

87.4

# SPRING OATS . . .

THE LIBRARY OF THE  
*Varieties for Illinois*

JUL 18 1947

By G. H. Dungan, O. T. Bonnett, and Benjamin Koehler

UNIVERSITY OF ILLINOIS

THE APPEARANCE of a new disease of oats, known as Helminthosporium blight, has cut down the number of spring-oat varieties which can safely be recommended for Illinois. **Clinton** remains the best variety for all parts of the state, since it is outstanding in yield and is also resistant to this blight. **Marion** and **Benton** are also recommended, especially for central and southern Illinois.

First observed in Illinois in 1945, Helminthosporium blight caused such severe damage in 1946 that some farmers plowed up their oats in late spring and sowed the fields to another crop. Other fields that were left standing were not harvested. The blight reduced the 1946 oat crop by about one-fifth.

The Helminthosporium blight organism is carried either on the seed or in the soil. Infected seedlings usually die when very young; or they may appear healthy for a while, then blight from the bottom leaves upward. If older plants become diseased, their lower joints will be blackened owing to rotting of the stem, and will be covered with spores of the fungus. This condition may develop any time from the jointing stage until maturity.

Seed can be cleared of Helminthosporium infection by treatment with New Improved Ceresan. Where the soil is already infected, this is only a half-way control measure but it is still worth while.

Helminthosporium blight did not affect the yield on the Illinois test fields in 1946, since all seed used on these fields had been treated each year. Tests made elsewhere, however, show that Vicland, Boone, Tama, Vikota, and Cedar—varieties formerly recommended for Illinois—are susceptible. These varieties were all developed by selection from the cross of Victoria × Richland. Neither these nor other susceptible varieties should be grown unless the seed is treated.

A number of varieties, such as Sixty-Day and Richland, are resistant to Helminthosporium blight but have such low yields that few farmers will want to plant them. Columbia is resistant to this fungus but is likely to be damaged by the rusts and smut.

Table 1.—NORTHERN ILLINOIS (Mt. Morris): Results of Tests  
With Spring Oat Varieties

Rank	Variety	C.I. No.*	Yield above (+), or below (-) average of all varieties <sup>b</sup>	Average yield per acre	Yield in 1946	Test weight per bushel	Plants erect at harvest	Height of plants	Color of grain	Re-action to Helmin. blight
Varieties grown five years, 1942-1946										
			<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>lb.</i>	<i>perct.</i>	<i>in.</i>		
1	Clinton	3971	+20.9	78.3	99.9	35.3	85	37	Yellow	R
2	Tama	3502	+ 9.2	66.6	90.4	31.3	77	34	Yellow	S
3	Vicland	3611	+ 8.7	66.1	83.3	30.7	77	34	Yellow	S
4	Boone	3305	+ 6.3	63.7	73.3	33.5	79	34	Yellow	S
5	Marion	3247	- 1.1	56.3	91.6	30.5	63	39	White	R
6	Erban	.....	- 3.0	54.4	80.4	27.9	80	41	White	R
7	Columbia	.....	- 3.9	53.5	96.7	30.3	43	38	Red	R
8	Richland	.....	-13.9	43.5	88.9	27.0	52	34	Yellow	R
9	Sixty-Day	.....	-14.0	43.4	84.4	26.2	41	36	Yellow	R
	Difference necessary for significance	.....	.....	5.7	16.0	.....	..	..	.....	..
Varieties grown four years, 1943-1946										
1	Clinton	3971	+20.4	76.1	99.9	35.3	99	36	Yellow	R
2	Fultex	3531	- 1.9	53.8	63.3	30.1	95	36	Red	S
	Difference necessary for significance	.....	.....	6.6	16.0	.....	..	..	.....	..
Varieties grown three years, 1944-1946										
1	Clinton	3971	+19.3	81.5	99.9	35.9	99	36	Yellow	R
2	Cedar	3314	+ 6.5	68.7	79.4	31.5	91	33	Yellow	S
3	Osage	3991	- 2.5	59.7	61.5	31.7	84	31	Yellow*	S
4	Ajax	.....	- 4.1	58.1	93.3	28.4	66	37	White	R
	Difference necessary for significance	.....	.....	8.6	16.0	.....	..	..	.....	..
Varieties grown two years, 1945 and 1946										
1	Clinton	3971	+13.8	88.8	99.9	36.1	100	39	Yellow	R
2	Benton	3910	+ 7.1	82.1	82.1	36.6	99	41	Yellow	R
3	Forvic	4164	+ 6.6	81.6	80.8	34.0	94	36	White	S
4	Iogold	.....	.....	.....	.....	.....	.....	.....	.....	.....
5	(Vict. X Rich.) Columbia X Navar- ro (Mo. 03883)	4066	+ .3	75.3	75.8	32.0	94	35	Yellow	S
6	Vikota	3602	- 5.3	69.7	65.9	32.9	86	34	Red	R
7	Ventura	3989	- 6.2	68.8	66.3	32.0	72	33	Yellow*	S
8	Exeter	.....	-15.3	59.7	77.3	28.5	77	40	White	R
9	Neosho	4141	-17.4	57.6	73.2	30.7	95	33	Red	S
	Difference necessary for significance	.....	.....	12.5	16.0	.....	..	..	.....	..
Varieties grown in 1946 only										
1	Clinton	3971	+19.1	99.9	99.9	35.1	99	40	Yellow	R
2	Bonda	4329	+13.6	94.4	94.4	36.9	95	42	White	R
3	Mindo	4328	+ 3.6	84.4	84.4	34.9	65	37	Yellow	R
4	Eaton	3908	- 1.5	79.3	79.3	33.5	96	39	White	R
	Difference necessary for significance	.....	.....	16.0	16.0	.....	..	..	.....	..

