RESULTS OF THE COOPERATIVE UNIFORM SOYBEAN TESTS

PART I. NORTH CENTRAL STATES

****
1963
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INTRODUCTION

The U. S. Regional Soybean Laboratory was organized in 1936 under the Bankhead-Jones Act, as a cooperative project by the U. S. Department of Agriculture and the twelve Agricultural Experiment Stations of the North Central Region. In 1942, the work of the Laboratory was expanded to include cooperation with twelve Agricultural Experiment Stations in the Southern Region also. At present, six other states and two provinces in Canada are also cooperating informally in the Laboratory research program, which is directed toward the breeding of improved varieties and strains of soybeans for industrial use and the obtaining of fundamental information necessary to the efficient development of strains to meet specific needs.

The purpose of the Uniform Soybean Tests is to evaluate critically the best of the experimental soybean lines being developed through the cooperative breeding research program. Ten of these tests, corresponding to ten maturity groups, have been established, with Test 00 including the very early strains for the northern fringe of the present area of soybean production. Uniform Tests 0 through IV, respectively, include strains adapted to locations farther south in the North Central States and areas of similar latitude. In general, each group is arranged to include strains differing in maturity by 10 days or less.

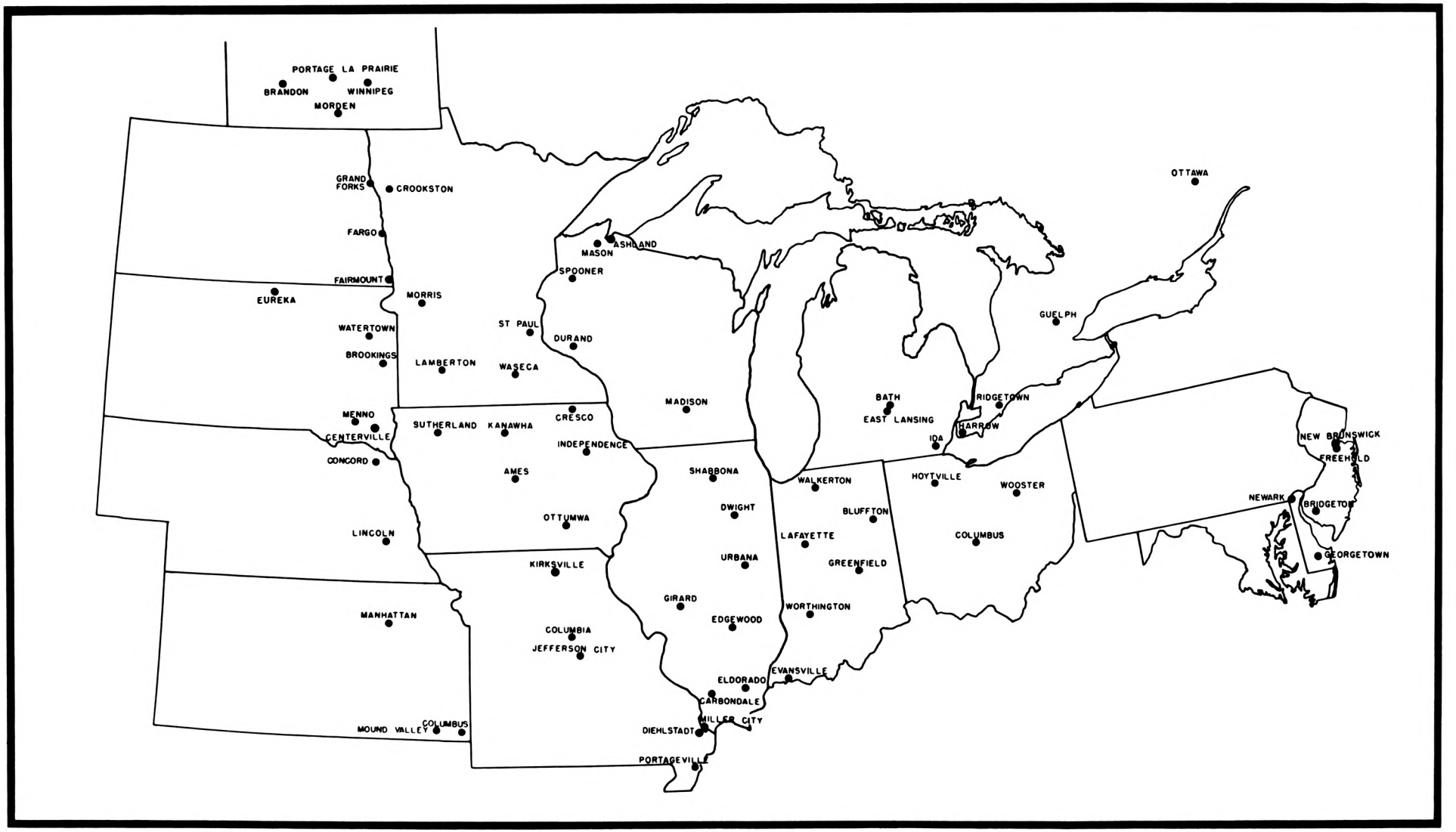
The summary of performance of strains in the first six Uniform Tests is included in Part I of this report. Information on the last four tests, which include strains adapted to the southern part of the United States, is contained in Part II, which is issued separately.

Most of the Uniform Tests in the North Central Region are grown in rod-row size plots, using four replications. Tie varieties and extra strains differing in maturity from the test strains are separated from the rest of the test by border rows to minimize competition. As the result of recent studies showing that fewer locations are necessary to measure chemical composition with the same precision as yield, the number of locations from which chemical data were obtained was reduced to about half of the test locations.

Uniform Preliminary Tests are grown at a limited number of locations throughout the region to screen the best experimental strains for maturity and general agronomic performance before they are entered in the Uniform Tests. At most locations these nurseries are grown in rod-row plots with two replications. Interest in the Preliminary Tests has been increasing as the importance of early evaluation of strains over a wider range in environmental conditions has been demonstrated. This year there were Preliminary Tests for all of the maturity groups.

Daily rainfall and temperature graphs, together with brief statements of growing conditions during 1963, are included for most nursery locations. Yields for all the Uniform Tests were generally higher in 1963 than in 1962 and protein content of the seed was about 2 percent lower. Oil content, on the other hand, was not much different between the two seasons. Many processors have had difficulty making 50 percent soybean meal from the 1963 crop and are beginning to ask for higher protein varieties.

One new soybean variety, Chippewa 64, from a backcross Chippewa x Blackhawk, was released to seed producers in the Spring of 1964. The strain has been in Uniform Test II under the designation L1. This strain carries resistance to Phytophthora rot. A farmer selection, A-100, entered in Uniform Test I for two years, has yielded well compared to named varieties and is being recommended to growers by some states.



MAP OF THE NORTH CENTRAL STATES SHOWING LOCATION OF THE COOPERATIVE UNIFORM SOYBEAN TESTS

UNIFORM TEST LOCATIONS - 1963

Location	Cooperator	Uniform Tests						Preliminary Tests					
		00	0	I	II	III	IV	00	0	I	II	III	IV
Ottawa, Ont.	L. S. Donovan, Central Exp. Farm	x	x					x	x				
Guelph, Ont.	G. E. Jones, Ont. Agr. Col.	x	x										
Ridgetown, Ont.	W. W. Snow, W. Ont. Agr. School		x	x	x				x	x	x		
Harrow, Ont.	R. I. Buzzell, Canada D.A. Res. Sta.			x	x						x		
Freehold, N. J.	J. C. Anderson, N. J. A.E.S.				x	x							
Bridgeton, N. J.	A. S. Fogg, Coop.						x						
Newark, Del.	R. H. Cole, Del. A.E.S.					x	x						
Georgetown, Del.	Univ. Substa. Div.					x	x					x	x
Hoytville, Ohio	Northwestern Substa.			x	x	x				x	x	x	
Wooster, Ohio	Ohio A.E.S.			x	x	x				x	x	x	
Columbus, Ohio	P. E. Smith, Ohio State Univ.		x	x	x	x	x			x	x	x	
Bath, Mich.	Muck Experiment Sta.	x						x					
East Lansing, Mich.	H. M. Brown, Mich. A.E.S.	x	x	x	x			x	x	x	x		
Dundee, Mich.	Russell Houpt & Son, Coop.			x	x								
Walkerton, Ind.	Frank Pulver, Coop.			x	x						x		
Bluffton, Ind.	Gerald Bayless, Coop.				x	x							
Lafayette, Ind.	O. W. Luetkemeier, Purdue A.E.S.			x	x	x					x	x	
Greenfield, Ind.	Mrs. R. Roney, Coop.				x	x							
Worthington, Ind.	Frederic Sloan, Coop.				x	x	x					x	x
Evansville, Ind.	B. Wagner, Coop.					x	x						x
Ashland, Wis.	G. H. Tenpas, Ashland Exp. Farm	x						x					
Spooner, Wis.	C. O. Rydberg, Spooner Exp. Farm		x						x				
Durand, Wis.	Anton Sam, Coop.		x	x									
Madison, Wis.	J. H. Torrie, Wis. A.E.S.			x	x					x	x		
Shabbona, Ill.	R. R. Bell, N. Ill. Exp. Field			x	x					x			
Dwight, Ill.	Harry Henderson, Coop.			x	x						x		
Urbana, Ill.	C. H. Farnham, Ill. A.E.S.				x	x					x	x	
Girard, Ill.	Lloyd Brothers, Coop.				x	x						x	
Edgewood, Ill.	John Wilson, Coop.				x	x	x						
Eldorado, Ill.	Marshall Grisham, Coop.					x	x						x
Carbondale, Ill.	D. R. Browning, Southern Ill. U.					x	x						x
Miller City, Ill.	M. B. Patton, Coop.						x						x
Crookston, Minn.	O. C. Soine, Coop.	x	x										
Morris, Minn.	Roy L. Thompson, Coop.		x										
St. Paul, Minn.	J. W. Lambert, Univ. of Minn.	x	x	x				x	x	x			
Lamberton, Minn.	W. W. Nelson, Coop.			x	x								
Waseca, Minn.	John R. Thompson, Coop.			x	x								
Cresco, Iowa	Howard Co. Exp. Assoc.			x									
Sutherland, Iowa	Galva-Primghar Exp. Farm				x								
Kanawha, Iowa	Northern Iowa Exp. Assoc.			x	x					x	x		
Independence, Iowa	Carrington-Clyde Exp. Assoc.				x								
Ames, Iowa	Iowa Agr. Exp. Sta.				x	x					x	x	
Ottumwa, Iowa	A. E. Newquist, Coop.					x						x	
Columbia, Mo.	Mo. Agr. Exp. Sta.				x	x	x				x	x	x
Portageville, Mo.	Arnold Matson, Mo. Delta Center						x						x
Portage la Prairie, Man.	W. O. Chubb, Coop.	x						x					
Winnipeg, Man.	B. R. Stefansson, Univ. of Man.	x						x					

UNIFORM TEST LOCATIONS - 1963 (Continued)

Location	Cooperator	Uniform Tests						Preliminary Tests					
		00	0	I	II	III	IV	00	0	I	II	III	IV
Brandon, Man.	H. Gross, Exp. Farm	x											
Morden, Man.	John Giesbrecht, Exp. Farm	x						x					
Grand Forks, N. D.	N. D. Agr. Exp. Sta.	x						x					
Fargo, N. D.	R. E. Bothun, State Univ. Sta.		x						x				
Watertown, S. D.	S. D. Agr. Exp. Sta.		x	x					x	x			
Brookings, S. D.	C. J. Franzke, S.D. A.E.S.			x						x			
Centerville, S. D.	S. D. Agr. Exp. Sta.				x						x		
Lincoln, Nebr.	J. H. Williams, Nebr. A.E.S.				x	x						x	
Powhattan, Kans.	Kans. Agr. Exp. Sta.					x	x						
Manhattan, Kans.	E. L. Mader, Kans. A.E.S.					x	x					x	x
Mound Valley, Kans.	Floyd E. Davidson, Br. Exp. Sta.						x						
Columbus, Kans.	V. H. Peterson, Columbus Exp. Field						x						
Grand Junction, Colo.	Carl Barnes, Western Slope Br. E.S.					x							
Kimberly, Idaho	Marshall LeBaron, Twin Falls Exp. Sta.	x											
Ontario, Ore.	L. A. Fitch, Malheur Br. E.S.		x					x	x	x			

METHODS

All Uniform and Preliminary Tests are planted in replicated single rod-row plots with four replications for the Uniform Tests and two replications for the Preliminary Tests. Usually 18 to 20 feet of row is planted and only 16 or 16½ feet harvested. Seeds are planted on the basis of 200 viable seeds per row.

Yield is measured after the seeds have been dried to a uniform moisture content and is reported in bushels per acre.

Maturity is taken as the date when approximately 95% of the pods are ripe and most of the leaves have dropped. Green stems are not to be considered in determining maturity but should be noted separately. Maturity is expressed as days earlier (-) or later (+) than the average of a standard reference variety. Reference varieties used for the Uniform Tests are as follows: Group 00, Acme; Group 0, Grant; Group I, Chippewa; Group II, Hawkeye; Group III, Shelby; and Group IV, Clark.

To make it possible to compare maturities of strains in different tests, the following tie varieties are included in the Uniform Tests: Flambeau (Group 00) in Uniform Test 0; Grant (Group 0) in Uniform Test I; Blackhawk (Group I) and Ford (Group III) in Uniform Test II; and Clark (Group IV) in Uniform Test III. These are separated from the rest of the test by border rows in order to minimize competition effects, and only maturity data are reported.

Lodging notes are taken at maturity and recorded on a scale of 1 to 5 according to the following degrees of lodging:

1 - Almost all plants erect
2 - All plants leaning slightly or a few plants down
3 - All plants leaning moderately, or 25% to 50% of the plants down
4 - All plants leaning considerably, or 50% to 80% of the plants down
5 - Almost all plants down

Height is reported as the average length in inches of plants from the ground to the tip of the stem at time of maturity.

Seed Quality is rated from 1 to 5 according to the following scale:

1 - Very good
2 - Good
3 - Fair
4 - Poor
5 - Very poor

The factors considered in estimating seed quality are: seed development, wrinkling, damage, and objectionable color for the variety.

Seed Weight is recorded as weight (in grams) per 100 seeds.

Chemical Composition of the seed is determined on samples submitted to the Laboratory headquarters in Urbana. Percentages of oil and protein are determined on a composite sample of all replications for each strain and are expressed on a moisture-free basis.

Calculating Summary Means. In cases where the lodging and seed quality notes are all the same at a location, indicating no expression of strain differences, these locations are not included in the mean for these traits. Where the C.V. of yield is greater than 20% at a location or where yields are unusually low, this location is not included in the strain means.

Disease Reactions are listed according to the Soybean Disease Classification Standards, March 1955, unless otherwise specified. The disease reaction is listed 1-5. The state where the test was made is identified in the column heading, and a small letter "a" or "n" under the state signifies artificial or natural infection. When the reaction is given by letter instead of numbers, R signifies resistant, S stands for susceptible, and I for intermediate. Seg. indicates that a strain is segregating for disease reaction.

Shattering scores are based on estimates of the percent of open pods as follows:

1 - No shattering
2 - 1 to 10% shattered
3 - 10 to 25% shattered
4 - 25 to 50% shattered
5 - Over 50% shattered

Testing History. The number of years in Uniform Test given in the tables includes the current year's test and excludes years in Preliminary Tests or Uniform Tests of another group. Numbers in parentheses include additional years when a nearly identical progenitor strain was tested. The previous regional test is abbreviated: U.T. 0 for Uniform Test 0, P.T. III for Uniform Preliminary Test III, etc., and only the last previous test is listed. The year(s) are listed only if the previous test did not immediately precede its entry in this test or if the strain was in the previous test for more than one year.

Descriptive Traits are abbreviated as follows:

Flower color: P = purple, W = white
Pubescence color: T = tawny, G = gray, Lt = light tawny
Seed coat luster: D = dull, S = shiny
Seed coat color: Y = yellow, G = gray, Lg = light gray
Hilum color: G = gray, T = tan, Y = yellow, Bl = black, Br = brown, Bf = buff, Ib = imperfect black, Lbf = light buff
Pod color: Br = brown, T = tan

Strain Designation. In order to simplify strain designations and indicate state of origin for entries in the Uniform Tests, the following code letters to precede strain numbers have been agreed upon in meetings of experiment station agronomists collaborating with the U. S. Regional Soybean Laboratory.

State	Code Letter	State	Code Letter	State	Code Letter
Alabama	Au	Louisiana	La	North Dakota	ND
Arkansas	R	Maine	Me	Ohio	H
California	B	Manitoba, Canada	UM	Oklahoma	Ok
Delaware	UD	Maryland	Md	Ontario, Canada	O
Florida	F	Michigan	E	South Carolina	SC
Georgia	Ga	Minnesota	M	South Dakota	SD
Illinois	L	Mississippi	D	Tennessee	UT
Indiana	C	Missouri	S	Texas	TS
Iowa	A	Nebraska	U	Virginia	V
Kansas	K	North Carolina	N	Wisconsin	W

Two or More States SL

It is suggested that states cooperating in these Uniform Tests use these letters to designate their strains.

