	58.5	.....	.....	.....	.....
Extra early Oakley	9	3,411	29.3	56.25	2	2,960	27.3	59.5	.....	.....	.....	.....
Oregon	11	3,562	28.7	55.5	2	3,180	27	59.5	.....	.....	.....	.....
Big English	9	3,095	26.9	56.25	5	2,525	27.2	60	.....	.....	.....	.....
Bearded monarch	12	3,411	29.3	53.5	2	2,675	22.1	53	.....	.....	.....	.....
Red Russian	9	2,924	28.7	55.75	2	2,045	27.1	59	.....	.....	.....	.....
Poole	9	3,007	32.2	56.5	4	2,495	30.1	58.5	.....	.....	.....	.....



Ontario wonder.....	14	3,452	25	56.25	2	3,285	23.6	56	.....	.....	.....	.....
Martin's amber.....	14	3,274	27.3	55	2	2,790	25.2	57	.....	.....	.....	.....
Lehigh.....	12	3,873	34.4	55.75	4	3,280	27	57.5	.....	.....	.....	.....
Golden cross.....	9	3,575	32.2	56	4	2,620	31.3	59	1	4,289	30.4	58.5
Theiss.....	9	3,612	26.4	55.25	30	2,700	23.3	56	.....	.....	.....	.....
Democrat.....	12	3,767	30.3	55.25	4	3,400	29.5	58.5	.....	.....	.....	.....
Golden prolific.....	13	3,717	29.7	52	5	2,575	28.2	55	.....	.....	.....	.....
Tasmanian red.....	12	3,835	33.4	50.75	30	3,643	29.6	59.5	.....	.....	.....	.....
Lebanon.....	12	3,451	30.6	57.25	4	3,800	30	59.5	.....	.....	.....	.....
Tuscan Island.....	12	3,277	34.1	57.5	1	2,575	31.1	58.5	.....	.....	.....	.....
Fulcaster.....	9	2,778	27.7	57.25	2	3,825	27.1	57.5	30	3,798	24.5	57
Deitz.....	11	3,948	34.5	55	4	3,350	30.5	60	.....	.....	.....	.....
Hindustan.....	11	4,085	35.4	55.25	4	3,900	31.3	60	.....	.....	.....	.....
Diehl Mediterranean.....	11	3,306	35.1	57.75	4	2,520	29.7	58.5	.....	.....	.....	.....
Rudy.....	13	2,499	28.6	.....	30	2,645	25.9	57.5	.....	.....	.....	.....
Deitz longberry.....	12	3,346	30	55.75	.....	.....	.....	.....	30	6,162	34.7	54.5
										4,970	27.4	56.5

## WHEAT—YIELDS OF MIXTURES, 1891-92.

	Wt. 100 kernels, grams.	Lb. per bu.	Yield per acre.	
			Straw, lb.	Grain, bu.
<i>Components of mixture a.</i>				
Velvet chaff [Penquite's].....	2.54	56.25	3,910	33.4
Lehigh.....	3.38	55.75	3,873	34.4
Hindustan.....	3.24	55.25	4,085	35.4
Tasmanian red.....	2.9	56.75	3,835	33.4
Nigger.....	3.24	54.5	3,212	31.7
Diehl Mediterranean.....	3.47	57.75	3,306	35.1
Tuscan Island.....	3.64	57.5	3,277	34.1
Miami Valley.....	2.7	54.75	4,368	28.8
Longberry Wabash.....	3.18	54.25	3,307	30.7
Bearded monarch.....	2.5	53.5	3,411	29.3
Fairfield.....	2.4	52.5	3,568	24.2
Average of above.....	3.02	55.3	3,650	31.9
Yield from mixture of seed.....	3.28	58	3,404	33.4
<i>Components of mixture b.</i>				
Wyandot red.....	2.7	55	2,921	30.2
Poole.....	2.78	56.5	3,007	32.2
Witter.....	2.22	52.25	3,453	27.2
Sheriff.....	2.6	52.75	2,871	22.2
Hicks.....	2.74	56.75	3,179	28.6
Fultz.....	2.44	55	3,687	28.6
Currell's prolific.....	2.52	55.75	2,991	31
Oregon.....	2.38	55.5	3,562	28.7
Longberry.....	2.56	54.5	2,889	30.2
Early ripe.....	2.74	55.75	2,923	28
Average of above.....	2.57	55	3,148	28.7
Yield from mixture of seed.....	2.38	57	3,730	30.7
<i>Components of mixture c.</i>				
Russian red.....	2.76	55.75	2,924	28.7
Improved rice.....	2.52	55.25	2,759	30.4
Extra early Oakley.....	2.42	56.25	3,411	29.3
Crate.....	2.84	55.25	4,128	33.7
Average of above.....	2.63	55.62	3,305	30.5
Yield from mixture of seed.....	2.6	55.25	3,641	32.9
<i>Components of mixture d.</i>				
Deitz.....	3	55	3,948	34.5
Lebanon.....	3.34	57.25	3,451	30.6
Theiss.....	2.26	55.25	3,612	26.4
Average of above.....	2.87	55.8	3,670	30.5
Yield from mixture of seed.....	2.86	56.5	3,703	33.3