\* U. S. Department of Agriculture Cereal Investigations number.

<sup>b</sup> Each variety has been compared with all varieties grown the same year. In most years 24 varieties were grown at both Mt. Morris and Urbana, and 14 varieties at Alhambra.

\* Slightly reddish-yellow.

Table 2.—CENTRAL ILLINOIS (Urbana): Results of Tests With Spring Oat Varieties

Rank	Variety	C.I. No. <sup>a</sup>	Yield above (+), or below (-) average of all varieties <sup>b</sup>	Average yield per acre	Yield in 1946	Test weight per bushel	Plants erect at harvest	Height of plants	Color of grain	Re-action to Helmin. blight
Varieties grown five years, 1942-1946										
			<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>lb.</i>	<i>perct.</i>	<i>in.</i>		
1	Clinton	3971	+7.7	71.1	71.6	34.7	99	36	Yellow	R
2	Tama	3502	+6.1	69.5	74.0	32.6	91	34	Yellow	S
3	Vicland	3611	+4.1	67.5	68.4	32.8	93	34	Yellow	S
4	Marion	3247	+3.4	66.8	70.5	34.3	94	41	White	R
5	Vikota	3602	+2.4	65.8	68.5	32.8	90	34	Yellow	S
6	Boone	3305	+ .8	64.2	67.0	33.6	94	34	Yellow	S
7	Fultex	3531	- .5	62.9	63.3	32.5	95	31	Red	S
8	Columbia	.....	-1.1	62.3	71.5	33.3	74	38	Red	R
9	Erbank	.....	-6.2	57.2	62.3	30.5	96	39	White	R
10	Sixty-Day	.....	-7.3	56.1	67.7	29.0	79	36	Yellow	R
11	Richland	.....	-9.0	54.4	70.7	29.3	81	33	Yellow	R
	Difference necessary for significance	.....	.....	1.8	3.3	.....	.....	.....	.....	.....
Varieties grown four years, 1943-1946										
1	Clinton	3971	+6.7	69.9	71.6	35.1	99	37	Yellow	R
2	Iogold (Vict. X Rich.)	4066	+5.1	68.3	77.8	33.0	98	35	Yellow	S
	Difference necessary for significance	.....	.....	2.1	3.3	.....	.....	.....	.....	.....
Varieties grown three years, 1944-1946										
1	Clinton	3971	+6.9	74.3	71.6	35.2	100	38	Yellow	R
2	Ajax	.....	+6.6	74.0	79.2	32.1	97	40	White	R
3	Cedar	3314	+2.8	70.2	70.8	33.3	91	35	Yellow	S
4	Ventura	3989	+1.4	68.8	75.5	33.1	93	31	Yellow*	S
5	Osage	3991	+1.2	68.6	72.8	33.4	95	32	Yellow*	S
6	Neosho	4141	+ .6	68.0	73.3	34.0	98	35	Red	S
	Difference necessary for significance	.....	.....	2.5	3.3	.....	.....	.....	.....	.....
Varieties grown two years, 1945 and 1946										
1	Clinton	3971	+4.2	79.1	71.6	36.4	100	39	Yellow	R
2	Benton	3910	+3.0	77.9	69.2	37.3	98	44	Yellow	R
3	Columbia X Navarro (Mo. 03883)	.....	-6.7	68.2	75.2	34.8	87	41	Red	R
	Difference necessary for significance	.....	.....	3.0	3.3	.....	.....	.....	.....	.....
Varieties grown in 1946 only										
1	Mindo	4328	+8.6	80.1	80.1	35.4	97	33	Yellow	R
2	Bonda	4329	+3.1	74.6	74.6	37.8	97	40	White	R
3	Exeter	.....	+1.8	73.3	73.3	30.1	100	38	White	R
4	Clinton	3971	+ .1	71.6	71.6	36.1	100	34	Yellow	R
5	Eaton	3908	- .1	71.4	71.4	34.1	100	35	White	R
6	Forvic	4164	-3.7	67.8	67.8	35.8	97	36	White	S
	Difference necessary for significance	.....	.....	3.3	3.3	.....	.....	.....	.....	.....