UNIFORM TEST 00, 1963

Strain	Originating Agency	Origin	Generation Composited
Acme	Central Exp. Farm, Ottawa, Ont.	Sel. from Pagoda	
Flambeau	Wis. Agr. Exp. Sta.	Introduction from Russia	
0-57-2921	Central Exp. Farm, Ottawa, Ont.	Blackhawk x Capital	F_7
M384	Minn. A.E.S. & U.S.R.S.L.	Renville x Capital	F_5
M387	Minn. A.E.S. & U.S.R.S.L.	Renville x Capital	F_5
M388	Minn. A.E.S. & U.S.R.S.L.	Renville x Capital	F_5
UM4	Univ. of Manitoba, Winnipeg, Man.	Acme x Comet	F_5
UM13	Univ. of Manitoba, Winnipeg, Man.	0-52-903 x Flambeau	F_5

Identification of Parent Strain

0-52-903 753-1, sel. by Sven A. Holmberg, Norrkoping, Sweden; same as P.I. 194654.

UM4, although not outyielding Acme in 1963, has a 2-bushel yield advantage in the 4-year mean (see tables 7-8). Strain 0-57-2921 has outyielded Flambeau in 1962-63 and has better lodging resistance in spite of its greater height.

M387 had the highest average yield but was Group 0 maturity. The two other selections from Renville x Capital were similar to 0-57-2921 in all traits except height.

Table 1. Regional testing history and descriptive data for the strains in Uniform Test 00, 1963.

Strain	Years in Uniform Test 00	Previous Regional Test	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color	Shattering*	Shattering**
Acme	6	None	P	G	S	Y	Y	Br	2.5	3.0
Flambeau	6	43-56 U.T.0	P	T	S	Y	Bl	Br	2.0	1.0
0-57-2921	2	60-61 U.T.0	P+W	G	D	Y	Y	Br	2.0	1.0
M384	1	P.T.00	W	G	S	Y	Bf+Y	Br	1.0	1.0
M387	1	P.T.00	P	G	D	Y	Y	Br	1.0	1.0
M388	1	P.T.00	P+W	G	S	Y	Y+G	Br	1.0	1.0
UM4	4	P.T.00	P	G	D	Y	Y	Br	5.0	2.8
UM13	1	P.T.00	P	T	S	Lg	Bl	Br	4.5	2.0

*Shattering scored at Urbana, Ill., 1 month after maturity, mean of 2 replications.

**Shattering scored at Grand Forks, N. D.

Table 2. Summary of data for Uniform Test 00, 1963.

Strain	Yield	Rank	Matu-rityl	Lodg-ing	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	11	11	8	10	11	9	9	7	7
Acme	29.3	7	0	1.5	28	1.8	18.1	37.4	20.1
Flambeau	33.7	5	+5.9	2.9	31	2.1	16.3	37.3	19.7
0-57-2921	34.1	3	+6.9	2.0	33	2.3	13.1	36.1	20.7
M384	34.2	2	+6.9	1.9	30	2.4	14.1	36.3	21.3
M387	35.8	1	+8.3	2.4	33	2.5	14.2	35.6	20.9
M388	34.1	3	+6.8	2.2	30	2.2	14.9	35.9	21.5
UM4	29.3	7	+0.8	1.4	28	2.0	17.8	36.9	20.5
UM13	31.1	6	+2.5	2.2	30	2.3	17.5	37.9	20.1

[1]Days earlier (-) or later (+) than Acme which matured September 8, 108 days after planting.

Table 3. Disease data for Uniform Test 00, 1963.

Strain	Bacterial Blight		Bacterial Pustule		Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew	
	Ill.	Ia.	Ill.	Ia.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.
	a[1]	a[2]	a	a	n[1]	a	a	a	n	n
Acme	4	5	4	3	4	Seg.	S	5	2	--
Flambeau	2	5	4	3	4	S	S	5	1	--
0-57-2921	2	5	3	4	4	R	S	5	5	--
M384	2	5	4	3	4	S	Seg.	5	4	--
M387	3	5	4	3	4	S	Seg.	5	3	--
M388	3	5	4	3	4	S	Seg.	5	5	--
UM4	3	5	4	3	4	S	S	5	1	--
UM13	3	5	3	3	4	S	R	3	3	--

[1]a = artificial inoculation; n = natural infection.
[2]Causal organism is a bacterium different than Ps. glycinea.

Table 4. Yield, yield rank, and maturity, days earlier (-) or later (+) than Acme for Uniform Test 00, 1963.

Strain	Mean of 11 Tests	Ottawa Ont.[1]	Guelph Ont.	Bath Mich.[1] *	East Lansing Mich.	Ash-land Wis.	Crooks-ton Minn.
Acme	29.3	33.4	42.9	6.6	30.8	29.2	25.3
Flambeau	33.7	36.4	38.9	13.1	30.7	29.2	32.2
0-57-2921	34.1	34.2	35.6	8.5	32.7	28.3	27.5
M384	34.2	40.2	42.4	9.8	29.3	34.7	27.8
M387	35.8	33.9	41.4	2.7	31.4	32.1	32.1
M388	34.1	38.6	35.1	6.2	27.6	34.8	31.0
UM4	29.3	30.9	34.1	9.9	32.4	28.8	28.4
UM13	31.1	34.4	35.1	10.8	33.9	30.3	24.6
Coef. of Var. (%)		9.4	8.5	16.5	8.7	--	--
L.S.D. (5%)		5.5	4.8	2.1	N.S.	--	--
Row Spacing (In.)		40	27	32	24	24	22
	Yield Rank						
Acme	7	7	1	6 *	5	5	7
Flambeau	5	3	4	1	6	5	1
0-57-2921	3	5	5	5	2	8	6
M384	2	1	2	4	7	2	5
M387	1	6	3	8	4	3	2
M388	3	2	6	7	8	1	3
UM4	7	8	8	3	3	7	4
UM13	6	4	6	2	1	4	8
	Mean of 8 Tests	Maturity					
Acme	0	0	0	0 *	0	0	0
Flambeau	+5.9	+8	+12	+ 7	+3	-2	+ 6
0-57-2921	+6.9	+6	+ 8	+ 6	+2	0	+ 8
M384	+6.9	+6	+ 9	+ 7	+3	+3	+ 8
M387	+8.3	+9	+10	+10	+3	+5	+10
M388	+6.8	+8	+13	+ 7	+2	-1	+ 9
UM4	+0.8	-2	0	0	0	+1	0
UM13	+2.5	+4	+ 5	+ 5	0	-4	+ 4
Date planted	5-23	5-22	5-30	5-27	6-5	5-27	5-15
Acme matured	9-8	9-10	9-13	9-20	9-14	9-25	9-2
Days to mature	108	111	106	116	101	121	110

*Not included in the mean.
[1]Irrigated.

Table 4. (Continued)

Strain	St. Paul Minn.	Portage la Prairie Man.	Winnipeg Man.	Brandon Man.	Morden Man.	Grand Forks N.D.	Kimberly Idaho *
Acme	23.4	29.7	27.7	36.9	29.7	13.5	30.6
Flambeau	23.6	34.2	33.8	53.2	36.6	21.8	24.9
0-57-2921	24.6	35.6	31.5	59.6	40.0	25.2	31.7
M384	25.4	32.3	30.2	53.3	35.7	24.9	28.8
M387	29.7	33.4	33.6	62.2	42.0	21.6	35.7
M388	25.1	31.7	31.8	59.1	36.0	24.8	28.8
UM4	24.5	29.8	28.7	42.1	30.5	12.4	27.7
UM13	22.7	31.0	31.4	49.4	33.3	16.4	22.6
Coef. of Var. (%)	--	14.2	10.5	17.5	8.4	10.7	18.0
L.S.D. (5%)	--	--	4.8	5.2	4.4	3.1	N.S.
Row Spacing (In.)	36	30	24	36	36	24	24

	Yield Rank						
							*
Acme	7	8	8	8	8	7	3
Flambeau	6	2	1	5	3	4	7
0-57-2921	4	1	4	2	2	1	2
M384	2	4	6	4	5	2	4
M387	1	3	2	1	1	5	1
M388	3	5	3	3	4	3	4
UM4	5	7	7	7	7	8	6
UM13	8	6	5	6	6	6	8

	Maturity						
		*		*		*	*
Acme	0	0	0	0	0		0
Flambeau	+3	+21	+ 5	+14	+12		+ 6
0-57-2921	+6	+21	+12	+14	+13		+ 3
M384	+6	+21	+ 9	+14	+11		+11
M387	+5	+21	+10	+18	+14		+13
M388	+5	+21	+ 7	+18	+11		+ 3
UM4	+5	0	0	0	+ 2		+ 4
UM13	+3	+ 8	+ 2	0	+ 6		+ 2
Date planted	5-23	5-30	5-22	5-16	5-10	5-22	5-31
Acme matured	9-1	9-9	9-4	9-9	8-28	--	9-12
Days to mature	101	102	105	116	110	--	104

Table 5. Lodging, plant height, and seed quality for Uniform Test 00, 1963.

Strain	Mean of 10 Tests	Ottawa Ont.[1]	Guelph Ont.	Bath Mich.[1]	East Lansing Mich.	Ash-land Wis.	Crooks-ton Minn.
				*			
Acme	1.5	2.0	2.0	1.0	1.0	2.0	2.0
Flambeau	2.9	2.5	4.0	3.0	2.0	3.0	2.5
0-57-2921	2.0	1.2	2.5	1.0	1.0	2.0	1.8
M384	1.9	1.0	3.0	1.0	2.0	2.0	2.2
M387	2.4	1.5	3.5	1.0	2.0	2.5	3.0
M388	2.2	1.4	3.5	2.0	2.0	2.5	2.7
UM4	1.4	1.2	2.0	1.0	1.0	1.5	2.0
UM13	2.2	1.8	4.0	3.0	2.0	2.0	2.0
	Mean of 11 Tests			Plant Height			
				*			
Acme	28	29	30	15	26	23	25
Flambeau	31	31	32	21	28	25	31
0-57-2921	33	32	34	17	30	22	35
M384	30	29	33	17	28	23	31
M387	33	30	32	15	29	24	32
M388	30	30	28	15	26	23	30
UM4	28	28	33	15	28	23	26
UM13	30	32	34	20	28	23	28
	Mean of 9 Tests			Seed Quality			
				*		*	
Acme	1.8	1.0	1.0	3.0	1.0	2.0	2.2
Flambeau	2.1	1.0	3.0	4.0	1.0	2.0	2.5
0-57-2921	2.3	2.0	2.0	3.0	1.0	2.0	3.0
M384	2.4	2.0	3.0	3.0	1.0	2.0	2.5
M387	2.5	2.0	3.0	4.0	1.0	2.0	3.0
M388	2.2	2.0	2.0	2.0	2.0	2.0	2.3
UM4	2.0	2.0	1.0	2.0	1.0	2.0	2.5
UM13	2.3	1.0	3.0	5.0	2.0	2.0	2.3

*Not included in the mean.
[1]Irrigated.

Table 5. (Continued)

Strain	St. Paul Minn.	Portage la Prairie Man.	Winnipeg Man.	Brandon Man.	Morden Man.	Grand Forks N.D. *	Kimberly Idaho
Acme	2.0	1.0	1.0	1.0	1.3	1.0	
Flambeau	2.8	2.0	2.0	3.0	4.7	1.0	
0-57-2921	2.2	1.0	1.2	3.0	4.0	1.0	
M384	1.8	1.0	1.0	2.0	2.5	1.0	
M387	2.5	1.0	1.8	2.0	4.0	1.0	
M388	2.8	1.0	1.8	1.0	3.5	1.0	
UM4	2.0	1.0	1.0	1.0	1.0	1.0	
UM13	2.0	3.0	1.0	1.0	3.5	1.0	
			Plant Height				
Acme	31	36	26	27	33	19	31 *
Flambeau	30	36	33	33	41	23	35
0-57-2921	35	44	36	34	43	22	42
M384	29	33	32	34	38	22	33
M387	34	40	37	36	42	22	35
M388	30	37	32	32	37	20	34
UM4	31	37	27	26	33	19	34
UM13	29	37	29	31	36	20	36
			Seed Quality				
Acme	2.8	2.5	2.0	2.0	2.0		
Flambeau	3.0	2.0	2.0	1.0	3.0		
0-57-2921	3.5	2.5	3.0	1.0	3.0		
M384	3.2	1.5	3.0	2.0	3.0		
M387	3.2	2.0	2.0	3.0	3.0		
M388	3.2	2.0	2.0	2.0	2.0		
UM4	3.0	2.5	2.0	1.0	3.0		
UM13	3.0	2.5	2.0	2.0	3.0		

Table 6. Percentages of protein and oil for Uniform Test 00, 1963.

Strain	Mean of 7 Tests	Ottawa Ont.[1]	East Lansing Mich.	Ash-land Wis.	Crooks-ton Minn.	Bran-don Man.	Mor-den Man.	Grand Forks N.D.	Kim-berly Idaho *
Acme	37.4	36.6	37.3	41.0	32.6	39.0	36.6	38.8	39.8
Flambeau	37.3	38.1	37.6	41.6	30.9	38.9	35.4	38.5	39.3
0-57-2921	36.1	36.1	37.3	40.2	29.2	37.8	35.0	37.0	39.4
M384	36.3	36.6	38.3	40.3	29.0	37.0	35.9	37.2	38.9
M387	35.6	36.0	37.3	37.6	29.9	37.5	34.6	36.1	38.6
M388	35.9	36.3	37.2	39.8	30.3	38.0	33.6	36.3	38.5
UM4	36.9	35.8	36.4	40.0	32.1	38.8	36.6	38.5	38.7
UM13	37.9	38.0	37.6	41.8	32.1	39.8	36.5	39.6	38.4

	Mean of 7 Tests	Percentage of Oil							*
Acme	20.1	19.6	20.0	18.2	22.3	19.4	20.4	20.9	18.6
Flambeau	19.7	18.1	19.3	17.7	22.0	19.0	20.8	20.8	17.0
0-57-2921	20.7	19.0	19.5	19.2	22.7	21.0	21.8	21.7	18.1
M384	21.3	19.4	21.2	19.7	23.8	21.3	21.6	21.8	19.1
M387	20.9	19.3	20.5	19.2	23.1	21.1	21.7	21.5	19.2
M388	21.5	19.7	21.0	18.8	24.6	21.0	22.3	23.1	18.8
UM4	20.5	19.4	20.5	18.9	23.1	19.9	20.4	21.3	19.0
UM13	20.1	19.2	20.2	17.4	23.6	19.3	20.0	20.7	18.0

*Not included in the mean.
[1]Irrigated.

Table 7. Four-year summary of data for Uniform Test 00, 1960-1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	45	45	39	36	45	39	37	38	38
Acme	27.0	3	0	1.8	28	2.3	17.2	39.7	19.5
Flambeau	30.8	1	+8.7	3.1	32	2.6	16.0	40.2	19.3
UM4	29.0	2	+0.7	1.6	29	2.4	17.2	39.1	19.8

[1]Days earlier (-) or later (+) than Acme which matured September 10, 107 days after planting.

Table 8. Four-year summary of yield and yield rank for Uniform Test 00, 1960-1963.

Strain	Mean of 45 Tests	Ottawa Ont.	Guelph Ont.	East Lansing Mich.	Ashland Wis.	Crookston Minn.	St. Paul Minn.	Portage la Prairie Man.	Winnipeg Man.	Brandon Man.	Morden Man.	Ontario Ore.	Medford Ore.
Years Tested		1960-1963	1960-1963	1960-1963	1960-1963	1960-1963	1960-61, 1963	1960-1963	1960-61, 1963	1960-1963	1960-1963	1960-1962	1961-1962
Acme	27.0	31.6	31.5	26.4	28.5	21.6	24.8	36.4	22.7	25.1	18.1	50.0	29.6
Flambeau	30.8	38.1	35.5	29.6	30.8	29.5	26.9	38.6	25.5	28.8	22.4	51.5	33.0
UM4	29.0	34.1	30.2	27.3	31.4	24.4	28.1	40.3	22.8	28.7	18.6	52.8	28.3
	Yield Rank												
Acme	3	3	2	3	3	3	3	3	3	3	3	2	
Flambeau	1	1	1	1	2	1	2	2	1	1	1	2	1
UM4	2	2	3	2	1	2	1	1	2	2	2	1	3

UNIFORM PRELIMINARY TEST 00 - 1963

Strain	Originating Agency	Origin	Generation Composited
Acme	Central Exp. Farm, Ottawa, Ont.	Sel. from Pagoda	
Flambeau	Wis. Agr. Exp. Sta.	Introduction from Russia	
M412	Minn. A.E.S. & U.S.R.S.L.	P.I. 132207	
M422	Minn. A.E.S. & U.S.R.S.L.	Renville x Capital	F_5
UM14	Univ. of Manitoba, Winnipeg, Man.	0-52-903 x Flambeau	F_5
UM15	Univ. of Manitoba, Winnipeg, Man.	0-52-903 x Flambeau	F_5

Identification of Parent Strains

0-52-903 753-1, sel. by Sven A. Holmberg; same as P.I. 194654.
P.I. 132207 No. D. 14 from the Netherlands, presented by Dr. L. Koch, Zeist.

UM14 and UM15 appear to be improvements over the check varieties, performing well in all traits including seed composition. M422 yielded very well but matured with Group 0. M412 also matured later than Flambeau and should probably be classified Group 0.

Table 9. Regional testing history and descriptive data for the strains in Uniform Preliminary Test 00, 1963.