*Experiment No. 53. The Effect of the time and Manner of Harvesting on the Yield of Wheat.*

Three cuttings, of nine samples each, were made for the years 1891 and '92, each sample containing 200 spikes. The heads were removed from three samples of each cutting, and both straw and heads were placed in the drying room. Three were stood up in the drying room, and three were put out in the sun till thoroughly dry. Each sample was threshed, and the weights of straw and chaff, of grain, and of a certain number of kernels, were ascertained with the results found in the tables. The tabular results are each an average of three samples. In each of the two years the average yield of grain and weight of 1,000 kernels is greatest for that dried in the shade with heads on, which indicates that there is a transition of matter from straw to grain after cutting, if the heads are not removed and the drying is not too rapid. In general there is an increase in yield from the earliest to the latest cutting. These results correspond with those obtained from experiments of like character in two previous years.

WEIGHTS OF WHEAT CUT AT DIFFERENT DATES AND DRIED IN DIFFERENT WAYS, 1891-92

Date of cutting.	Stage of ripeness, when cut.	Wt. of 500 kernels, grams.			Wt. of kernels of 200 heads of wheat, grams.			Wt. of straw and chaff of 200 culms, grams.		
		Heads removed.	Dried in the shade.	Dried in the sun.	Heads removed.	Dried in the shade.	Dried in the sun.	Heads removed.	Dried in the shade.	Dried in the sun.
1891 June 18	Kernels mostly in milk, some in dough stage, lowerleaves dry.	8.3	8.7	8.5	77.5	85.6	80	435.2	441.9	378.5
25	Kernels mostly in dough, leaves mostly dead, lower half of stems brown....	12.3	13.4	13	114.6	123.1	122.2	395.6	381.1	378.2
29	Fully ripe.....	12.9	13	13.1	117.7	120.1	120.4	371.8	372.6	367.4
1892 June 29	Kernels in milk. Straw beginning to turn in color.....	8.8	9	7.9	88.6	104.7	85.2	365.9	410.4	390.1
July 4	Kernels in dough stage.....	9.7	10	8.3	111.1	108.1	73.5	388.7	354.1	335.1
13	Fully ripe.....	14	13.9	12.8	153	153.6	134.8	337.5	330.4	300.3

