

KENTUCKY

AGRICULTURAL EXPERIMENT STATION

OF THE

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BULLETIN No. 94.

WHEAT.

1. Test of Varieties.
2. Descriptions of Varieties.

LEXINGTON, KENTUCKY,

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KENTUCKY Agricultural Experiment Station.

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ADDRESS:

KENTUCKY AGRICULTURAL EXPERIMENT STATION,
LEXINGTON, KY.

BULLETIN No. 94.

WHEAT.

I. Test of Varieties.

By J. N. HARPER, AGRICULTURIST.

The wheat season of 1900-1901 was quite unfavorable, the yield being about one third less than that of the previous season. All of the varieties were damaged to some extent by the Hessian Fly and other insects.

Thirty-seven varieties of wheat were planted October 4th, after having first been treated with a solution of copper sulphate, to prevent smut. Each variety was planted on one-twentieth of an acre plot in drills eight inches apart. The amount of seed sown was at the rate of six pecks per acre. All of the varieties were up October 12th. The stand was very good and all of the varieties stood the winter well, with the exception of Nos. 1, 2 and 4. Numbers 2 and 4 were only slightly injured by the winter but No. 1 was very badly winter-killed. All of the varieties were harvested July 1st, 1901.

The method adopted last year for determining the weight per bushel was used again this year. The wheat was run into a Fairbank's standard tester through a funnel with an open-

ing $\frac{1}{2}$ inch in diameter placed six inches above the top of the measure. The measure when full was "struck" without jarring. It will be noted that the varieties test much lower this season than the last. This is probably due to the large percentage of immature grains caused by the ravages of insect pests.

The varieties of wheat were again submitted to Mr. W. W. Patterson, of the Lexington Roller Mills, for examination as to their milling qualities. These were scored on the basis of one hundred being a perfect milling wheat. The Station has arranged with the Lexington Roller Mills to make a milling test of a number of these wheats. It was not possible to finish the test in time for this bulletin, but it is hoped to obtain some interesting results for a future publication.

Table III gives the yields of fifteen of the best varieties of wheat grown on the Experiment Farm for two years, and the two-year average of each. Some interesting conclusions may be drawn from the results shown in this table. There are eight smooth varieties and they average for the two years 39.2 bushels, and seven bearded varieties which average for the two years only 36.9 bushels. The farmers of this section of the State prefer a smooth wheat to a bearded one as it is very hard to get hands to harvest the bearded varieties.

Table I.—Comparative Yield and Quality of the Varieties.