Strain	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color	Shattering**	Shattering***
Acme	P	G	S	Y	Y	Br	3.5	3.0
Flambeau	P	T	S	Y	Bl	Br	1.5	1.0
M412	P	G	S	Y	Y	Br	1.5	1.0
M422	W	G	S	Y	Y	Br	1.0	1.0
UM14	P	T	S	Lg	Bl*	Br	3.0	2.0
UM15	P	T	S	Lg	Bl	Br	2.5	2.0

*Segregating normal and abnormal (imperfect abscission) hilum.
**Shattering scored at Urbana, Ill., 1 month after maturity, mean of 2 replications.
***Shattering scored at Grand Forks, N. D.

Table 10. Summary of data for Uniform Preliminary Test 00, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	8	8	6	8	9	7	7	7	7
Acme	27.2	5	0	1.6	29	2.1	18.3	38.7	19.6
Flambeau	30.3	3	+5.5	2.9	33	2.1	17.1	39.5	18.9
M412	27.1	6	+7.2	2.2	30	2.2	20.4	43.2	17.0
M422	33.8	1	+8.2	2.1	32	1.9	16.1	39.1	20.0
UM14	30.1	4	+2.8	2.0	30	1.9	19.1	39.3	20.3
UM15	31.6	2	+2.2	2.1	30	1.9	18.1	39.2	20.3

[1]Days earlier (-) or later (+) than Acme which matured September 7, 107 days after planting.

Table 11. Disease data for Uniform Preliminary Test 00, 1963.

Strain	Bacterial Blight	Bacterial Pustule	Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew	
	Ill.	Ill.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.
	a[1]	a	n[1]	a	a	a	n	n
Acme	4	4	3	Seg.	S	5	2	--
Flambeau	2	4	3	S	S	5	1	--
M412	4	3	3	S	S	4	5	--
M422	2	4	3	S	S	5	5	--
UM14	2	3	3	R	R	3	--	--
UM15	3	4	3	R	R	3	--	--

[1]a = artificial inoculation; n = natural infection.

Table 12. Yield, yield rank, and maturity, days earlier (-) or later (+) than Acme, for Uniform Preliminary Test 00, 1963.

Strain	Mean of 8 Tests	Ottawa Ont.[1]	Bath Mich.[1] *	East Lansing Mich.	Ashland Wis.	St. Paul Minn.	Portage la Prairie Man.	Winnipeg Man.	Morden Man.	Grand Forks N.D.	Ontario Ore.[1] *
Acme	27.2	29.0	10.0	27.8	31.8	24.8	34.5	29.3	26.8	13.8	50.6
Flambeau	30.3	34.6	16.7	28.9	32.1	24.7	33.9	33.3	33.1	22.0	45.8
M412	27.1	27.5	8.0	28.4	21.8	22.3	28.8	29.9	37.5	20.6	47.0
M422	33.8	32.2	14.1	31.1	29.0	30.5	42.7	38.0	40.9	25.8	56.5
UM14	30.1	31.7	16.0	31.2	28.1	26.0	34.0	32.5	36.1	21.3	44.7
UM15	31.6	30.2	13.8	31.0	32.8	30.1	38.7	33.0	36.6	20.2	51.2
C.V.(%)		15.4	15.6	8.5	--	--	14.3	5.4	10.6	8.6	4.2
L.S.D.(5%)		N.S.	3.1	N.S.	--	--	--	3.2	N.S.	4.5	5.4
Row Sp.(In.)		40	32	24	--	36	30	24	36	24	20

	Yield Rank										
			*								*
Acme	5	5	5	6	3	4	3	6	6	6	3
Flambeau	3	1	1	4	2	5	5	2	5	2	5
M412	6	6	6	5	6	6	6	5	2	4	4
M422	1	2	3	2	4	1	1	1	1	1	1
UM14	4	3	2	1	5	3	4	4	4	3	6
UM15	2	4	4	3	1	2	2	3	3	5	2

	Mean of 6 Tests	Maturity									
			*				*			*	*
Acme	0	0	0	0	0	0	0	0	0		0
Flambeau	+5.5	+8	+7	+5	-2	+ 5	+21	+ 6	+11		+6
M412	+7.2	+7	+7	+4	+5	+10	+21	+ 6	+11		+9
M422	+8.2	+9	+7	+5	+1	+11	+21	+10	+13		+6
UM14	+2.8	+2	+3	+4	-8	+ 9	+21	+ 3	+ 7		-5
UM15	+2.2	+2	+4	+4	-5	+ 2	+21	+ 3	+ 7		-8
Date planted	5-23	5-22	5-27	6-5	5-27	5-23	5-30	5-22	5-10	5-22	5-7
Acme matured	9-7	9-9	9-20	9-14	9-23	8-30	9-9	9-4	8-28	--	8-28
Days to mature	107	110	116	101	119	99	102	105	110	--	113

*Not included in the mean.
[1]Irrigated.

UNIFORM TEST 0 - 1963

Strain	Originating Agency	Origin	Generation Composited
Grant	Wis. A.E.S. & U.S.R.S.L.	Lincoln x Seneca	F_6
Merit	Central Exp. Farm, Ottawa, Ont.	Blackhawk x Capital	F_8
Norchief	Wis. A.E.S. & U.S.R.S.L.	Hawkeye x Flambeau	F_4
M316G	Minn. A.E.S. & U.S.R.S.L.	Hawkeye x Capital	F_{12}
M389	Minn. A.E.S. & U.S.R.S.L.	Capital x M10	F_5
M391	Minn. A.E.S. & U.S.R.S.L.	Capital x Renville	F_5
0-4323	Research Station, Harrow, Ont.	Capital x Hardome	F_7
0-56-2678	Central Exp. Farm, Ottawa, Ont.	Blackhawk x Capital	F_7
0-57-2826	Central Exp. Farm, Ottawa, Ont.	Adams x A3K-884	F_{12}
0-57-2905	Central Exp. Farm, Ottawa, Ont.	Blackhawk x Capital	F_8

Identification of Parent Strains

A3K-884	Sel. from Mukden x Richland, progenitor of Blackhawk.
M10	Sel. from Lincoln (2) x Richland.

None of the strains in the test outyielded Grant although some were considerably taller and slightly more lodging resistant. Among the earlier strains, 0-4323 has the best average performance (see the 3-year summary, tables 20-21). It is the earliest and yet one of the tallest strains in the test, and has outyielded Norchief by 2 bushels on the average.

Table 13. Regional testing history and descriptive data for the strains in Uniform Test 0, 1963.

Strain	Years in Uniform Test 0	Previous Regional Test	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color	Shattering*
Grant	14	P.T.0	W	Lt	S	Y	Bl	Br	1.0
Merit	6	P.T.0	W	G	D	Y	Bf	Br	1.0
Norchief	14	None	P	T	D	Y	Bl	Br	1.0
M316G	1	P.T.0	P	G	D	Y	Y	Br	1.5
M389	1	P.T.0	P	G	D	Y	Y	Br	1.0
M391	1	P.T.0	P	T	S	Y	Y	Br	1.0
0-4323	3	P.T.0	P	T	S	Y	T	Br	1.0
0-56-2678	2	P.T.0	W	T	S	Y	T	Br	1.0
0-57-2826	2	P.T.0	W	G	S	Y	Bf	Br	1.0
0-57-2905	2	P.T.0	W	T	S	Y	Bf	Br	1.0

*Shattering scored at Urbana, Ill., 1 month after maturity, mean of 2 replications.

Table 14. Summary of data for Uniform Test 0, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	11	11	8	10	11	9	7	5	5
Grant	33.4	1	0	3.0	33	1.7	15.9	38.6	19.7
Merit	31.5	8	-2.6	2.5	35	1.9	13.6	37.6	20.5
Norchief	30.1	10	-4.9	2.4	31	2.3	16.3	38.7	19.9
M316G	31.6	7	-1.8	3.0	36	2.1	14.7	38.2	20.9
M389	31.9	3	-3.8	2.6	32	2.3	14.9	38.9	20.1
M391	31.7	5	-0.3	2.8	37	2.1	15.4	37.8	21.0
0-4323	31.9	3	-5.0	2.8	38	2.2	14.8	39.3	19.6
0-56-2678	31.7	5	-1.3	2.8	39	2.0	13.7	38.8	19.8
0-57-2826	32.2	2	-0.1	2.8	36	2.2	15.5	38.6	20.1
0-57-2905	30.5	9	-2.8	2.7	39	2.3	14.4	39.0	20.0

[1]Days earlier (-) or later (+) than Grant which matured September 22, 121 days after planting. Flambeau (Group 00) matured -6.1.

Table 15. Disease data for Uniform Test 0, 1963.

Strain	Bacterial Blight		Bacterial Pustule		Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew	
	Ill.	Ia.	Ill.	Ia.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.
	a[1]	a[2]	a	a	n[1]	a	a	a	n	n
Grant	4	5	4	4	3	S	S	5	4	--
Merit	3	5	4	4	3	R	Seg.	5	5	--
Norchief	3	5	3	3	3	S	S	4	4	--
M316G	4	5	3	3	3	S	S	5	5	--
M389	3	5	2	3	3	S	Seg.	5	5	--
M391	3	5	3	3	3	S	R	4	4	--
0-4323	4	5	3	3	3	S	R	3	5	--
0-56-2678	4	5	3	4	4	S	S	4	4	--
0-57-2826	3	5	3	3	4	S	S	5	4	--
0-57-2905	3	5	4	3	4	S	S	5	3	--

[1]a = artificial inoculation; n = natural infection.
[2]Causal organism is a bacterium different than Ps. glycinea.

Table 16. Yield and yield rank for Uniform Test 0, 1963.

Strain	Mean of 11 Tests	Ottawa Ont.[1]	Guelph Ont.	Ridgetown Ont.	Columbus Ohio[1]	East Lansing Mich.	Spooner Wis.[1]
					*		
Grant	33.4	38.3	24.7	43.6	15.7	38.7	30.3
Merit	31.5	36.1	29.6	42.7	13.4	31.6	29.8
Norchief	30.1	37.8	24.7	40.6	12.3	26.3	27.4
M316G	31.6	36.4	23.2	43.0	19.2	35.2	27.8
M389	31.9	33.7	27.8	39.5	11.4	34.7	31.2
M391	31.7	37.7	24.9	39.2	16.0	36.9	30.1
0-4323	31.9	38.8	33.6	43.4	13.1	36.7	31.7
0-56-2678	31.7	37.0	28.4	42.8	18.1	31.7	28.1
0-57-2826	32.2	38.0	25.4	42.1	19.6	33.3	30.2
0-57-2905	30.5	38.3	26.3	40.5	14.2	34.9	25.4
Coef. of Var. (%)		10.3	13.9	6.5	27.0	11.9	7.3
L.S.D. (5%)		N.S.	5.4	N.S.	N.S.	5.9	3.0
Row Spacing (In.)		40	27	24	28	24	36
	Yield Rank						
Grant	1	2	8	1	5	1	3
Merit	8	9	2	5	7	9	6
Norchief	10	5	8	7	9	10	9
M316G	7	8	10	3	2	4	8
M389	3	10	4	9	10	6	2
M391	5	6	7	10	4	2	5
0-4323	3	1	1	2	8	3	1
0-56-2678	5	7	3	4	3	8	7
0-57-2826	2	4	6	6	1	7	4
0-57-2905	9	2	5	8	6	5	10

*Not included in the mean.
[1]Irrigated.
[2]Three replications.

Table 16. (Continued)

Strain	Durand Wis.[2]	Crookston Minn.	Morris Minn.	St. Paul Minn.	Fargo N.D.	Watertown S.D.	Ontario Ore.[1] *
Grant	23.1	31.9	29.6	34.3	39.0	33.9	50.5
Merit	21.2	28.8	30.9	31.9	35.4	28.0	57.1
Norchief	20.8	29.2	30.8	28.3	32.7	32.2	51.5
M316G	20.5	31.2	32.3	30.6	37.8	29.6	53.0
M389	21.7	29.8	30.0	30.0	35.1	37.2	52.0
M391	22.0	27.4	34.2	28.9	39.4	27.9	57.7
0-4323	19.8	26.3	27.2	28.6	32.6	32.2	54.4
0-56-2678	21.4	26.5	31.8	28.9	33.0	39.3	49.5
0-57-2826	21.4	26.7	36.2	31.4	37.8	31.7	50.0
0-57-2905	20.6	26.7	30.0	31.9	29.8	31.2	51.6
Coef. of Var. (%)	6.5	--	--	--	5.2	--	5.6
L.S.D. (5%)	N.S.	--	--	--	2.6	--	5.0
Row Spacing (In.)	36	22	40	36	40	42	20

	Yield Rank						
Grant	1	1	9	1	2	3	8
Merit	6	5	5	2	5	9	2
Norchief	7	4	6	10	8	4	7
M316G	9	2	3	5	3	8	4
M389	3	3	7	6	6	2	5
M391	2	6	2	7	1	10	1
0-4323	10	10	10	9	9	4	3
0-56-2678	4	9	4	7	7	1	10
0-57-2826	4	7	1	4	3	6	9
0-57-2905	8	7	7	2	10	7	6

Table 17. Maturity, days earlier (-) or later (+) than Grant, and lodging for Uniform Test 0, 1963.

Strain	Mean of 8 Tests	Ottawa Ont.[1]	Guelph Ont.	Ridgetown Ont.	Columbus Ohio[1]	East Lansing Mich.	Spooner Wis.[1]
				*	*		
Grant	0	0	0	0	0	0	0
Merit	-2.6	- 9	-2	-2	- 5	-1	- 4
Norchief	-4.9	- 8	-4	-4	- 7	-3	- 6
M316G	-1.8	- 7	+1	+2	- 5	0	- 4
M389	-3.8	- 7	-5	-3	- 9	-2	- 5
M391	-0.3	- 3	-2	+1	- 3	0	- 2
0-4323	-5.0	-13	-3	-5	-11	-2	- 6
0-56-2678	-1.3	- 6	0	-1	- 4	+1	- 3
0-57-2826	-0.1	- 5	-2	+1	- 1	+1	- 2
0-57-2905	-2.8	- 7	-5	-3	- 8	0	- 3
Flambeau	-6.1	- 9	-4	--	--	-5	-10
Date planted	5-24	5-22	5-30	5-24	5-14	6-6	5-27
Grant matured	9-22	10-3	10-4	9-23	9-5	9-29	9-18
Days to mature	121	134	127	122	114	115	114
	Mean of 10 Tests	Lodging					
					*		
Grant	3.0	2.5	4.3	2.5	1.2	3.0	4.0
Merit	2.5	1.0	3.8	1.8	1.0	2.0	4.3
Norchief	2.4	1.5	3.3	2.0	1.0	2.0	4.3
M316G	3.0	1.9	4.3	2.6	1.0	3.0	4.0
M389	2.6	2.0	3.5	2.0	1.0	2.0	2.8
M391	2.8	2.2	4.0	1.8	1.0	3.0	3.3
0-4323	2.8	2.0	4.3	1.8	1.0	3.0	3.8
0-56-2678	2.8	2.0	3.5	2.1	1.0	3.0	3.0
0-57-2826	2.8	2.6	4.0	1.9	1.0	3.0	4.0
0-57-2905	2.7	1.2	3.5	2.0	1.0	2.0	3.5

*Not included in the mean.
[1]Irrigated.

Table 17. (Continued)

Strain	Durand Wis.	Crookston Minn.	Morris Minn.	St. Paul Minn.	Fargo N.D.	Watertown S.D.	Ontario Ore.[1]
	*		*				*
Grant	0	0	0	0	0	0	0
Merit	-4	-1	- 3	+1	- 5	0	- 4
Norchief	-4	-4	- 6	-3	-11	0	- 7
M316G	-3	-2	- 3	+1	- 3	0	- 3
M389	-2	-5	- 5	-2	- 4	0	- 4
M391	-1	0	0	+4	0	+1	- 4
0-4323	-6	-5	-10	-2	-10	+1	-15
0-56-2678	-2	+1	- 3	+1	- 6	+2	0
0-57-2826	+1	+2	+ 3	+3	0	+2	- 1
0-57-2905	-4	0	- 5	0	- 9	+2	- 3
Flambeau	-4	-8	--	-2	-11	0	-12
Date planted	--	5-15	5-22	5-23	5-14	5-20	5-8
Grant matured	9-10	9-16	9-13	9-10	9-23	9-15	9-16
Days to mature	--	124	114	110	132	118	131

	Lodging					
						*
Grant	2.1	2.8	3.3	3.3	2.2	4.6
Merit	1.5	3.0	3.0	2.5	2.0	3.2
Norchief	1.6	1.0	3.3	2.5	2.0	4.8
M316G	2.0	3.0	3.2	3.5	2.5	3.8
M389	1.9	2.3	3.0	3.0	3.0	3.0
M391	2.0	2.3	3.3	3.0	3.0	3.4
0-4323	2.0	2.0	3.0	3.8	2.5	3.7
0-56-2678	2.1	3.0	3.8	3.5	2.2	4.5
0-57-2826	1.6	2.0	4.0	3.0	2.0	3.7
0-57-2905	2.0	2.8	3.0	3.8	2.8	4.3

Table 18. Plant height and seed quality for Uniform Test 0, 1963.