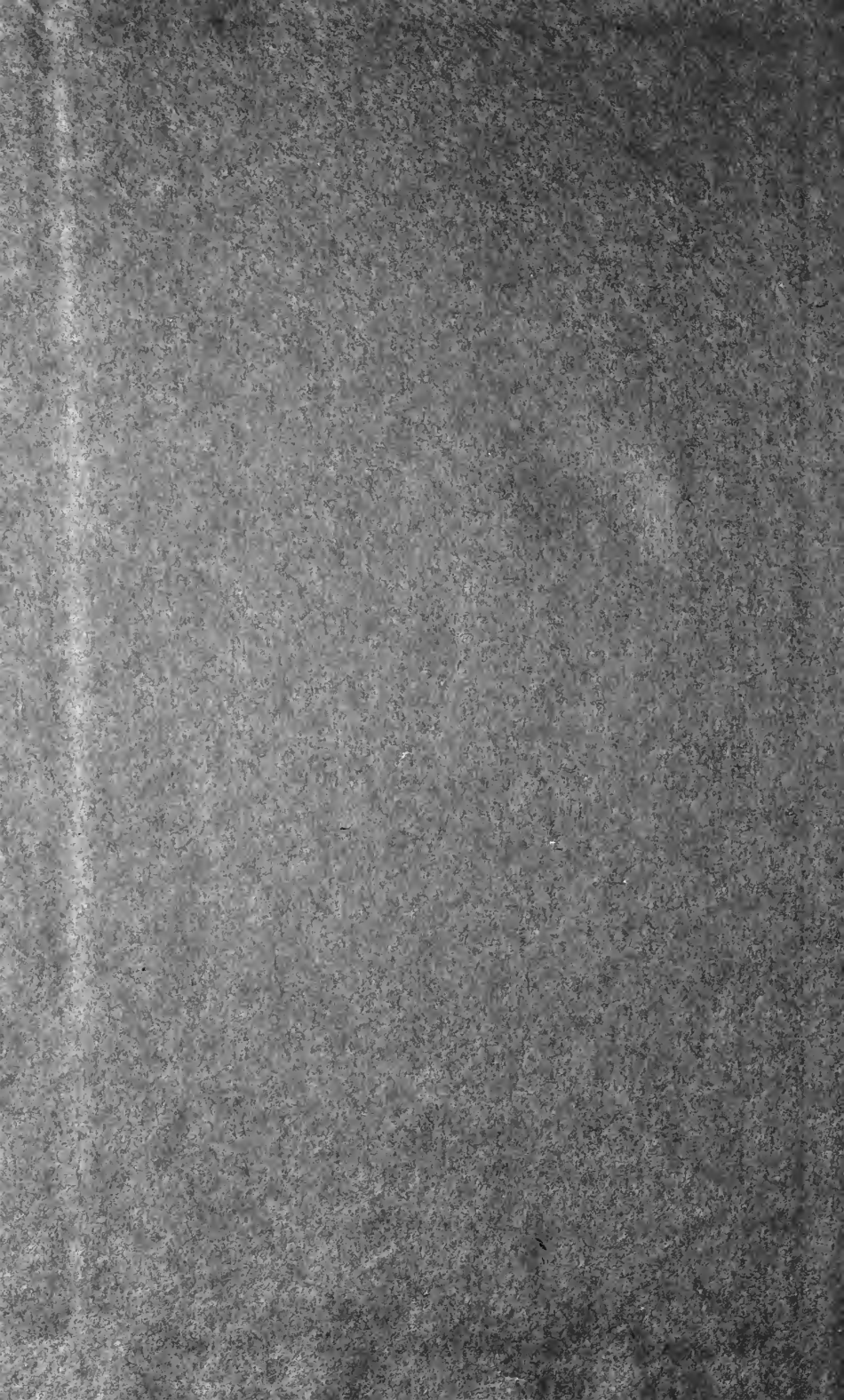
RELATIVE WEIGHTS OF WHEAT CUT AT DIFFERENT DATES AND DRIED IN DIFFERENT  
WAYS, 1891 AND 1892.

Date of Cutting.	Relative wt. [air dry] of kernels of 100 culms of wheat.				Relative wt. [air dry] of 1000 kernels.			
	Heads re- moved	Dried in shade.	Dried in sun.	Aver- age-	Heads re- moved	Dried in shade.	Dried in sun.	Aver- age.
1891.								
June 18.....	63	65.9	65	64.6	62.3	65.2	63	63.5
“ 25.....	93.1	100	99.3	97.5	91.8	100	97.4	96.4
“ 29.....	95.6	97.5	97.8	97	96.4	97.4	97.9	97.2
Average.....	83.9	87.8	87.4		83.5	87.5	86.1	
1892.								
June 29.....	57.6	68.2	55.4	60.4	62.1	64.	56.4	61.2
July 4.....	72.4	70.4	47.8	63.5	69.5	71.7	59.3	66.8
“ 13.....	99.6	100	87.7	95.8	100	99	91.4	96.8
Average.....	76.5	79.5	63.6		77.5	78.2	69	

G. E. MORROW, A.M., *Agriculturist.*

FRANK D. GARDNER, B.S., *Assistant Agriculturist.*







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