Station Number.	NAME.	Yield Per Acre.		Weight Per Bushel.	Milling Qualities, Per Cent.	Date of Ripening.
		Grain Bushels 60 lbs. per bu.	Lbs. Straw.			
1	Jones's Winter Fife	17.41	2145	56 $\frac{1}{4}$	.....	June 30
2	American Bronze	26.40	3036	57	93	" 30
3	Beech-wood Hybrid	33.00	3960	57 $\frac{1}{2}$	95	" 26
4	Pride of Genesee.....	22.36	2838	56 $\frac{1}{4}$	90	" 30
5	Indiana Swamp	31.71	3817	59 $\frac{3}{4}$	97	" 27
6	Rice Wheat.....	22.91	3575	58	95	" 24
7	Jones's Bearded.....	23.83	3344	56	.....	" 30
8	Clawson Longberry	22.82	3036	56	.....	" 28
9	Kansas Mortgage Lifter	23.10	2970	59 $\frac{1}{2}$	94	" 24
10	Fultz-Mediterranean	22.91	2530	57	92	" 24
11	Rudy	33.36	3564	59	97	" 28
12	Diamond Grit.....	25.30	2750	59 $\frac{1}{4}$	93 $\frac{1}{2}$	" 30
13	Turkish Red.....	27.22	2662	60 $\frac{1}{2}$	96	" 28
14	Lancaster Red	31.53	4158	58 $\frac{3}{4}$	96	" 26
15	Fulcaster	29.79	3674	59 $\frac{1}{2}$	96	" 26
16	Harvest King.....	36.30	3982	59 $\frac{3}{4}$	96 $\frac{1}{2}$	" 24
17a	Fultz	36.30	4092	60 $\frac{1}{2}$	95	" 24
17b	Fultz (No. 5493 U. S. D. Agr.)	29.33	3520	60	94	" 23
18	Jersey Fultz	29.70	3388	59 $\frac{1}{2}$	94	" 24
19	Extra Early Oakley.....	28.23	2816	59	93 $\frac{1}{2}$	" 23
20	Democrat.....	23.19	2354	59 $\frac{1}{2}$	.....	" 24
21	Early White Leader... ..	18.33	1760	57 $\frac{1}{4}$	.....	" 30
22	Harvest Queen.....	24.75	2596	57 $\frac{1}{2}$	.....	" 28
23	Oatka Chief	21.10	3564	57	.....	" 28
24	Longberry Amber.....	17.60	1914	59	.....	" 30
25	Gold Coin.....	20.71	2282	58	.....	" 28
26	Early Genesee Giant	21.72	2552	57	.....	" 28
27a	Early Arcadian	19.80	2002	56 $\frac{3}{4}$	.....	" 28
27b	Early Arcadian (4282 U.S.D.A.)	29.88	3542	57	.....	" 28
28	Bearded Winter Fife	21.63	2222	58 $\frac{1}{2}$	.....	" 25
29	Canadian Hybrid	24.93	2618	59 $\frac{1}{2}$	93 $\frac{1}{2}$	" 28
30	White-seeded Golden Cross ...	23.46	2662	58	.....	" 29
31	Jones's Longberry, No. 1	24.75	3146	58 $\frac{1}{4}$	.....	" 28
32	Long Amber	26.95	3124	58 $\frac{1}{2}$	.....	" 30
33a	Dawson's Golden Chaff.....	30.61	3014	57 $\frac{1}{2}$	90	" 27
33b	Dawson's Golden Chaff (5486 U. S. D. A)	31.71	3322	57 $\frac{3}{4}$	91	" 25
34	Pearl Prolific	28.96	3102	59 $\frac{1}{4}$	94	" 23
35	Improved Rice Wheat	29.33	3410	58 $\frac{3}{4}$	93	" 23
36a	Hungarian Wheat.....	27.31	3102	60 $\frac{1}{4}$	94	" 23
36b	No. 5145 U. S. Dep. Agr.	17.66	5740	59 $\frac{1}{4}$	98	.....
37	Pootung. (Shanghai, China) ...	28.66	4680	57	.....	.....

Table II.—Character of Straw, Height, &c.

Station Number.	NAME.	Character of Straw.	Length of Straw.		When Headed.	Kind of Head: B= Bearded. S= Smooth.
			Feet.	Inches.		
1	Jones's Winter Fife	Medium.	4	2	May 30	S.
2	American Bronze.....	Good.	4	1	" 29	S.
3	Beech-wood Hybrid.....	"	4	4	" 26	S.
4	Pride of Genesee.....	"	4	7	" 29	B.
5	Indiana Swamp.....	Medium.	4	9	" 27	B.
6	Rice Wheat	Good.	4	5	" 26	S.
7	Jones's Bearded	Very good	4	6	" 31	B.
8	Clawson Longberry	Good.	4	4	" 29	S.
9	Kansas Mortgage Lifter..	Medium.	4	8	" 26	B.
10	Fulzo-Mediterranean	Good.	4	1	" 26	S.
11	Rudy	Medium.	4	4	" 25	B.
12	Diamond Grit	Good.	4	6	" 28	B.
13	Turkish Red.....	Very weak.	3	10	" 27	B.
14	Lancaster Red.....	Good.	4	10	" 24	B.
15	Fulcaster.....	"	4	6	" 25	B.
16	Harvest King.....	"	4	3	" 24	S.
17a	Fultz.....	"	4	6	" 23	S.
17b	Fultz (5493, U. S. D. A.)...	"	4	5	" 25	S.
18	Jersey Fultz.....	Medium.	4	6	" 23	S.
19	Extra Early Oakley.....	Good.	4	3	" 22	S.
20	Democrat	"	4	3	" 28	B.
21	Early White Leader.....	"	3	10	" 31	S.
22	Harvest Queen.....	"	3	11	" 30	S.
23	Oatka Chief	Medium.	4		" 29	B.
24	Longberry Amber.....	Good.	3	10	" 30	S.
25	Gold Coin.....	"	3	9	" 29	S.
26	Early Genesee Giant	"	3	10	" 28	B.
27a	Early Arcadian.....	Medium.	3	8	" 27	
27b	Early Arcadian (No. 4282, U. S. D. A.)	Good.	4	3	" 26	S.
28	Bearded Winter Fife	Weak.	3	11	" 28	B.
29	Canadian Hybrid	"	4	2	" 28	S.
30	White-seeded Golden Cross	"	3	9	" 28	B.
31	Jones's Longberry No. 1..	Good.	4	8	" 31	B.
32	Long Amber.....	Weak.	4	5	" 31	S.
33a	Dawson's Golden Chaff...	Medium.	3	7	" 28	S.
33b	Dawson's Golden Chaff (No. 5486, U. S. D. A.)..	"	4	2	" 27	S.
34	Pearl Prolific.....	"	3	11	" 25	S.
35	Improved Rice Wheat....	Good.	4		" 25	S.
36a	Hungarian Wheat	Medium.	4	2	" 28	B.
36b	No. 5145, U. S. Dept. Agr..	Good.	4	5	.....	B.
37	Pootung (Shanghai, China)	Weak.	4	2	.....	S. & B.