Strain	Mean of 11 Tests	Ottawa Ont.[1]	Guelph Ont.	Ridgetown Ont.	Columbus Ohio[1]	East Lansing Mich.	Spooner Wis.[1]
					*		
Grant	33	32	37	40	24	36	35
Merit	35	31	36	43	22	40	38
Norchief	31	30	33	36	24	32	34
M316G	36	32	40	43	26	40	39
M389	32	27	34	40	24	34	35
M391	37	37	39	45	28	40	40
0-4323	38	40	36	50	29	40	41
0-56-2678	39	40	40	47	31	42	39
0-57-2826	36	35	36	43	29	40	40
0-57-2905	39	40	43	48	29	43	41

	Mean of 9 Tests	Seed Quality					
					*		
Grant	1.7	2.0	2.0	2.0	1.0	1.0	1.0
Merit	1.9	1.0	3.0	2.0	1.0	1.0	1.9
Norchief	2.3	2.0	3.0	2.0	1.2	2.0	1.0
M316G	2.1	2.0	3.0	1.0	1.0	1.0	1.9
M389	2.3	2.0	2.0	3.0	1.0	1.0	1.9
M391	2.1	2.0	3.0	3.0	1.2	1.0	1.7
0-4323	2.2	2.5	2.0	3.0	1.2	1.0	1.9
0-56-2678	2.0	2.0	3.0	1.0	1.2	2.0	1.5
0-57-2826	2.2	2.0	3.0	2.0	1.5	2.0	2.0
0-57-2905	2.3	3.0	2.0	2.0	1.5	2.0	1.7

*Not included in the mean.
[1]Irrigated.

Table 18. (Continued)

Strain	Durand Wis.	Crookston Minn.	Morris Minn.	St. Paul Minn.	Fargo N.D.	Watertown S.D.	Ontario Ore.[1]
							*
Grant	25	37	30	33	30	33	45
Merit	22	37	31	36	32	35	52
Norchief	20	32	27	33	30	31	37
M316G	25	39	32	37	31	33	48
M389	23	36	29	32	31	30	40
M391	26	39	34	37	31	34	45
0-4323	26	40	33	37	34	36	45
0-56-2678	28	43	38	40	37	37	55
0-57-2826	25	40	32	38	34	38	52
0-57-2905	25	43	35	39	34	36	55

	Seed Quality				
					*
Grant	2.0	2.0	2.5	1.0	2.0
Merit	2.5	2.5	2.5	1.0	2.0
Norchief	2.8	2.8	3.0	2.0	2.0
M316G	2.8	2.8	3.2	1.0	2.0
M389	2.8	3.0	2.8	2.0	2.5
M391	2.2	2.8	2.5	1.0	2.5
0-4323	2.2	2.2	2.8	2.0	2.5
0-56-2678	2.2	2.2	2.8	1.0	3.0
0-57-2826	2.2	2.2	3.0	1.0	3.0
0-57-2905	2.5	2.5	3.0	2.0	3.0

Table 19. Percentages of protein and oil for Uniform Test 0, 1963.

Strain	Mean of 5 Tests	Ridgetown Ont.	Columbus Ohio[1] *	East Lansing Mich.	Spooner Wis.[1]	Morris Minn.	Fargo N.D.	Ontario Ore.[1] *
Grant	38.6	38.0	37.7	33.9	41.9	39.3	39.7	37.6
Merit	37.6	35.5	37.2	34.3	40.7	38.7	38.6	39.1
Norchief	38.7	36.6	38.5	36.9	41.4	40.4	38.0	39.7
M316G	38.2	37.5	36.6	35.0	41.9	38.4	38.2	37.7
M389	38.9	37.3	39.1	35.9	41.5	39.6	40.0	38.9
M391	37.8	36.8	36.8	34.4	39.7	38.9	39.3	39.9
0-4323	39.3	37.7	40.9	36.4	42.4	40.0	40.1	40.4
0-56-2678	38.8	36.7	38.6	35.4	42.3	39.4	40.1	40.2
0-57-2826	38.6	37.6	38.1	34.7	40.4	40.5	39.8	37.6
0-57-2905	39.0	36.1	38.9	36.1	42.0	40.9	39.8	42.1

	Mean of 5 Tests	Percentage of Oil						
			*					*
Grant	19.7	20.0	21.7	20.2	17.5	20.9	20.1	20.6
Merit	20.5	20.1	22.6	20.5	18.6	21.7	21.5	21.3
Norchief	19.9	20.1	21.9	19.9	18.3	20.4	20.8	20.8
M316G	20.9	20.3	22.8	21.6	18.7	21.7	22.3	22.2
M389	20.1	19.3	21.5	20.9	18.3	20.9	21.2	20.3
M391	21.0	20.1	22.8	21.3	19.7	21.3	22.5	20.8
0-4323	19.6	18.7	20.9	20.6	18.1	19.9	20.9	20.3
0-56-2678	19.8	19.7	22.2	20.4	18.5	19.7	20.9	19.8
0-57-2826	20.1	19.9	22.3	20.9	18.3	20.8	20.7	21.1
0-57-2905	20.0	20.5	22.2	21.0	18.0	19.5	21.0	19.8

*Not included in the mean.
[1]Irrigated.

Table 20. Three-year summary of data for Uniform Test 0, 1961-1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	31	31	25	25	31	25	25	22	22
Grant	33.3	1	0	2.8	32	2.0	16.2	40.2	19.9
Merit	30.5	3	-3.2	2.2	33	1.8	14.1	39.5	20.6
Norchief	28.8	4	-3.8	2.3	30	2.3	16.4	40.5	20.0
0-4323	30.8	2	-5.5	2.3	36	2.5	15.2	41.2	19.9

[1]Days earlier (-) or later (+) than Grant which matured September 25, 122 days after planting.

Table 21. Three-year summary of yield and yield rank for Uniform Test 0, 1961-1963.

Strain	Mean of 31 Tests	Ottawa Ont.	Guelph Ont.	Ridgetown Ont.	Columbus Ohio	East Lansing Mich.	Spooner Wis.	Durand Wis.	Crookston Minn.
Years Tested		1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1962, 1963	1961-1963
Grant	33.3	40.1	32.2	49.8	27.6	36.4	30.2	18.3	28.9
Merit	30.5	36.4	29.5	45.1	22.2	30.2	27.9	16.7	26.7
Norchief	28.8	36.6	29.1	41.2	19.9	25.4	26.5	17.1	25.0
0-4323	30.8	41.3	31.5	45.6	24.8	33.0	27.7	15.2	23.5
	Yield Rank								
Grant	1	2	1	1	1	1	1	1	1
Merit	3	4	3	3	3	3	2	3	2
Norchief	4	3	4	4	4	4	4	2	3
0-4323	2	1	2	2	2	2	3	4	4

Table 21. (Continued)

Strain	Morris Minn.	St. Paul Minn.	Fargo N.D.	Eureka S.D.	Water-town S.D.	Othel-lo Wash.	Pros-ser Wash.	On-tario Ore.	Med-ford Ore.
Years Tested	1961-1963	1961, 1963	1961, 1963	1961, 1962	1961-1963	1961, 1962	1961, 1962	1961-1963	1961, 1962
Grant	29.4	40.6	34.9	10.6	21.6	45.7	42.5	64.3	33.6
Merit	28.8	38.6	31.1	13.9	19.5	44.4	51.4	66.4	36.1
Norchief	28.8	34.5	29.5	12.4	20.6	43.6	34.1	56.7	33.6
0-4323	25.8	34.9	30.6	11.0	18.1	45.0	47.2	56.4	42.6
	Yield Rank								
Grant	1	1	1	4	1	1	3	2	3
Merit	2	2	2	1	3	3	1	1	2
Norchief	2	4	4	2	2	4	4	3	3
0-4323	4	3	3	3	4	2	2	4	1

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Strain	Originating Agency	Origin	Generation Composited
Grant	Wis. A.E.S. & U.S.R.S.L.	Lincoln x Seneca	F_6
Norchief	Wis. A.E.S. & U.S.R.S.L.	Hawkeye x Flambeau	F_4
M406	Minn. A.E.S. & U.S.R.S.L.	Harosoy x Norchief	F_5
W1S-114	Wis. A.E.S. & U.S.R.S.L.	Norchief x Clark	F_7
W1S-191	Wis. A.E.S. & U.S.R.S.L.	Norchief x Clark	F_7
W1S-217	Wis. A.E.S. & U.S.R.S.L.	Norchief x Clark	F_7
W1S-264	Wis. A.E.S. & U.S.R.S.L.	Norchief x Harosoy	F_7
W1S-294	Wis. A.E.S. & U.S.R.S.L.	Norchief x Harosoy	F_7
W1S-311	Wis. A.E.S. & U.S.R.S.L.	Norchief x Harosoy	F_7

M406 had the highest mean yield in the test and was the only strain to outyield Grant. It performed well otherwise, except for a rather high susceptibility to lodging. Among the earlier strains, W1S-294 and W1S-191 were outstanding with high yield for their maturity and excellent lodging resistance.

Table 22. Regional testing history and descriptive data for the strains in Uniform Preliminary Test 0, 1963.

Strain	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color	Shattering*
Grant	W	Lt	S	Y	Bl	Br	1.5
Norchief	P	T	D	Y	Bl	Br	2.0
M406**	P	G	D	Y	Y	Br	1.5
W1S-114	P	T	D	G	Bl	Br	2.0
W1S-191	P	T	D	G	Bl	Br	1.0
W1S-217	P	T	D	Y	Bl	Br	1.5
W1S-264	P	G	D	Y	Y	Br	1.0
W1S-294	P	G	D	Y	Y	Br	1.0
W1S-311	P	T	D	Y	T+Br	Br	2.0

*Shattering scored at Urbana, Ill., 1 month after maturity, mean of 2 replications.
**Also in Uniform Preliminary Test I.

Table 23. Summary of data for Uniform Preliminary Test 0, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	7	7	6	6	7	5	4	5	5
Grant	36.3	2	0	2.4	32	1.6	16.2	38.8	19.8
Norchief	33.1	7	-3.7	2.3	32	1.8	15.9	39.2	20.0
M406	38.6	1	-0.8	2.7	34	1.8	18.4	39.2	20.0
W1S-114	33.5	6	-2.5	2.1	33	2.0	15.7	40.1	19.7
W1S-191	34.1	5	-2.3	1.7	33	1.8	15.6	40.3	20.0
W1S-217	33.0	9	-1.8	2.1	34	1.9	15.3	39.6	20.0
W1S-264	34.2	4	+1.0	3.0	35	1.7	16.0	38.6	20.3
W1S-294	35.1	3	-3.8	1.7	35	1.7	14.6	38.9	19.9
W1S-311	33.1	7	-2.3	2.2	34	2.3	16.0	40.1	20.0

[1]Days earlier (-) or later (+) than Grant which matured September 21, 120 days after planting. Flambeau (Group 00) matured -5.8.

Table 24. Disease data for Uniform Preliminary Test 0, 1963.

Strain	Bacterial Blight	Bacterial Pustule	Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew
	Ill.	Ill.	Ill.	Ind.	Race 1	Race 2	Ind.
	a[1]	a	n[1]	a	a	a	n
Grant	3	4	3	S	S	5	4
Norchief	4	4	3	S	S	4	4
M406	3	3	4	S	S	5	3
W1S-114	3	3	4	S	Seg.	5	4
W1S-191	3	4	4	S	Seg.	4	5
W1S-217	3	4	5	S	R	5	4
W1S-264	4	3	3	S	S	5	3
W1S-294	4	3	3	S	S	4	3
W1S-311	4	3	3	S	Seg.	4	4

[1]a = artificial inoculation; n = natural infection.

Table 25. Yield and yield rank for Uniform Preliminary Test 0, 1963.

Strain	Mean of 7 Tests	Ottawa Ont.[1]	Ridgetown Ond.	East Lansing Mich.	Spooner Wis.[1]	St. Paul Minn.	Fargo N.D.	Watertown S.D.	Ontario Ore.[1] *
Grant	36.3	41.6	41.4	35.3	28.6	32.6	35.6	39.3	50.5
Norchief	33.1	36.1	37.1	30.4	26.4	26.2	33.8	41.4	51.5
M406	38.6	41.3	43.2	40.0	31.3	30.9	37.8	45.8	62.0
W1S-114	33.5	35.3	38.7	33.6	26.7	31.6	34.2	34.4	50.0
W1S-191	34.1	37.3	36.5	34.6	27.2	28.3	33.3	41.2	48.3
W1S-217	33.0	34.9	34.1	33.7	29.7	26.9	33.1	38.6	53.0
W1S-264	34.2	36.6	35.7	38.8	26.5	31.5	36.6	33.9	55.9
W1S-294	35.1	42.9	40.9	37.2	30.5	29.5	33.6	31.0	53.4
W1S-311	33.1	37.5	37.4	39.5	24.1	28.3	30.2	34.4	50.4
Coef. of Var. (%)		16.2	7.0	7.5	9.1	--	5.5	--	6.7
L.S.D. (5%)		N.S.	N.S.	5.7	N.S.	--	4.4	--	8.8
Row Spacing (In.)		40	24	24	36	36	40	42	20

	Yield Rank								
									*
Grant	2	2	2	5	4	1	3	4	6
Norchief	7	7	6	9	8	9	5	2	5
M406	1	3	1	1	1	4	1	1	1
W1S-114	6	8	4	8	6	2	4	6	8
W1S-191	5	5	7	6	5	6	7	3	9
W1S-217	9	9	9	7	3	8	8	5	4
W1S-264	4	6	8	3	7	3	2	8	2
W1S-294	3	1	3	4	2	5	6	9	3
W1S-311	7	4	5	2	9	6	9	6	7

*Not included in the mean.
[1]Irrigated.

Table 26. Maturity, days earlier (-) or later (+) than Grant, for Uniform Preliminary Test 0, 1963.

Strain	Mean of 6 Tests	Ottawa Ont.[1]	Ridgetown Ont. *	East Lansing Mich.	Spooner Wis.[1]	St. Paul Minn.	Fargo N.D.	Watertown S.D.	Ontario Ore.[1] *
Grant	0	0	0	0	0	0	0	0	0
Norchief	-3.7	- 8	-3	-2	- 5	-1	- 8	+2	- 7
M406	-0.8	- 2	+2	0	- 2	+2	- 4	+1	- 3
W1S-114	-2.5	- 2	-4	-1	- 6	-1	- 6	+1	-11
W1S-191	-2.3	- 4	-3	0	- 6	0	- 5	+1	- 7
W1S-217	-1.8	- 1	-4	0	- 6	-1	- 4	+1	- 2
W1S-264	+1.0	- 2	+1	+1	0	+5	+ 2	0	- 2
W1S-294	-3.8	-13	-4	-2	- 3	+3	- 8	0	-17
W1S-311	-2.3	- 6	-4	-2	- 3	0	- 4	+1	- 6
Flambeau	-5.8	- 9	--	-5	-10	-1	-10	0	-12
Date planted	5-24	5-22	5-24	6-5	5-27	5-23	5-14	5-20	5-8
Grant matured	9-21	10-3	9-23	9-28	9-18	9-9	9-22	9-15	9-16
Days to mature	120	134	122	115	114	109	131	118	131

*Not included in the mean.
[1]Irrigated.

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Strain	Originating Agency	Origin	Generation Composited
A-100	Freedolph Anderson, St. Peter, Minn.	Unknown	
Blackhawk	Iowa A.E.S. & U.S.R.S.L.	Mukden x Richland	F_7
Chippewa	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F_5
Chippewa 64 (L1)	Ill. A.E.S. & U.S.R.S.L.	Chippewa (8) x Blackhawk	F_1
Ottawa	Edward Brodbeck, Ottawa Lake, Mich.	Sel. from Chippewa	
A8-1334	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Harosoy	F_6
A9-619	Iowa A.E.S. & U.S.R.S.L.	Clark x Chippewa	F_4
C1255	Purdue A.E.S. & U.S.R.S.L.	Harosoy x Clark	F_6
M8	Minn. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F_5
M417	Minn. A.E.S. & U.S.R.S.L.	Lincoln x Mandarin (Ottawa)	F_5

Chippewa 64 again had a slightly higher mean yield than its recurrent parent. However, the yield of Chippewa may have been lowered in 1963 by the poor stands of this variety only observed at a number of locations.

A8-1334 and C1255 were again the highest yielders in the test. In addition, A8-1334 had excellent lodging resistance and seed quality. A-100 performed about the same as in 1962, yielding higher than the check varieties but not as high as several of the experimental strains. Ottawa, also in for the second year, did not outperform the check varieties in any respect.

M417 matured quite early for this group and would perhaps be better classified as Group 0.

Table 27. Regional testing history and descriptive data for the strains in Uniform Test I, 1963.

Strain	Years in Uniform Test I	Previous Regional Test	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color	Shattering*
A-100	2	None	W	G	S	Y	Bf	Br	1.2
Blackhawk	16	None	W	G	S	Y	Bf	Br	1.2
Chippewa	15	P.T.I	P	T	S	Y	Bl	Br	1.0
Chippewa 64	2	None	P	T	S	Y	Bl	Br	1.0
Ottawa	2	None	P	G	S	Y	G	Br	1.5
A8-1334**	2	P.T.I	P	G	D	Y	Y	Br	1.5
A9-619	1	P.T.I	P	T	S	Y	Bl	Br	1.5
C1255	2	P.T.I	P	T	D	Y	G	Br	1.5
M8	1	49-52 U.T.0	W	G	D	Y	Y	Br	1.5
M417	1	None	W	G	S	Y	Y	Br	1.0

*Shattering scored at Urbana, Ill., 1 month after maturity, mean of 2 replications.
**Also in Uniform Preliminary Test I.