<sup>a</sup> See footnote a, Table 1.<sup>b</sup> See footnote b, Table 1.

\* Slightly reddish-yellow.

For comparison, figures for Clinton are included in reports of all tests except the five-year test in southern Illinois.

Table 3.—SOUTHERN ILLINOIS (Alhambra): Results of Tests With Spring Oat Varieties

Rank	Variety	C.I. No. <sup>a</sup>	Yield above (+), or below (-) average of all varieties <sup>b</sup>	Average yield per acre	Yield in 1946	Test weight per bushel	Plants erect at harvest	Height of plants	Color of grain	Reaction to Helmin. blight
Varieties grown five years, 1942-1946 <sup>c</sup>										
			<i>bu.</i>	<i>bu.</i>	<i>bu.</i>	<i>lb.</i>	<i>perct.</i>	<i>in.</i>		
1	Tama	3502	+2.5	25.2	37.1	27.3	79	31	Yellow	S
2	Marion	3247	+1.1	23.8	35.8	29.5	84	33	White	R
3	Columbia		+ .8	23.5	31.7	28.9	62	33	Red	R
4	Vicland	3611	- .6	22.1	29.2	26.6	83	30	Yellow	S
	Difference necessary for significance			2.6	5.3					
Varieties grown four years, 1943-1946										
1	Clinton	3971	+2.7	25.2	38.2	30.7	93	31	Yellow	R
2	Sixty-Day		-2.7	19.9	32.8	25.6	53	32	Yellow	R
	Difference necessary for significance			2.4	5.3					
Varieties grown three years, 1944-1946										
1	Clinton	3971	+2.5	24.8	38.2	30.2	93	31	Yellow	R
2	Neosho	4141	+2.3	24.6	36.4	27.4	70	28	Red	S
3	Cedar	3314	- .2	22.1	31.6	25.7	73	28	Yellow	S
	Difference necessary for significance			3.0	5.3					
Varieties grown two years, 1945 and 1946										
1	Benton	3910	+8.3	28.5	37.1	34.3	97	36	Yellow	R
2	Clinton	3971	+5.2	25.4	38.2	31.3	96	30	Yellow	R
3	Columbia X Navarero (Mo. 03883)		+1.3	21.5	35.0	30.8	58	32	Red	R
4	Osage	3991	-1.9	18.3	31.1	27.4	59	27	Yellow*	S
5	Ventura	3989	-3.6	16.6	27.6	26.3	50	27	Yellow*	S
	Difference necessary for significance			3.0	5.3					
Varieties grown in 1946 only										
1	Clinton	3971	+6.1	38.2	38.2	32.0	98	32	Yellow	R
2	Forvic	4164	-7.0	25.1	25.1	25.5	86	31	White	S
3	Fultex	3531	-9.3	22.8	22.8	22.8	96	30	Red	S
	Difference necessary for significance			5.3	5.3					

<sup>a</sup> See footnote a, Table 1. <sup>b</sup> See footnote b, Table 1. <sup>c</sup> Clinton was not grown at Alhambra in 1942 and thus could not be averaged for the five-year period.

\* Slightly reddish-yellow.

**Treatment for Helminthosporium blight.** It is best to use resistant varieties. If seed of these varieties is not available, infection *carried on the seed* can be controlled by treatment with New Improved Ceresan —  $\frac{1}{2}$  or  $\frac{1}{4}$  ounce per bushel. When using  $\frac{1}{2}$  ounce, let the seed stand in sacks or in bulk for at least 3 days before planting. If  $\frac{1}{4}$  ounce is used, let seed stand at least 30 days before planting. This treatment may not give complete control if the *soil* is infected.

(Experiment Station and Extension circulars are numbered consecutively in the same series.)