Table III.—Fifteen of the Best Varieties Compared.

Station Number.	Yield Per Acre. Grain 60 lbs. per bu.			Milling Qualities.		Kind of Head.	Character of Straw.	Weight Per Bushel.	
	1900.	1901.	Average.	1900.	1901.			1900.	1901.
								Lbs.	Lbs.
17	52.2	36.3	44.2	91	95	S.	Good.	63½	60½
16	50.3	36.3	43.3	97	96½	S.	"	63½	59¾
11	48.5	33.4	40.9	98	97	B.	Medium.	63	59
14	49.9	31.5	40.7	96	96	B.	Good.	62½	58¾
3	47.2	33.	40.1	93	95	S.	"	63¾	57½
5	46.5	31.7	39.1	98	97	B.	Medium.	64	59¾
33	46.5	30.6	38.5	*	90	S.	"	60¼	57½
18	47.2	29.7	38.4	91	94	S.	"	64	59½
19	48.6	28.2	38.4	*	93½	S.	Good.	64	59
34	46.5	29.	37.7	91	94	S.	Medium.	64½	59¼
15	45.2	29.8	37.5	98	96	B.	Good.	63½	59½
13	45.9	27.2	36.5	*	96	B.	Very weak.	65	60½
35	37.1	29.3	33.2	91	93	S.	Good.	64	58¾
9	41.3	23.1	32.2	94	94	B.	Medium.	65	59½
36	36.5	27.3	31.9	*	94	B.	"	64	60¼

* These were designated as "poor milling wheats."

Meteorological Summary.

To show something of the character of the season, the following table has been compiled from the records of observations on temperature, rainfall and sunshine taken at the United States Weather Bureau Station on the College Campus:

Table IV.—Summary by Months.

MONTHS, 1900-1901.	Per Ct. Sunshine	Cloudiness.	Amount of Rain-fall in Inches.	TEMPERATURE, Degrees.		
				Mean.	Highest.	Lowest.
July, 1900	80.	20.	2.80	77.	93.	58.
August.....	87.	13.	5.75	79.	96.	62.
September.....	78.	22.	1.85	73.	97.	46.
October	70.	30.	0.79	65.	87.	38.
November	54.	46.	6.38	45.	74.	20.
December	42.	58.	1.86	37.	59.	18.
January, 1901.. ..	39.	61.	1.49	34.	63.	11.
February	47.	53.	0.62	29.	61.	9.
March.....	42.	58.	2.23	44.	76.	4.
April.....	45.	55.	4.52	49.	84.	30.
May	62.	38.	2.67	63.	87.	45.
June	73.	27.	3.70	74.	94.	46.

2. Descriptions of Varieties and Notes.

BY H. GARMAN, ENTOMOLOGIST AND BOTANIST.

The varieties described below were grown for the first time on the Experiment Farm during the season of 1900-1901, and the descriptions are thus additional to those in Bulletin 89, published in September, 1900. Some notes on other varieties as grown from new seed are added.