CHIPPEWA 64

Chippewa 64 was released in February 1964 by the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, South Dakota, and Wisconsin, and in Ontario, Canada. Chippewa 64, formerly L1, is quite similar to Chippewa in appearance and performance in the absence of Phytophthora rot. It was developed at Urbana by the backcrossing method used to transfer from Blackhawk to Chippewa the dominant gene Rps for PR resistance.

The details are given below.

1958 to 1960. The cross Chippewa x Blackhawk was made, followed by 7 successive backcrosses onto Chippewa, using Phytophthora-tested F_1 plants as the pollen source for each backcross. By using field and greenhouse at Urbana, 3 generations were grown each year.

Oct. 1960 to Jan. 1961. F_1BC_7. Eighteen seedlings were inoculated with PR and the 8 uninfected plants were grown to maturity.

Feb. to May 1961. F_2BC_7. Seedlings from the 8 F_1 plants were inoculated but only 4 were found to be segregating for PR resistance. From these 4 F_1 plants a total of 220 F_2 seedlings were inoculated and 183 uninfected plants were grown to maturity.

1961 Summer. F_3BC_7. Lines from 149 F_2 plants were grown at Shabbona, Illinois. All lines were harvested and progeny-tested in the greenhouse. The 29 uniformly PR-resistant lines (based on a test of 40 F_4 plants) were composited as L1, giving a total of 65.4 pounds of breeder seeds. These 29 F_2 plants came from 4 F_1 plants, each represented by 9, 7, 8, and 5 F_2 plants.

This seedlot was distributed for increase as follows, based on the Chippewa acreage within each state: Illinois, 4.2 pounds; Indiana, 2.0 (to be increased in Illinois); Iowa, 42.1; Ohio, 1.2; South Dakota, 2.5; and the remaining 13.4 pounds was used for Uniform Test I and reserve.

1962-63. L1 was tested in Uniform Test I in paired plots with Chippewa and was similar to Chippewa in all traits. Foundation seed production in 1962:

Illinois	15 bu.	(including 4 bu. for Indiana, 1/2 bu. sent to Michigan, and 1 pound to Ontario)
Iowa	36 "	(2 bu. sent to Minnesota and 1/2 bu. sent to Wisconsin)
Ohio	1.1 "	
South Dakota	2 "	

Foundation seed production in 1963:

Illinois	343 bu.	Ohio	45 bu.
Indiana	135 "	Ontario	3/4 "
Iowa	1529 "	South Dakota	34 "
Michigan	none	Wisconsin	32 "
Minnesota	77 "		

Table 28. Summary of data for Uniform Test I, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	19	19	15	15	19	12	14	8	8
A-100	39.7	4	+6.3	2.0	36	2.0	17.9	38.4	21.1
Blackhawk	35.8	8	+6.0	2.5	38	2.2	16.2	38.6	20.2
Chippewa	36.0	6	0	1.9	35	1.8	14.8	39.0	20.3
Chippewa 64	37.0	5	+0.3	1.9	37	2.0	15.4	39.2	20.3
Ottawa	36.0	6	+1.6	2.6	38	1.9	16.7	39.6	19.9
A8-1334	41.5	1	+4.8	2.0	38	2.0	15.8	39.8	20.4
A9-619	39.8	3	+3.9	2.0	36	2.0	16.6	39.6	20.7
C1255	41.0	2	+4.1	2.3	38	2.6	17.6	38.9	20.6
M8	33.6	10	-2.1	2.4	33	2.0	14.6	39.0	20.5
M417	35.0	9	-3.9	1.8	33	1.9	17.1	39.4	20.1

[1]Days earlier (-) or later (+) than Chippewa which matured September 18, 119 days after planting. Grant (Group 0) matured -4.7.

Table 29. Disease data for Uniform Test I, 1963.

Strain	Bacterial Blight		Bacterial Pustule		Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew		Purple Stain
	Ill.	Ia.	Ill.	Ia.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.	Ind.
	a[1]	a[2]	a	a	n[1]	a	a	a	n	n	n
A-100	4	5	4	3	4	S	R	3	5	3.7	2
Blackhawk	3	5	4	3	4	R	S	4	5	3.8	2
Chippewa	3	4	3	3	4	S	S	5	4	4.0	2
Chippewa 64	2	5	3	3	4	R	S	5	4	3.0	2
Ottawa	4	5	4	3	4	R	S	5	4	3.3	2
A8-1334	3	5	3	3	4	S	--	5	5	3.0	2
A9-619	3	3	3	3	4	S	R	4	4	4.0	--
C1255	4	5	3	4	4	S	R	5	3	3.5	1
M8	4	5	4	3	3	S	S	5	5	3.0	--
M417	4	5	4	3	4	S	S	4	2	2.0	--

[1]a = artificial inoculation; n = natural infection.
[2]Causal organism is a bacterium different than Ps. glycinea.

Table 30. Yield and yield rank for Uniform Test I, 1963.

Strain	Mean of 19 Tests	Ridge-town Ont.	Har-row Ont.	Hoyt-ville Ohio	Woos-ter Ohio	Co-lum-bus Ohio[1]	East Lan-sing Mich.	Dundee Mich.[3]	Walk-erton Ind. *	Lafa-yette Ind.	Du-rand Wis.
A-100	39.7	32.8	29.9	45.3	36.4	32.0	36.5	36.3	22.8	51.3	25.0
Blackhawk	35.8	36.1	27.2	33.2	30.9	30.5	33.0	32.3	26.9	43.1	22.1
Chippewa	36.0	36.7	30.0	33.1	30.9	29.0	31.7	27.2	22.0	44.0	21.0
Chippewa 64	37.0	38.6	29.9	35.0	29.2	27.2	33.1	32.8	27.9	45.3	21.5
Ottawa	36.0	37.7	28.0	36.2	29.5	28.0	34.7	30.2	25.4	41.6	21.4
A8-1334	41.5	40.5	25.3	45.7	28.2	36.9	37.6	30.0	25.2	48.9	22.7
A9-619	39.8	37.3	28.9	43.6	31.7	30.2	39.2	32.2	30.3	47.4	27.0
C1255	41.0	39.0	29.6	45.4	37.1	35.6	41.2	39.1	25.1	51.2	20.9
M8	33.6	35.0	29.5	30.9	30.0	25.2	34.7	29.2	23.9	39.2	23.5
M417	35.0	41.0	25.6	38.7	28.2	22.3	36.5	31.5	17.4	42.7	21.3
Coef. of Var.(%)		6.1	11.0	10.7	8.3	12.5	8.2	14.0	14.9	7.3	6.1
L.S.D.(5%)		3.3	N.S.	6.0	3.8	5.4	4.3	N.S.	5.4	4.6	1.9
Row Spacing(In.)		24	36	28	28	28	24	28	40	38	36
	Yield Rank										
A-100	4	10	2	3	2	3	4	2	8	1	2
Blackhawk	8	8	8	8	4	4	9	4	3	7	5
Chippewa	6	7	1	9	4	6	10	10	9	6	9
Chippewa 64	5	4	2	7	8	8	8	3	2	5	6
Ottawa	6	5	7	6	7	7	6	7	4	9	7
A8-1334	1	2	10	1	9	1	3	8	5	3	4
A9-619	3	6	6	4	3	5	2	5	1	4	1
C1255	2	3	4	2	1	2	1	1	6	2	10
M8	10	9	5	10	6	9	6	9	7	10	3
M417	9	1	9	5	9	10	4	6	10	8	8

*Not included in the mean.
[1]Irrigated.
[2]Two replications.
[3]Three replications.

Table 30. (Continued)

Strain	Madison Wis.	Shabbona Ill.	Dwight Ill.	St. Paul Minn.	Lamberton Minn.	Waseca Minn.	Cresco Iowa	Kanawha Iowa	Watertown S.D.[2]	Brookings S.D.
A-100	31.9	50.2	46.4	37.3	37.2	44.5	37.2	46.4	43.7	53.1
Blackhawk	30.7	43.7	37.5	34.5	34.9	36.8	36.2	43.9	42.8	51.7
Chippewa	33.2	48.4	40.3	30.3	32.7	36.4	35.7	42.5	47.3	54.4
Chippewa 64	32.3	46.3	41.9	31.8	32.7	39.6	38.0	45.8	47.6	54.3
Ottawa	31.6	42.6	35.8	31.8	30.0	36.3	33.6	43.8	50.1	60.4
A8-1334	31.2	51.9	45.5	37.5	43.9	45.7	40.2	48.2	65.3	63.4
A9-619	34.4	52.6	45.4	36.0	38.6	45.6	40.0	49.8	44.0	52.7
C1255	33.0	50.3	45.0	38.5	39.1	42.5	39.0	48.7	49.9	54.1
M8	32.0	44.2	34.2	32.8	28.0	34.1	33.7	40.6	41.9	39.8
M417	31.0	46.0	38.2	29.5	30.9	37.8	35.0	42.0	42.4	45.3
Coef. of Var.(%)	6.3	7.5	8.1	--	--	--	5.7	5.9	--	--
L.S.D.(5%)	2.8	5.2	N.S.	--	--	--	2.9	3.7	--	--
Row Spacing(In.)	36	40	38	36	40	40	42	40	42	42
	Yield Rank									
A-100	6	4	1	3	4	3	5	4	7	6
Blackhawk	10	9	8	5	5	7	6	6	8	8
Chippewa	2	5	6	9	6	8	7	8	5	3
Chippewa 64	4	6	5	7	6	5	4	5	4	4
Ottawa	7	10	9	7	9	9	10	7	2	2
A8-1334	8	2	2	2	1	1	1	3	1	1
A9-619	1	1	3	4	3	2	2	1	6	7
C1255	3	3	4	1	2	4	3	2	3	5
M8	5	8	10	6	10	10	9	10	10	10
M417	9	7	7	10	8	6	8	9	9	9

Table 31. Maturity, days earlier (-) or later (+) than Chippewa, and lodging for Uniform Test I, 1963.

Strain	Mean of 15 Tests	Ridge-town Ont.	Har-row Ont.	Hoyt-ville Ohio *	Woos-ter Ohio *	Co-lum-bus Ohio[1]	East Lan-sing Mich.	Dun-dee Mich.	Walk-erton Ind. *	Lafa-yette Ind.	Du-rand Wis. *
A-100	+6.3	+ 9	+6	+ 5	+5	+ 6	+8	+8	+11	+7	+7
Blackhawk	+6.0	+10	+5	+10	+5	+ 5	+8	+8	+ 2	+7	+4
Chippewa	0	0	0	0	0	0	0	0	0	0	0
Chippewa 64	+0.3	+ 1	0	+ 1	0	+ 2	0	0	0	0	0
Ottawa	+1.6	+ 5	+1	+ 2	0	+ 1	+3	+2	0	+2	+2
A8-1334	+4.8	+ 9	+4	+ 3	+1	+ 3	+5	+6	+ 5	+4	+3
A9-619	+3.9	+ 6	+3	+ 5	+3	+ 4	+5	+4	+ 7	+3	+5
C1255	+4.1	+ 8	+3	+ 8	+3	+ 3	+5	+6	+ 6	+4	+4
M8	-2.1	+ 2	-1	- 2	-6	- 9	-1	0	- 2	+1	-2
M417	-3.9	- 4	-4	- 3	-7	-10	-3	0	- 7	0	-1
Grant	-4.7	- 4	-8	--	--	- 6	-2	0	- 9	-2	-2
Date planted	5-22	5-24	5-31	5-14	5-21	5-14	6-5	5-25	5-31	5-20	--
Chippewa matured	9-18	9-27	9-18	9-13	9-13	9-11	10-3	9-18	9-21	9-8	9-12
Days to mature	119	126	110	122	115	120	120	116	113	111	--

	Mean of 15 Tests	Lodging									
					*	*			*		
A-100	2.0	2.4	1.1	2.0	1.0	1.0	2.0	2.0	1.8	1.0	1.3
Blackhawk	2.5	2.9	1.0	3.2	1.0	1.0	3.0	2.0	1.3	1.5	1.5
Chippewa	1.9	2.5	1.3	2.2	1.0	1.0	2.0	2.0	1.3	1.0	1.0
Chippewa 64	1.9	2.4	1.1	2.5	1.0	1.0	2.0	1.0	1.3	1.0	1.1
Ottawa	2.6	2.4	1.0	3.7	1.0	1.0	2.0	2.0	1.0	2.0	1.3
A8-1334	2.0	2.6	1.0	2.5	1.0	1.0	2.0	2.0	1.8	1.3	1.0
A9-619	2.0	2.5	1.2	2.0	1.0	1.0	2.0	2.0	1.0	1.0	1.4
C1255	2.3	2.4	1.0	3.2	1.0	1.0	2.0	3.0	1.5	1.8	1.1
M8	2.4	2.4	1.2	3.5	1.0	1.0	2.0	2.0	2.3	2.5	1.6
M417	1.8	2.1	1.0	2.0	1.0	1.0	2.0	1.0	1.5	1.3	1.9

*Not included in the mean.
[1]Irrigated.

Table 31. (Continued)

Strain	Madison Wis.	Shabbona Ill.	Dwight Ill.	St. Paul Minn.	Lamberton Minn.*	Waseca Minn.	Cresco Iowa	Kanawha Iowa	Watertown S.D.	Brookings S.D.
A-100	+6	+6	+5	+ 9	+7	+10	+4	+4	+1	+6
Blackhawk	+5	+8	+4	+ 8	+7	+ 6	+4	+4	+1	+7
Chippewa	0	0	0	0	0	0	0	0	0	0
Chippewa 64	0	0	0	0	0	- 1	0	-1	+2	+1
Ottawa	+1	+3	+1	+ 7	+2	- 2	-2	-2	+1	+3
A8-1334	+6	+5	+1	+ 7	+7	+ 8	+3	+3	+1	+7
A9-619	+6	+4	+2	+ 4	+5	+ 6	+3	+3	+1	+5
C1255	+4	+5	+2	+ 9	+5	+ 5	+1	+1	+1	+5
M8	-4	-3	0	- 2	0	- 3	-4	-7	-2	+1
M417	-7	-6	-3	- 5	-1	- 5	-5	-7	-1	+2
Grant	-5	-7	-7	-11	--	- 6	-5	-7	-2	+1
Date planted	5-21	5-14	5-25	5-23	5-16	5-21	5-22	5-9	5-20	5-25
Chippewa matured	9-12	9-14	9-13	9-21	9-11	9-21	9-19	9-7	9-23	9-22
Days to mature	114	123	111	121	118	123	120	121	126	120
	Lodging									
A-100	2.1	2.9	2.4	2.5	3.0	2.0	2.0	1.4		
Blackhawk	2.0	3.5	3.5	4.3	4.0	2.0	2.2	1.5		
Chippewa	1.8	2.4	1.2	3.0	3.0	2.0	1.2	1.3		
Chippewa 64	1.6	2.8	1.5	3.0	3.3	2.0	1.8	1.3		
Ottawa	2.1	3.5	4.1	4.0	4.0	2.5	2.8	1.4		
A8-1334	1.6	2.8	1.7	3.5	3.0	2.0	2.0	1.6		
A9-619	1.8	2.7	1.4	3.0	3.8	2.0	1.2	1.3		
C1255	2.0	3.3	2.3	3.3	3.8	2.0	2.6	1.4		
M8	2.4	3.6	3.4	3.3	3.0	2.0	2.0	1.6		
M417	1.5	3.0	1.3	3.0	2.5	2.0	1.2	1.4		

Table 32. Plant height and seed quality for Uniform Test I, 1963.

Strain	Mean of 19 Tests	Ridge-town Ont.	Harrow Ont.	Hoyt-ville Ohio	Woos-ter Ohio	Co-lum-bus Ohio[1]	East Lan-sing Mich.	Dun-dee Mich.	Walk-erton Ind. *	Lafa-yette Ind.	Durand Wis.
A-100	36	42	26	39	29	29	36	38	29	41	29
Blackhawk	38	44	31	41	30	31	36	40	34	44	28
Chippewa	35	40	26	39	29	28	37	36	31	42	28
Chippewa 64	37	42	29	42	30	29	38	40	34	43	28
Ottawa	38	45	29	44	31	30	40	42	37	43	30
A8-1334	38	43	25	44	27	29	38	40	34	47	29
A9-619	36	42	26	41	28	28	36	38	31	42	29
C1255	38	45	29	42	31	32	39	42	35	46	29
M8	33	39	24	40	25	28	34	33	29	38	25
M417	33	40	24	37	22	27	34	34	29	37	24

	Mean of 12 Tests	Seed Quality								
				*	*	*	*		*	
A-100	2.0	2.0	1.8	1.0	1.0	1.0	1.0	2.0	1.0	1.5
Blackhawk	2.2	3.0	2.2	1.0	1.0	1.0	1.0	1.0	1.0	1.5
Chippewa	1.8	3.0	2.2	1.0	1.0	1.0	1.0	2.0	1.5	1.0
Chippewa 64	2.0	3.0	2.4	1.0	1.0	1.0	1.0	2.0	1.5	1.0
Ottawa	1.9	2.0	1.9	1.0	1.0	1.0	1.0	1.0	1.5	1.5
A8-1334	2.0	2.0	1.8	1.0	1.0	1.0	1.0	2.0	1.0	1.5
A9-619	2.0	3.0	1.9	1.0	1.0	1.0	1.0	2.0	1.5	1.5
C1255	2.6	4.0	3.9	1.0	1.0	1.0	1.0	1.0	1.0	1.5
M8	2.0	3.0	1.6	1.0	1.0	1.0	1.0	1.0	1.5	1.5
M417	1.9	2.0	3.1	1.0	1.0	1.0	1.0	1.0	1.5	1.5

*Not included in the mean.
[1]Irrigated.