No. 8. Clawson Longberry.

Beardless. Seeds large, soft, white, but a trifle darker than some other white wheats, such as Early Arcadian. Spike rather short and stout, a little wider near the tip and so a trifle club-shaped; 3.75 inches long; 0.50 inch in diameter; color dull umber-brown. Glumes not pubescent. Empty glumes with a strong keel in the back, terminating in a short claw. Flowering glumes at base of spike with a short claw, which at the tip is replaced by bristles 0.25 to 0.66 inch long. Stem yellow. Average number of seeds from a spike, 49. Average weight of seeds from one spike, 2.3 grams. Weight of 10 cubic centimeters of seeds, 7.00 grams.

This variety bears some resemblance in the character of its spike to Early Arcadian, but the spikelets are much less crowded near the upper end of the spike, and the general shape of the spike is thus less strongly club-shaped. Its seeds are larger, longer, and a trifle darker in color, though the difference is so slight that it is likely to escape attention except when the two are compared side by side.

Seed from the United States Department of Agriculture (4280). Raised in New York.

No. 29. Canadian Hybrid.

Beardless. Seeds of medium size, plump, red, moderately hard. Spike compact, its dimensions well maintained toward the extremities; 3.65 inches long; greater diameter, 0.50 inch; lesser diameter, 0.37 inch; glumes pubescent, whitish, the flowering glumes at the tip with a few bristles 0.25 inch long.

Stem pale yellow. Average number of seeds from a spike, 54. Average weight of seeds from a spike, 2.1 grams. Weight of ten cubic centimeters of seeds, 7.5 grams.

Of good appearance, but with the stem rather slight.

No. 37. Pootung Wheat.

Beardless, or bearded. Seeds small, soft, red. Spike slender, tapering, the spikelets well separated, so that the axis is visible between; length, 4.75 inches; greater diameter, 0.37 lesser diameter, 0.25 inch; glumes pale yellow in the smooth form, faintly dusky lined, more decidedly dusky lined in the bearded form; bristles of bearded form, from 0.75 to 3 inches long. Stem yellow, slight. Average number of seeds from a spike, 37.5. Average weight of seeds from a spike, 0.925 gram. Weight of ten cubic centimeters of seeds, 7.3 grams.

The seed of this wheat was received from the United States Department of Agriculture under the above name, and numbered 5051. About half of the spikes were smooth, and the other half decidedly bearded, though in other respects alike. The straw was very weak, and much of it was thrown down before it was cut. Average height when mature about 50 inches, though often reaching a height of 54 inches. Two varieties should be made of it, though it is doubtful if it will prove of value here.

The label with the seed received from the United States Division of Botany, Section of Seed and Plant Introduction, reads: "From Shanghai, China. Received April 11, 1900, through Consul-General Goodnow. 'Pootung' is said to be grown on the lowlands between the Whangpoo and Yangtsi rivers. The Chinese report that this wheat is never attacked by rust."

Red rust very abundant on blades. No stem rust. It is a very early wheat, and was cut June 22.

Notes.

No. 17b. Fultz wheat from seed obtained under number 5493 from the United States Department of Agriculture is not in any essential different from this wheat grown for several

years from Station seed. The spike is slender, tapering, with a few apical bristles from 0.50 to 0.75 inch long. The average length is 4.12 inches, which is greater than that of wheat harvested on the Farm in 1899 and described in page 191 of Bulletin 89. This difference seems to be due to the seed, for our Fultz wheat (No. 17a) harvested this year, has a slighter, shorter spike. Average number of seeds from a spike, 47. Average weight of seeds from a spike, 1.87 gram. Weight of ten cubic centimeters of seeds, 7.5 grams.

No. 27b. Early Arcadian wheat raised this year from seed raised in New York and furnished to the Station under No. 4282 by the United States Department of Agriculture does not differ much from that grown here as Number 27a. The average number of seeds from one spike is 55.2, however, as against 65 in 1897 (see Bulletin 89, p. 194). The short, club-shaped, smooth spike distinguishes this variety from all of those grown on the Farm, except Clawson Longberry (No. 8) grown here for the first time last season. The latter has, however, a more slender spike, and its seeds are larger.

No. 33b. The seed grown under this number was received under No. 5486 from the United States Department of Agriculture, and was raised at Ithaca, New York. The spike agrees with that of wheat raised from our own seed, but the number of seeds averages 41.5, and the average weight is only 1.72 gram, while our wheat raised in 1897 averaged 43.75 seeds to the spike and 1.82 grams by weight.

No. 36b. This Hungarian wheat was grown in a small plot (1-80 acre) among the forage plants on a different part of the Farm from the other wheats. The seed came from Missouri, under No. 5145 of the United States Department of Agriculture. It produced a very rank growth, though the stand was poor owing to the depredations of poultry at the time of planting. Average height about 53 inches, though occasional plants reached a height of 58 inches. Strongly bearded. Seed large, very dark in color and very hard. Number of seeds from a spike, 36.5. Average weight of seeds from a spike, 1.55 gram. Weight of ten cubic centimeters of seeds, 7.7 grams.

The milling qualities of a sample of this wheat submitted to Mr. Patterson of the Lexington Roller Mills were rated 98, while a sample of No. 36a, from home grown seed, was rated only 94, which without explanation might be interpreted as meaning that 36b was a much better milling wheat than the other. The difference noted by Mr. Patterson is, however, due solely to the relative ripeness of the two samples.

No. 36b was cut before it was thoroughly ripe and its seeds are consequently darker in color, harder, and slightly less plump.

Samples of 36a taken before the main crop was harvested are so much like 36b that when mixed the two can not be distinguished. It would thus seem that millers prefer a wheat that is not completely ripe. It was cut July 1.

Red rust frequent on blades. Stem rust very rare.

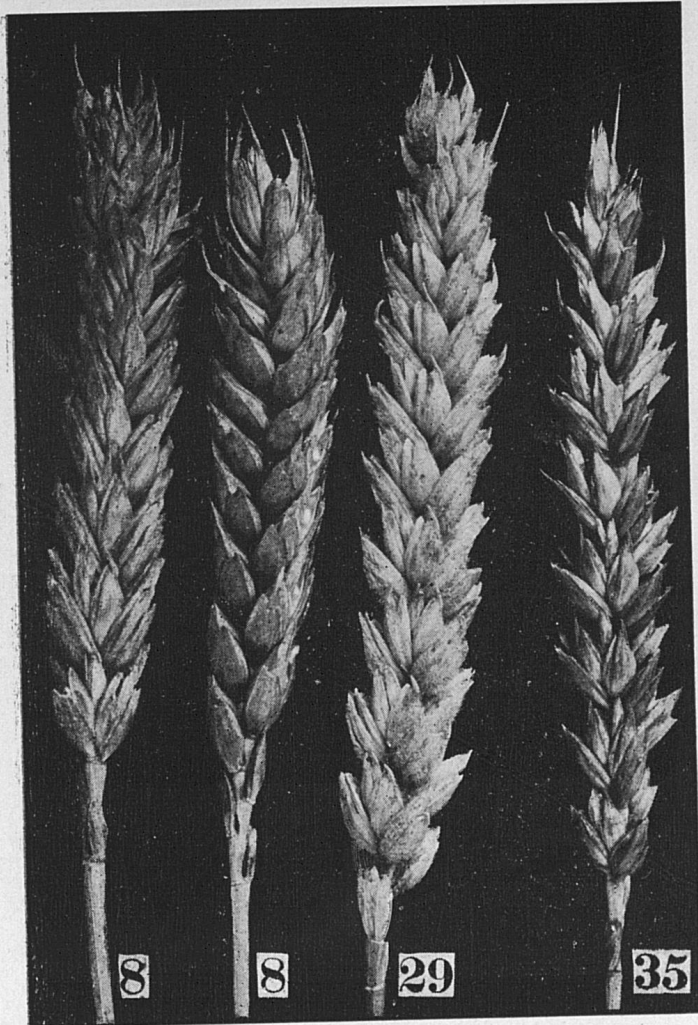


FIG. I.—8, 8, Clawson Longberry; 29, Canadian Hybrid; 35, Improved Rice. Natural size. Photographed by H. Gaman.



FIG. II.—36, Theiss or Hungarian; 37, 37, Pootung. Natural size.
Photographed by H. Garman.