Table 32. (Continued)

Strain	Madison Wis.	Shabbona Ill.	Dwight Ill.	St. Paul Minn.	Lamberton Minn.	Waseca Minn.	Cresco Iowa	Kanawha Iowa	Watertown S.D.	Brookings S.D.
A-100	30	38	41	36	38	39	41	37	34	38
Blackhawk	34	41	45	38	40	41	42	38	40	37
Chippewa	31	38	41	37	36	39	39	36	34	37
Chippewa 64	31	40	44	39	37	40	40	36	35	38
Ottawa	34	38	48	41	42	40	41	38	36	38
A8-1334	32	44	45	37	41	41	44	41	36	38
A9-619	31	41	42	39	38	40	39	38	35	38
C1255	32	43	45	38	39	40	42	40	36	35
M8	30	36	40	37	32	37	36	32	32	36
M417	29	36	38	35	32	36	38	33	36	36

	Seed Quality									
							*	*		
A-100	2.0	1.6	2.0	3.2	2.5	2.0	1.0	1.0	1.0	2.0
Blackhawk	1.0	2.0	2.9	3.2	2.8	2.5	1.0	1.0	1.0	3.0
Chippewa	2.0	1.6	1.5	2.2	2.0	2.0	1.0	1.0	1.0	1.0
Chippewa 64	2.0	1.6	1.8	2.2	2.0	2.0	1.0	1.0	2.0	2.0
Ottawa	1.0	2.0	2.3	3.2	2.5	2.5	1.0	1.0	1.0	2.0
A8-1334	2.0	1.9	2.0	3.2	2.5	2.8	1.0	1.0	1.0	1.0
A9-619	2.0	1.5	1.6	3.2	2.8	2.2	1.0	1.0	1.0	1.0
C1255	3.0	1.8	1.9	3.2	3.5	3.8	1.0	1.0	2.0	2.0
M8	1.0	2.3	2.3	2.2	3.0	2.5	1.0	1.0	2.0	2.0
M417	1.0	2.1	2.0	2.2	2.5	1.5	1.0	1.0	2.0	2.0

Table 33. Percentages of protein and oil for Uniform Test I, 1963.

Strain	Mean of 8 Tests	Ridge-town Ont.	Co-lum-bus Ohio[1]	East Lan-sing Mich.	Walk-erton Ind. *	Madi-son Wis.	Shab-bona Ill.	Wa-seca Minn.	Kana-wha Iowa	Brook-ings S.D.
A-100	38.4	37.4	38.2	37.4	42.5	38.5	37.9	40.3	39.4	38.4
Blackhawk	38.6	35.9	37.6	37.9	41.6	38.6	39.0	40.9	40.1	38.8
Chippewa	39.0	38.0	38.6	39.0	41.6	38.1	38.3	40.4	40.3	39.3
Chippewa 64	39.2	37.9	39.1	38.4	41.9	38.6	38.9	40.2	40.6	39.5
Ottawa	39.6	38.8	37.9	38.8	42.3	40.4	39.1	41.2	40.3	40.2
A8-1334	39.8	39.1	38.0	39.4	43.9	40.4	39.1	41.7	40.7	39.7
A9-619	39.6	38.4	39.9	38.4	42.9	38.1	38.3	42.3	41.5	39.7
C1255	38.9	37.8	38.7	37.5	43.9	40.0	38.7	40.8	38.5	38.8
M8	39.0	38.1	37.4	38.5	42.5	39.0	38.6	41.2	40.9	38.6
M417	39.4	37.1	38.5	38.0	41.4	40.5	38.6	41.6	41.2	39.8
	Mean of 8 Tests	Percentage of Oil								
					*					
A-100	21.1	20.2	22.0	20.2	20.1	22.2	21.2	21.1	21.0	21.0
Blackhawk	20.2	20.4	22.0	20.0	19.6	19.4	19.0	20.4	20.3	20.0
Chippewa	20.3	19.8	21.5	20.1	19.7	21.3	20.2	18.6	20.1	20.5
Chippewa 64	20.3	19.5	21.6	19.5	19.7	20.9	20.3	19.7	21.1	19.9
Ottawa	19.9	19.7	21.9	19.2	18.8	20.1	19.6	19.3	20.0	19.1
A8-1334	20.4	19.8	22.3	19.4	19.6	20.5	20.2	19.9	20.7	20.3
A9-619	20.7	20.4	21.8	19.9	19.6	22.2	20.7	20.1	20.5	20.3
C1255	20.6	19.9	21.7	19.3	19.0	21.1	20.9	20.3	20.7	20.8
M8	20.5	20.3	22.2	19.8	19.8	21.5	20.5	19.2	20.4	20.1
M417	20.1	19.3	21.4	19.6	19.7	21.0	20.4	19.5	20.0	19.6

*Not included in the mean.
[1]Irrigated.

UNIFORM PRELIMINARY TEST I - 1963

Strain	Originating Agency	Origin	Generation Composited
Blackhawk	Iowa A.E.S. & U.S.R.S.L.	Mukden x Richland	F_7
Chippewa	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F_5
A1-540	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Harosoy	F_9
A1-541	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Harosoy	F_9
A8-1334	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Harosoy	F_6
A9K-2558	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Chippewa	F_4
C1295	Purdue A.E.S. & U.S.R.S.L.	Mukden x Mandarin (Ottawa)	F_6
C1296	Purdue A.E.S. & U.S.R.S.L.	Mukden x Mandarin (Ottawa)	F_6
C1299	Purdue A.E.S. & U.S.R.S.L.	Mukden x Mandarin (Ottawa)	F_6
C1301	Purdue A.E.S. & U.S.R.S.L.	Mukden x Mandarin (Ottawa)	F_6
HX77-93	Ohio A.E.S. & U.S.R.S.L.	Monroe x Richland	F_6
HX77-208	Ohio A.E.S. & U.S.R.S.L.	Monroe x Richland	F_6
L61-1884	Ill. A.E.S. & U.S.R.S.L.	Lindarin (3) x L58-2080	F_3
M406	Minn. A.E.S. & U.S.R.S.L.	Harosoy x Norchief	F_5
0-31253	Research Station, Harrow, Ont.	Lincoln x [Mandarin (Ottawa) x A.K.(Harrow)]	F_5

Identification of Parent Strain

L58-2080 F_7 line from Hawkeye x Lee.

The two A1 selections from Hawkeye x Harosoy performed as well or better than A8-1334, which has led Uniform Test I in performance the past two years. A9K-2558 also had excellent yield and was equal to Chippewa in other traits. The four C strains, from Mukden x Mandarin (Ottawa), were selected for high protein content. All are higher in protein than the check varieties but only C1299 is appreciably higher, up 3.4% over Blackhawk and down only 1.2% in oil. This strain also had the highest yield of the four and yielded as well as the check strains. L61-1884 is a BC_2 Lindarin which carries a major gene for earliness. Three of the strains in the test were 7 days later than Chippewa but since they were only 1 day later than Blackhawk, they are probably alright as Group I. M406 matured later than Grant in this test but earlier in Preliminary Test 0.

Table 34. Regional testing history and descriptive data for the strains in the Uniform Preliminary Test I, 1963.

Strain	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color	Shattering*
Blackhawk	W	G	S	Y	Bf	Br	1.5
Chippewa	P	T	S	Y	Bl	Br	1.0
A1-540	P	G	D	Y	Y	Br	2.0
A1-541	P	G	D	Y	Y	Br	2.2
A8-1334**	P	G	D	Y	Y	Br	2.2
A9K-2558	P	T	S	Y	Bl	Br	1.5
C1295	P	G	S	Y	Ib	Br	2.2
C1296	W	G	S	Y	Y	Br	1.0
C1299	W	G	S	Y	Bf	Br	1.0
C1301	W	G	S	Y	Y	Br	1.5
HX77-93	W	G	D	Y	Y	Br	1.0
HX77-208	P	G	D	Y	G	Br	1.0
L61-1884	P	G	D	Y	Bf	Br	1.5
M406***	P	G	D	Y	Y	Br	1.5
0-31253	P	G	S	Y	Bf	Br	1.0

*Shattering scored at Urbana, Ill., 1 month after maturity, mean of 2 replications.

**Also in Uniform Test I.

***Also in Uniform Preliminary Test 0.

Table 35. Summary of data for Uniform Preliminary Test I, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	11	11	9	8	11	8	9	8	8
Blackhawk	38.7	7	+6.0	2.6	37	2.0	15.9	38.2	20.5
Chippewa	37.7	9	0	1.9	35	1.7	14.5	38.8	20.3
A1-540	41.9	1	+4.6	1.6	37	1.9	15.7	39.5	20.6
A1-541	39.0	5	+2.9	1.7	37	1.8	15.9	39.4	20.6
A8-1334	39.5	4	+4.2	1.9	38	1.7	16.1	39.4	20.6
A9K-2558	41.3	2	+2.7	1.9	36	1.6	17.2	39.3	20.5
C1295	33.4	15	+4.0	2.6	40	2.0	17.4	40.9	19.7
C1296	36.8	13	+7.0	2.9	41	1.9	17.2	40.3	19.4
C1299	38.3	8	+7.1	3.1	41	1.9	17.6	41.6	19.3
C1301	37.5	11	+4.3	2.7	40	1.5	15.9	40.7	19.4
HX77-93	37.7	9	+3.6	2.2	39	1.6	16.9	39.1	20.9
HX77-208	39.7	3	+7.2	3.0	40	1.8	16.9	38.9	20.5
L61-1884	33.8	14	-2.1	1.6	32	1.5	16.3	40.0	20.1
M406	38.9	6	-3.8	2.3	32	1.8	18.3	38.6	20.9
0-31253	37.1	12	+1.7	2.3	34	1.6	15.9	38.6	20.2

[1]Days earlier (-) or later (+) than Chippewa which matured September 19, 121 days after planting. Grant (Group 0) matured -5.2.

Table 36. Disease data for Uniform Preliminary Test I, 1963.

Strain	Bacterial Blight	Bacterial Pustule	Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew		Purple Stain
	Ill.	Ill.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.	Ind.
	a[1]	a	n[1]	a	a	a	n	n	n
Blackhawk	3	4	3	--	--	--	--	3.8	--
Chippewa	3	3	3	--	--	--	--	4.0	--
A1-540	2	3	3	S	S	4	5	2.5	--
A1-541	2	4	4	S	S	5	5	2.3	--
A8-1334	2	3	4	--	--	--	--	2.8	--
A9K-2558	1	3	4	S	S	4	3	3.3	--
C1295	3	3	4	R	S	3	2	3.0	2
C1296	3	3	3	R	S	5	4	2.0	2
C1299	4	3	3	R	S	4	1	3.3	1
C1301	4	2	3	R	S	5	2	3.0	1
HX77-93	3	3	3	R	S	5	3	3.8	--
HX77-208	3	4	3	R	S	4	5	4.0	--
L61-1884	3	4	3	S	--	5	2	2.0	--
M406	2	4	3	--	--	--	--	2.0	--
0-31253	4	3	3	--	--	--	--	2.0	--

[1]a = artificial inoculation; n = natural infection.

Table 37. Yield and yield rank for Uniform Preliminary Test I, 1963.

Strain	Mean of 11 Tests	Ridge-town Ont.	Hoyt-ville Ohio	Woos-ter Ohio	Colum-bus Ohio[1]	East Lansing Mich.
Blackhawk	38.7	37.1	35.1	32.3	31.8	38.2
Chippewa	37.7	34.5	34.9	32.1	31.9	28.3
A1-540	41.9	43.7	40.3	30.7	39.5	42.3
A1-541	39.0	39.4	36.2	27.9	30.2	37.0
A8-1334	39.5	39.3	36.1	33.4	34.9	35.4
A9K-2558	41.3	37.3	40.1	34.6	34.1	35.1
C1295	33.4	36.3	27.8	30.6	28.1	31.2
C1296	36.8	37.3	33.3	32.2	31.1	33.0
C1299	38.3	33.8	34.1	32.5	40.7	33.4
C1301	37.5	39.4	36.3	31.6	33.6	34.8
HX77-93	37.7	34.7	36.1	28.6	31.2	37.1
HX77-208	39.7	38.3	36.7	29.8	36.1	31.5
L61-1884	33.8	35.2	30.7	23.9	32.0	28.3
M406	38.9	45.7	35.8	24.8	24.8	39.2
0-31253	37.1	38.2	39.1	30.2	28.5	38.6
Coef. of Var. (%)		6.3	8.5	10.4	9.3	13.1
L.S.D. (5%)		5.1	N.S.	N.S.	6.5	N.S.
Row Spacing (In.)		24	28	28	28	24
	Yield Rank					
Blackhawk	7	10	10	4	9	4
Chippewa	9	14	11	6	8	14
A1-540	1	2	1	8	2	1
A1-541	5	3	6	13	12	6
A8-1334	4	5	7	2	4	7
A9K-2558	2	8	2	1	5	8
C1295	15	11	15	9	14	13
C1296	13	8	13	5	11	11
C1299	8	15	12	3	1	10
C1301	11	3	5	7	6	9
HX77-93	9	13	7	12	10	5
HX77-208	3	6	4	11	3	12
L61-1884	14	12	14	15	7	14
M406	6	1	9	14	15	2
0-31253	12	7	3	10	13	3

*Not included in the mean.
[1]Irrigated.

Table 37. (Continued)

Strain	Madison Wis.	Shabbona Ill.	St. Paul Minn.	Kanawha Iowa	Watertown S.D.	Brookings S.D.	Ontario Ore.[1] *
Blackhawk	32.7	46.4	31.2	44.4	46.9	49.6	40.6
Chippewa	33.5	48.4	27.2	41.7	48.6	53.8	42.7
A1-540	32.2	52.3	29.3	52.2	43.9	54.7	52.4
A1-541	31.3	49.8	33.7	47.7	42.9	53.3	51.1
A8-1334	30.1	51.7	33.5	52.0	42.8	45.3	54.3
A9K-2558	37.1	49.5	32.9	49.0	48.4	56.4	42.7
C1295	25.0	40.1	29.0	39.7	32.3	47.7	43.7
C1296	24.8	38.0	27.6	42.0	41.5	63.8	38.6
C1299	27.0	43.5	33.2	42.2	42.7	58.6	43.2
C1301	26.1	44.7	24.7	43.0	36.2	61.7	48.6
HX77-93	29.9	44.5	26.1	42.0	41.4	63.6	52.7
HX77-208	30.6	52.0	30.1	45.1	43.8	62.2	42.9
L61-1884	28.1	39.0	32.2	42.4	43.9	36.4	38.7
M406	30.0	46.4	28.6	48.2	47.2	57.2	57.3
0-31253	26.2	41.0	31.4	41.0	45.9	48.4	55.0
Coef. of Var. (%)	7.5	4.0	--	7.0	--	--	7.7
L.S.D. (5%)	4.8	3.9	--	6.8	--	--	7.7
Row Spacing (In.)	36	40	36	40	42	42	20

	Yield Rank						
Blackhawk	3	7	7	7	4	11	13
Chippewa	2	6	13	13	1	9	11
A1-540	4	1	9	1	6	8	5
A1-541	5	4	1	5	9	10	6
A8-1334	7	3	2	2	10	14	3
A9K-2558	1	5	4	3	2	7	11
C1295	14	13	10	15	15	13	8
C1296	15	15	12	11	12	1	15
C1299	11	11	3	10	11	5	9
C1301	13	9	15	8	14	4	7
HX77-93	9	10	14	11	13	2	4
HX77-208	6	2	8	6	8	3	10
L61-1884	10	14	5	9	6	15	14
M406	8	7	11	4	3	6	1
0-31253	12	12	6	14	5	12	2

Table 38. Maturity, days earlier (-) or later (+) than Chippewa, for Uniform Preliminary Test I, 1963.

Strain	Mean of 9 Tests	Ridgetown Ont.	Hoytville Ohio *	Wooster Ohio *	Columbus Ohio[1]	East Lansing Mich.
Blackhawk	+6.0	+ 8	+11	+ 5	+3	+7
Chippewa	0	0	0	0	0	0
A1-540	+4.6	+ 6	+ 8	+ 3	0	+1
A1-541	+2.9	+ 4	+ 2	+ 9	0	-1
A8-1334	+4.2	+ 5	+ 8	+ 3	+1	+2
A9K-2558	+2.7	+ 4	+ 7	+ 8	0	+2
C1295	+4.0	+ 5	+ 7	+12	+4	+2
C1296	+7.0	+ 9	+11	+ 5	+4	+7
C1299	+7.1	+10	+ 7	+ 7	+4	+8
C1301	+4.3	+ 8	+ 2	+ 2	0	+6
HX77-93	+3.6	+ 4	+ 3	+ 9	+3	+7
HX77-208	+7.2	+ 9	+ 7	+13	+5	+7
L61-1884	-2.1	- 3	- 3	+ 4	-4	-1
M406	-3.8	- 5	- 3	+ 1	-6	-7
O-31253	+1.7	+ 4	+ 2	+ 2	+4	-3
Grant	-5.2	- 4	--	--	-7	-5
Date planted	5-21	5-24	5-14	5-21	5-14	6-5
Chippewa matured	9-19	9-27	9-12	9-14	9-12	10-3
Days to mature	121	126	121	116	121	120

*Not included in the mean.
[1]Irrigated.

Table 38. (Continued)

Strain	Madison Wis.	Shabbona Ill.	St. Paul Minn.	Kanawha Iowa	Watertown S.D.	Brookings S.D.	Ontario Ore.[1] *
Blackhawk	+5	+ 6	+12	+5	+2	+ 6	+14
Chippewa	0	0	0	0	0	0	0
A1-540	+6	+ 4	+14	+3	+2	+ 5	+ 9
A1-541	+4	+ 3	+11	+1	+1	+ 3	+ 2
A8-1334	+4	+ 4	+13	+3	+1	+ 5	+10
A9K-2558	+4	+ 3	+ 6	+3	0	+ 2	- 4
C1295	0	+ 6	+ 9	+2	+2	+ 6	+12
C1296	+2	+12	+11	+7	+1	+10	+21
C1299	+3	+ 9	+13	+6	+2	+ 9	+20
C1301	+1	+ 5	+11	+3	+1	+ 4	+12
HX77-93	+3	+ 5	+ 2	+3	+1	+ 4	+12
HX77-208	+6	+ 9	+12	+7	+3	+ 7	+10
L61-1884	-2	- 5	0	-1	-2	- 1	0
M406	-6	- 2	- 4	-6	0	+ 2	- 5
O-31253	-2	+ 4	+ 2	+1	+3	+ 2	+ 7
Grant	-5	- 7	-11	-7	-2	+ 1	- 1
Date planted	5-21	5-14	5-23	5-9	5-20	5-25	5-8
Chippewa matured	9-11	9-14	9-18	9-7	9-23	9-22	9-17
Days to mature	113	123	118	121	126	120	132

UNIFORM TEST II - 1963

Strain	Originating Agency	Origin	Generation Composited
Harosoy	Research Station, Harrow, Ontario	Mandarin (Ottawa) (2) x A.K. (Harrow)	F_5
Harosoy 63	Ill. A.E.S. & U.S.R.S.L.	Harosoy (8) x Blackhawk	F_1
L2	Ill. A.E.S. & U.S.R.S.L.	Harosoy 63 x [Harosoy (6) x S54-1207]	F_1
Hawkeye	Iowa A.E.S. & U.S.R.S.L.	Mukden x Richland	F_4
Hawkeye 63	Ill. A.E.S. & U.S.R.S.L.	Hawkeye (7) x Blackhawk	F_1
Lindarin	Purdue A.E.S. & U.S.R.S.L.	Mandarin (Ottawa) x Lincoln	F_7
Lindarin 63	Purdue A.E.S. & U.S.R.S.L.	Lindarin (5) x Mukden	F_2
C1315	Purdue A.E.S. & U.S.R.S.L.	Lindarin (8) x Mukden	F_3
A1-939	Iowa A.E.S. & U.S.R.S.L.	Sel. from AX56P64-1	F_8
A5-5629	Iowa A.E.S. & U.S.R.S.L.	Roanoke x Hawkeye	F_5
A8-932	Iowa A.E.S. & U.S.R.S.L.	Harosoy x Capital	F_6
AX50F40-2	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Clark	F_5
AX56P64-1	Iowa A.E.S. & U.S.R.S.L.	Adams x Harosoy	F_5
C1264	Purdue A.E.S. & U.S.R.S.L.	Harosoy x C1079	F_6
C1265	Purdue A.E.S. & U.S.R.S.L.	Harosoy x C1079	F_6
C1273	Purdue A.E.S. & U.S.R.S.L.	Mandarin (Ottawa) x Clark	F_6
M402	Minn. A.E.S. & U.S.R.S.L.	Renville x Capital	F_5
U7-6804	Nebr. A.E.S. & U.S.R.S.L.	Hawkeye x H6150	F_7

Identification of Parent Strains

C1079	F_7 line from Lincoln x Ogden; from same F_4 line as Kent.
H6150	Sel. from Lincoln (2) x Richland.
S54-1207	Sel. from Hawkeye x (L49-4091 x L46-2132-1). L49-4091 is a pustule-resistant F_4 line from [F_3 Lincoln (2) x Richland] x (Lincoln x CNS). L46-2132-1 is an F_8 line from Lincoln (2) x Richland and a sib of Clark and Shelby.

Three-year mean performance (see tables 50 and 51) of the three Phytophthora-resistant backcross varieties, Harosoy 63, Hawkeye 63, and Lindarin 63, shows them to be very close to the recurrent parent in most traits. However, each of the backcross varieties is slightly below its recurrent parent in yield, not enough to be statistically significant, but the consistency of the difference is enough to cause some concern. L2, the pustule- and Phytophthora-resistant backcross Harosoy strain was also low in yield in both 1962 and 1963, whereas, C1315, a BC_7 Lindarin, yielded as well as Lindarin in 1963 and better than Lindarin 63, which is a BC_4 strain.

The three A strains in the 3-year table all look very good, especially in yield. A1-939, a selection from one of them, is being increased for release.

Table 39. Regional testing history and descriptive data for the strains in Uniform Test II, 1963.

Strain	Years in Uniform Test II	Previous Regional Test	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color	Shattering*	Shattering**
Harosoy	13	None	P	G	D	Y	Y	Br	2.0	3
Harosoy 63	3(4)	None	P	G	D	Y	Y	Br	2.0	3
L2	2	None	P	G	D	Y	Y	Br	2.0	3
Hawkeye	17	--	P	G	D	Y	Ib	Br	3.0	2
Hawkeye 63	4	None	P	G	D	Y	Ib	Br	3.0	2
Lindarin	8	P.T.II	P	G	D	Y	Bf	Br	1.0	2
Lindarin 63	2(3)	None	P	G	D	Y	Bf	Br	1.0	2
C1315	1	None	P	G	D	Y	Bf	Br	1.0	2
A1-939	1	None	P	G	S	Y	Y	T	1.5	2
A5-5629	3	P.T.II	P	G	D	Y	Ib	Br	3.5	2
A8-932	2	P.T.I	P	G	D	Y	Y	Br	1.0	2
AX50F40-2	3	P.T.II	P	G	D	Y	Ib	Br	1.5	3
AX56P64-1	3	P.T.II	P	G	S	Y	Y	T	1.0	2
C1264	2	P.T.II	P	G	D	Y	Y	Br	1.0	2
C1265	2	P.T.II	P	G	D	Y	Y	Br	3.0	2
C1273	1	P.T.II	P	T	D	Y	Y	Br	1.5	2
M402	1	P.T.I	W+P	T+G	D	Y	Y	Br	1.0	2
U7-6804	1	P.T.II	W	G	S	Y	Bf	Br	1.5	2

*Shattering scored at Urbana, Ill., 1 month after maturity, mean of two replications.

**Shattering scored at Centerville, S. D.

Table 40. Summary of data for Uniform Test II, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	27	27	22	24	26	19	20	14	14
Harosoy	39.3	10	-4.0	2.8	42	1.8	17.6	39.2	20.7
Harosoy 63	39.1	11	-4.8	2.7	42	1.7	17.3	39.2	21.0
L2	38.4	14	-4.5	2.9	43	1.8	17.8	39.4	20.8
Hawkeye	36.9	16	0	2.5	42	1.8	17.5	39.6	21.0
Hawkeye 63	35.9	18	+0.1	2.5	42	1.8	17.3	39.5	21.1
Lindarin	38.9	13	-3.7	2.0	38	1.7	15.6	39.2	21.1
Lindarin 63	37.5	15	-4.2	2.3	39	1.7	15.9	39.0	21.3
C1315	39.0	12	-3.3	2.2	39	1.8	16.2	39.0	20.8
A1-939	42.5	1	-1.3	2.2	43	1.8	16.8	37.6	21.9
A5-5629	40.5	7	-1.0	2.6	43	1.7	18.1	38.6	21.3
A8-932	42.5	1	-2.8	2.6	42	1.7	15.5	38.4	21.0
AX50F40-2	42.3	3	-0.8	2.1	38	1.9	18.8	38.9	21.4
AX56P64-1	41.8	4	-1.7	2.3	43	1.9	16.8	37.7	21.8
C1264	41.7	5	+1.2	2.0	42	2.1	17.0	38.1	21.5
C1265	40.0	8	-3.0	2.1	42	1.9	16.9	39.1	21.7
C1273	40.8	6	+0.9	2.6	36	2.1	20.0	40.1	20.3
M402	39.5	9	-2.6	1.8	38	2.1	17.0	38.1	22.1
U7-6804	36.8	17	-2.5	2.0	38	2.2	18.0	38.6	21.7

[1]Days earlier (-) or later (+) than Hawkeye which matured September 24, 126 days after planting. Blackhawk (Group I) matured -6.2. Ford (Group III) matured +6.4.

Table 41. Disease data for Uniform Test II, 1963.

Strain	Bacterial Blight		Bacterial Pustule		Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew		Purple Stain
	Ill.	Ia.	Ill.	Ia.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.	Ind.
	a[1]	a[2]	a	a	n[1]	a	a	a	n	n	n
Harosoy	3	5	3	3	4	S	R	5	1.5	2.5	3
Harosoy 63	3	5	2	3	4	R	R	5	1.5	3.0	3
L2	3	5	2	1	4	R	R	5	1.5	3.0	3
Hawkeye	3	5	3	3	4	S	S	5	5.0	3.5	3
Hawkeye 63	3	5	3	3	4	R	S	5	5.0	3.5	3
Lindarin	3	5	3	4	4	S	R	5	1.5	3.0	3
Lindarin 63	3	5	3	4	4	R	R	5	2.0	3.5	3
C1315	3	5	3	3	4	R	R	5	1.8	3.2	4
A1-939	3	5	4	3	4	S	R	5	1.8	2.5	--
A5-5629	3	5	4	3	4	S	R	1	1.0	2.9	3
A8-932	2	5	4	3	4	S	R	5	3.3	2.0	3
AX50F40-2	3	5	3	3	4	S	R	5	4.5	3.0	3
AX56P64-1	3	5	4	3	4	S	R	4	1.5	2.6	4
C1264	4	5	3	3	4	S	R	1	2.8	2.7	3
C1265	3	5	3	3	4	S	R	1	1.5	2.1	3
C1273	4	5	3	3	4	S	S	4	1.8	3.0	1
M402	3	5	4	3	4	S	--	5	5.0	4.3	--
U7-6804	3	4	3	3	4	S	--	5	4.8	3.5	1

[1]a = artificial inoculation; n = natural infection.
[2]Causal organism is a bacterium different than Ps. glycinea.

Table 42. Yield for Uniform Test II, 1963.

Strain	Mean of 27 Tests	Rank	Ridge-town Ont.	Har-row Ont.	Free-hold N.J.	Hoyt-ville Ohio	Woos-ter Ohio	Co-lum-bus Ohio[1]	East Lan-sing Mich.	Dun-dee Mich.	Walk-er-ton Ind.	Bluff-ton Ind.	Lafa-yette Ind.	Green-field Ind.	Wor-thing-ton Ind.
Harosoy	39.3	10	40.3	28.5	32.2	37.6	36.3	34.6	31.7	36.0	36.9	40.3	49.9	36.6	45.4
Har. 63	39.1	11	39.5	28.4	27.1	38.0	33.6	31.9	34.1	30.8	35.2	42.2	50.4	41.2	49.4
L2	38.4	14	42.6	29.0	24.4	36.8	34.7	30.1	28.4	31.9	34.9	42.9	50.6	39.8	43.8
Hawkeye	36.9	16	33.0	28.6	30.2	35.7	33.8	32.8	28.4	31.8	26.6	37.4	41.2	36.3	46.9
Hawk. 63	35.9	18	30.7	28.1	27.2	30.9	32.2	32.3	24.1	32.6	34.4	37.3	40.5	37.8	41.0
Lindarin	38.9	13	34.2	29.9	28.4	36.3	31.9	33.3	30.7	30.3	29.1	39.3	49.1	39.7	46.3
Lind. 63	37.5	15	37.5	30.6	32.9	31.4	34.6	30.4	31.8	31.0	32.2	40.0	47.2	38.0	43.3
C1315	39.0	12	33.2	30.3	30.6	37.4	31.8	32.5	31.3	32.5	35.5	43.5	50.4	42.8	47.6
A1-939	42.5	1	39.5	33.1	31.4	39.8	33.7	26.2	36.3	33.1	39.9	42.2	53.0	40.8	55.5
A5-5629	40.5	7	45.6	35.6	29.0	30.7	37.5	34.6	28.1	37.4	35.3	43.7	49.4	41.5	47.0
A8-932	42.5	1	45.3	32.2	33.0	43.4	38.1	33.5	35.4	35.5	38.4	45.6	52.2	42.3	45.8
AX50F40-2	42.3	3	36.9	30.9	29.5	40.8	32.1	34.0	35.0	37.5	33.6	41.6	51.6	41.0	47.9
AX56P64-1	41.8	4	38.7	30.3	33.2	41.1	34.9	32.8	37.8	32.4	39.3	42.3	51.8	40.7	50.2
C1264	41.7	5	35.4	28.8	30.3	38.6	32.6	33.3	32.8	35.6	37.5	42.5	53.6	40.6	48.7
C1265	40.0	8	44.3	27.3	30.7	34.4	31.7	34.9	35.0	34.5	33.4	44.4	49.7	36.7	46.4
C1273	40.8	6	33.2	35.5	29.3	38.9	35.0	33.1	31.4	35.8	34.2	43.2	50.2	46.9	42.2
M402	39.5	9	31.7	28.7	31.7	43.8	33.9	33.3	32.4	32.3	28.8	24.7	48.4	41.7	45.0
U7-6804	36.8	17	35.1	30.8	28.3	35.0	30.9	30.8	30.8	36.3	27.0	37.1	45.2	35.0	37.6
C.V.(%)			8.1	9.4	10.5	8.7	9.2	10.7	11.9	8.4	11.3	9.5	7.4	8.2	9.2
L.S.D.(5%)			4.4	4.1	4.4	4.6	N.S.	N.S.	5.4	4.0	5.5	5.4	5.1	4.6	6.0
R.Sp.(In.)			24	36	30	28	28	28	24	28	40	38	38	38	38

*Not included in the mean.
[1]Irrigated.

Table 42. (Continued)

Strain	Madison Wis.	Shabbona Ill.	Dwight Ill.	Urbana Ill.	Girard Ill.	Edgewood Ill. *	Lamberton Minn.	Waseca Minn.	Sutherland Iowa	Kanawha Iowa	Independence Iowa	Ames Iowa	Columbia Mo.	Centerville S.D.	Lincoln Nebr.[1]
Harosoy	32.0	50.1	41.0	50.2	48.6	42.2	37.9	37.3	41.0	45.8	36.6	43.8	33.9	36.0	41.0
Har. 63	31.4	50.9	40.2	48.9	48.3	42.0	37.7	38.2	43.2	45.3	38.2	42.8	31.3	37.7	40.7
L2	31.2	50.5	39.1	49.5	43.2	41.1	34.7	36.2	41.3	46.9	36.7	42.5	33.9	38.6	41.3
Hawkeye	34.1	40.3	33.6	47.5	47.5	36.4	34.2	37.0	42.0	44.2	36.4	40.6	30.5	38.9	46.5
Hawk. 63	32.5	41.5	37.4	45.8	46.7	38.1	30.5	35.4	42.6	43.5	34.1	38.8	28.3	38.2	45.6
Lindarin	30.6	51.2	48.0	49.1	46.4	38.6	37.7	40.7	39.4	52.1	39.4	47.8	31.5	33.3	45.6
Lind. 63	31.7	46.8	41.1	48.2	42.5	42.3	33.3	36.6	41.2	43.2	36.3	40.3	30.2	36.2	43.0
C1315	32.6	46.4	40.4	48.9	44.4	41.2	35.7	38.5	39.2	47.6	39.8	45.0	30.2	39.7	46.2
A1-939	34.6	49.9	45.4	51.6	49.4	40.3	39.3	45.3	43.3	56.7	43.6	53.2	34.4	48.1	49.1
A5-5629	38.8	49.0	37.6	48.1	47.1	45.6	37.8	40.5	45.8	44.8	41.4	43.0	31.9	45.2	48.2
A8-932	39.0	53.4	39.7	51.9	49.7	42.2	39.8	43.1	48.8	50.7	43.7	44.2	32.1	40.4	49.1
AX50P40-2	39.6	55.6	48.3	54.1	48.2	49.6	39.0	43.8	45.2	49.4	40.8	49.8	35.9	47.3	53.7
AX56P64-1	33.5	50.9	48.3	51.6	47.3	47.0	37.9	39.1	44.4	56.0	39.2	51.7	32.8	43.8	45.5
C1264	35.4	49.6	41.3	53.1	47.2	47.3	38.1	41.9	44.3	49.3	43.2	53.5	33.6	53.3	51.7
C1265	34.2	45.3	43.6	47.3	50.6	41.1	32.8	38.5	41.3	48.4	41.0	45.0	31.8	49.8	46.8
C1273	36.0	45.2	44.5	51.6	42.4	34.7	36.8	37.8	45.9	54.2	41.8	50.6	30.3	50.8	45.6
M402	36.0	55.1	45.8	52.5	45.2	40.2	36.6	43.6	43.2	52.4	41.4	46.8	28.2	40.6	43.7
U7-6804	34.6	47.1	41.1	44.9	38.9	37.1	31.8	37.3	41.0	49.3	36.7	45.6	27.5	35.1	43.0
CV(%)	6.7	8.1	8.7	5.0	7.5	--	--	--	5.6	6.4	7.5	6.3	--	--	8.4
LSD(5%)	3.2	5.6	5.2	3.5	4.9	--	--	--	3.4	4.4	4.2	4.1	--	--	5.4
R.Sp.(In.)	36	40	38	40	38	37	40	40	40	40	40	40	38	42	40

Table 43. Yield rank for Uniform Test II, 1963.

Strain	Mean of 27 Tests	Ridge-town Ont.	Har-row Ont.	Free-hold N.J.	Hoyt-ville Ohio	Woos-ter Ohio	Co-lum-bus Ohio	East Lan-sing Mich.	Dun-dee Mich.	Walk-er-ton Ind.	Bluff-ton Ind.	Lafa-yette Ind.	Green-field Ind.	Wor-thing-ton Ind.
Harosoy	10	5	15	4	9	3	2	10	4	5	12	10	16	12
Har. 63	11	6	16	17	8	11	14	6	17	8	9	7	6	3
L2	14	4	11	18	11	6	17	15	14	9	6	6	11	14
Hawkeye	16	16	14	10	13	9	10	15	15	18	15	17	17	8
Hawk. 63	18	18	17	16	17	13	13	18	10	10	16	18	14	17
Lindarin	13	13	10	14	12	15	6	14	18	15	14	13	12	10
Lind. 63	15	9	7	3	16	7	16	9	16	14	13	15	13	15
C1315	12	14	8	8	10	16	12	12	11	6	4	7	2	6
A1-939	1	6	3	6	5	10	18	2	9	1	9	2	8	1
A5-5629	7	1	1	13	18	2	2	17	2	7	3	12	5	7
A8-932	1	2	4	2	2	1	5	3	7	3	1	3	3	11
AX50F40-2	3	10	5	11	4	14	4	4	1	12	11	5	7	5
AX56P64-1	4	8	8	1	3	5	10	1	12	2	8	4	9	2
C1264	5	11	12	9	7	12	6	7	6	4	7	1	10	4
C1265	8	3	18	7	15	17	1	4	8	13	2	11	15	9
C1273	6	14	2	12	6	4	9	11	5	11	5	9	1	16
M402	9	17	13	5	1	8	6	8	13	16	18	14	4	13
U7-6804	17	12	6	15	14	18	15	13	3	17	17	16	18	18

Table 43. (Continued)

Strain	Madi-son Wis.	Shab-bona Ill.	Dwight Ill.	Ur-bana Ill.	Gi-rard Ill.	Edge-wood Ill.	Lam-ber-ton Minn.	Wa-seca Minn.	Suth-er-land Iowa	Kana-wha Iowa	Inde-pen-dence Iowa	Ames Iowa	Co-lum-bia Mo.	Cen-ter-ville S.D.	Lin-coln Nebr.
Harosoy	14	8	11	8	4	6	5	13	15	13	15	12	3	16	17
Har. 63	16	5	13	11	5	8	8	11	8	14	12	14	11	14	18
L2	17	7	15	9	15	10	13	17	12	12	13	15	3	12	16
Hawkeye	10	18	18	15	7	17	14	15	11	16	16	16	12	11	7
Hawk. 63	13	17	17	17	11	15	18	18	10	17	18	18	16	13	9
Lindarin	18	4	3	10	12	14	8	6	17	5	10	6	10	18	9
Lind. 63	15	13	9	13	16	5	15	16	14	18	17	17	14	15	14
C1315	12	14	12	11	14	9	12	9	18	11	9	9	14	10	8
A1-939	7	9	5	5	3	12	2	1	7	1	2	2	2	4	3
A5-5629	3	11	16	14	10	4	7	7	3	15	5	13	8	6	5
A8-932	2	3	14	4	2	6	1	4	1	6	1	11	7	9	3
AX50F40-2	1	1	1	1	6	1	3	2	4	7	8	5	1	5	1
AX56P64-1	11	5	1	5	8	3	5	8	5	2	11	3	6	7	12
C1264	6	10	8	2	9	2	4	5	6	8	3	1	5	1	2
C1265	9	15	7	16	1	10	16	9	12	10	7	9	9	3	6
C1273	4	16	6	5	17	18	10	12	2	3	4	4	13	2	9
M402	4	2	4	3	13	13	11	3	8	4	5	7	17	8	13
U7-6804	7	12	9	18	18	16	17	13	15	8	13	8	18	17	14

Table 44. Maturity, days earlier (-) or later (+) than Hawkeye, for Uniform Test II, 1963.

Strain	Mean of 22 Tests	Ridge-town Ont.	Har-row Ont.	Free-hold N.J.	Hoyt-ville Ohio	Woos-ter Ohio	Co-lum-bus Ohio[1]	Dun-dee Mich.	Walk-er-ton Ind.	Bluff-ton Ind.	Lafa-yette Ind.	Green-field Ind.	Wor-thing-ton Ind.
													*
Harosoy	-4.0	-3	-4	-2	-3	- 6	-1	-2	-1	-3	-3	-1	-2
Harosoy 63	-4.8	-3	-4	-3	-3	- 7	-2	-3	-3	-3	-2	-2	-2
L2	-4.5	-3	-4	-4	-1	- 6	-2	-3	-2	-3	-2	0	-2
Hawkeye	0	0	0	0	0	0	0	0	0	0	0	0	0
Hawkeye 63	+0.1	+1	0	0	0	- 2	+3	+1	+1	0	0	+1	0
Lindarin	-3.7	-3	-4	-1	-1	- 4	+1	-3	-6	-4	-1	-2	-3
Lindarin 63	-4.2	-3	-4	-3	-1	- 5	-1	-3	-6	-4	-2	-3	-3
C1315	-3.3	-2	-4	0	-1	- 4	+1	-2	-6	-3	-2	-2	-3
A1-939	-1.3	-1	-2	0	+4	- 2	-1	0	0	0	0	+1	-1
A5-5629	-1.0	-2	0	0	+5	- 3	+3	-1	-2	+1	0	+2	0
A8-932	-2.8	-2	-3	-3	+3	- 5	+1	-3	-1	-3	0	+1	0
AX50F40-2	-0.8	-2	-1	+2	0	+ 1	+2	-2	0	0	0	+1	-1
AX56P64-1	-1.7	-2	-1	-1	+1	- 2	+1	-2	0	0	0	-1	+1
C1264	+1.2	+5	+1	+5	+5	+ 3	+5	+1	+1	0	0	+2	+3
C1265	-3.0	0	-1	-3	+4	- 1	+2	-3	-3	-1	-2	-1	0
C1273	+0.9	+4	-1	+3	+6	+ 5	0	+1	+2	0	+2	+1	+1
M402	-2.6	-3	-1	-2	+4	- 3	+2	-3	-1	-4	-2	+1	0
U7-6804	-2.5	-1	-1	-2	+5	- 5	0	-1	-1	-3	-3	+2	0
Blackhawk	-6.2	-3	-7	-7	+2	- 8	-8	-5	-9	-7	-3	-5	--
Ford	+6.4	+8	+5	+7	+7	+12	+9	+4	+3	+5	+8	+9	-2
Date pltd.		5-21	5-24	5-31	6-5	5-14	5-21	5-14	5-25	5-31	5-23	5-16	5-25	6-1
Hawkeye mat.		9-24	10-11	9-30	9-23	9-21	9-26	9-24	10-1	10-2	9-21	9-18	9-19	9-26
Da. to mat.		126	140	122	110	130	128	133	129	124	121	125	117	117

*Not included in the mean.
[1]Irrigated.

Table 44. (Continued)

Strain	Madi-son Wis.	Shab-bona Ill.	Dwight Ill.	Ur-bana Ill.	Gi-rard Ill.	Edge-wood Ill. *	Lam-ber-ton Minn. *	Wa-seca Minn.	Suth-er-land Iowa	Kana-wha Iowa	Inde-pen-dence Iowa	Ames Iowa	Co-lum-bia Mo. *	Lin-coln Nebr.[1]
Harosoy	-4	-3	-4	-3	-3	-7	-7	- 7	-8	- 9	-4	-5	0	- 8
Harosoy 63	-5	-4	-4	-5	-4	-8	-7	- 7	-9	-10	-6	-6	-1	-10
L2	-6	-4	-5	-5	-3	-8	-7	- 8	-8	-10	-6	-5	-1	- 9
Hawkeye	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hawkeye 63	-1	+1	+1	0	0	-2	+1	0	0	0	0	0	0	- 3
Lindarin	-6	-1	-3	-3	-2	-8	-7	- 7	-6	- 9	-3	-6	-2	- 8
Lindarin 63	-6	-1	-3	-4	-3	-8	-7	- 8	-6	-10	-3	-6	-3	- 8
C1315	-5	-1	-3	-3	-3	-8	-7	- 7	-5	- 9	0	-4	-1	- 7
A1-939	-3	0	-4	-1	+1	-5	-6	- 6	-4	- 5	-2	-2	+1	- 2
A5-5629	-3	-1	-2	-2	0	-3	-3	- 5	-4	- 7	0	-2	+2	+ 1
A8-932	-6	-1	0	-3	-2	-8	-5	- 7	-5	-11	-2	-4	-1	- 6
AX50F40-2	0	-2	-2	-1	+1	-4	0	- 4	-2	- 4	0	-1	+3	- 4
AX56P64-1	-2	-1	-4	-2	0	-8	-5	- 6	-4	- 5	-2	-3	+2	- 2
C1264	+2	0	-1	0	+3	0	-2	- 4	0	- 3	+2	+1	+4	- 1
C1265	-4	-2	-5	-4	-2	-8	-6	- 9	-5	- 9	-4	-6	0	- 8
C1273	+2	+2	0	0	+2	-6	+1	- 4	0	- 4	+2	0	+1	- 4
M402	-4	-4	-5	-3	-2	-8	-4	-11	-3	- 8	-2	-3	+1	0
U7-6804	-4	-3	-4	-4	-2	-8	-6	- 4	-2	- 8	-4	-5	-2	- 4
Blackhawk	-7	-4	-7	-9	-7	--	-7	- 5	-9	-10	-6	-8	--	- 5
Ford	+6	+6	+4	+4	+8	+6	--	+ 6	+6	+ 5	+8	+6	+5	+ 5
Date pltd.	5-21	5-14	5-25	5-13	5-24	5-10	5-16	5-21	5-29	5-9	5-14	5-16	5-31	5-22
Hawk. mat.	9-24	9-26	9-24	9-18	9-13	9-3	9-25	10-10	9-22	9-21	9-20	9-19	9-8	9-22
Da. to mat.	126	135	122	128	112	116	132	142	116	135	129	126	100	123

Table 45. Lodging for Uniform Test II, 1963.

Strain	Mean of 24 Tests	Ridge-town Ont.	Har-row Ont.	Free-hold N.J.	Hoyt-ville Ohio	Woos-ter Ohio *	Co-lum-bus Ohio[1]	East Lan-sing Mich.	Dun-dee Mich.	Walk-er-ton Ind.	Bluff-ton Ind.	La fa-yette Ind.	Green-field Ind.	Wor-thing-ton Ind.
Harosoy	2.8	2.9	1.0	1.0	2.7	1.0	1.7	4.0	4.0	1.8	1.5	3.0	1.3	3.8
Harosoy 63	2.7	2.5	1.0	1.0	3.0	1.0	1.5	4.0	4.0	2.0	2.3	3.0	1.5	3.3
L2	2.9	2.8	1.0	1.0	3.0	1.0	1.5	5.0	4.0	2.3	2.8	3.0	1.5	3.5
Hawkeye	2.5	3.0	1.0	1.0	3.2	1.0	1.2	4.0	4.0	1.8	2.0	2.0	1.0	2.5
Hawkeye 63	2.5	3.3	1.0	1.0	3.2	1.0	1.0	4.0	4.0	1.3	2.3	2.0	1.3	3.0
Lindarin	2.0	2.0	1.0	1.0	2.0	1.0	1.0	3.0	3.0	1.0	1.5	1.0	1.0	2.3
Lindarin 63	2.3	2.4	1.0	1.0	3.0	1.0	1.0	3.0	3.0	1.3	2.3	2.0	1.3	3.3
C1315	2.2	2.5	1.0	1.0	3.0	1.0	1.0	3.0	3.0	1.3	2.3	1.8	1.3	2.3
A1-939	2.2	2.5	1.2	1.0	3.0	1.0	1.5	3.0	3.0	2.0	1.8	2.0	1.5	2.8
A5-5629	2.6	3.1	1.3	1.0	3.2	1.0	1.2	4.0	4.0	1.5	1.8	2.0	1.8	2.8
A8-932	2.6	2.3	1.0	2.0	3.0	1.0	1.2	4.0	3.0	1.8	2.3	2.5	1.5	3.5
AX50F40-2	2.1	2.9	1.2	1.0	2.7	1.0	1.2	4.0	3.0	1.8	1.8	1.3	1.0	2.5
AX56P64-1	2.3	2.3	1.2	1.0	3.2	1.0	1.5	3.0	3.0	1.8	1.8	2.0	1.3	2.8
C1264	2.0	2.1	1.1	1.0	3.0	1.0	1.0	3.0	3.0	1.3	1.3	1.0	1.0	2.3
C1265	2.1	2.1	1.0	1.0	2.5	1.0	1.0	3.0	2.0	1.0	1.8	1.0	1.0	2.5
C1273	2.6	3.6	1.4	1.0	3.2	1.0	2.0	4.0	3.0	2.3	2.3	2.5	1.3	3.3
M402	1.8	1.9	1.0	1.0	2.0	1.0	1.2	2.0	2.0	1.0	1.0	1.0	1.0	2.5
U7-6804	2.0	2.1	1.0	1.0	2.5	1.0	1.2	3.0	3.0	1.5	1.3	1.0	1.0	3.0

*Not included in the mean.
[1]Irrigated.

Table 45. (Continued)

Strain	Madison Wis.	Shabbona Ill.	Dwight Ill.	Urbana Ill.	Girard Ill.	Edgewood Ill. *	Lamberton Minn.	Waseca Minn.	Sutherland Iowa	Kanawha Iowa	Independence Iowa	Ames Iowa	Columbia Mo. *	Lincoln Nebr.[1]
Harosoy	2.0	3.7	3.5	4.1	3.5	1.0	4.2	3.0	1.3	2.9	3.0	3.6	1.0	2.8
Harosoy 63	1.9	3.7	3.6	3.9	3.8	1.0	3.5	3.0	1.4	2.8	3.0	3.4	1.0	2.5
L2	2.1	3.7	3.6	3.9	3.9	1.1	4.2	2.8	1.3	3.1	3.2	3.6	1.0	3.5
Hawkeye	2.1	3.4	3.1	3.5	2.7	1.1	3.0	2.8	1.3	3.0	2.6	3.1	1.0	2.4
Hawkeye 63	2.4	3.5	3.3	3.5	2.8	1.1	2.8	3.0	1.3	3.1	2.9	3.2	1.0	1.5
Lindarin	1.5	3.2	2.5	3.4	2.6	1.0	3.5	2.0	1.1	1.8	2.3	2.2	1.0	1.6
Lindarin 63	1.8	3.3	3.0	3.8	2.8	1.0	3.8	2.0	1.3	2.0	2.4	2.4	1.0	1.9
C1315	1.9	3.3	2.7	3.7	2.7	1.3	3.5	2.0	1.2	2.1	2.7	2.2	1.0	1.8
A1-939	2.0	3.0	1.8	2.7	3.5	1.0	3.5	2.0	1.1	1.8	2.2	1.9	1.0	1.8
A5-5629	3.1	3.5	3.6	3.3	3.1	1.1	3.5	2.5	1.3	2.9	3.2	2.9	1.0	2.6
A8-932	1.8	3.7	3.8	3.8	2.8	1.1	3.8	2.2	1.3	2.4	3.0	2.6	1.0	3.1
AX50F40-2	2.4	2.9	1.6	2.6	2.6	1.2	2.8	2.0	1.3	1.6	2.2	2.0	1.0	1.9
AX56P64-1	1.9	3.4	2.3	3.6	3.3	1.0	3.2	2.2	1.0	1.8	2.3	2.0	1.0	2.9
C1264	2.4	3.3	2.3	2.7	2.5	1.1	3.0	2.0	1.2	1.8	2.1	2.1	1.0	2.5
C1265	1.9	3.4	2.8	3.2	2.6	1.1	3.8	2.0	1.2	1.7	2.4	2.0	1.0	2.5
C1273	3.1	3.1	2.4	2.9	4.2	1.5	3.5	3.0	1.4	2.1	2.6	2.2	1.0	1.9
M402	2.1	2.6	1.4	2.6	3.3	1.1	3.0	1.8	1.2	1.8	2.2	1.6	1.0	1.5
U7-6804	1.9	3.1	2.0	2.8	2.9	1.0	3.5	2.0	1.2	1.6	2.1	1.7	1.0	1.6

Table 46. Plant height for Uniform Test II, 1963.

Strain	Mean of 26 Tests	Ridge-town Ont.	Har-row Ont.	Free-hold N.J.	Hoyt-ville Ohio	Woos-ter Ohio	Co-lum-bus Ohio[1]	East Lan-sing Mich.	Dun-dee Mich.	Walk-er-ton Ind.	Bluff-ton Ind.	Lafa-yette Ind.	Green-field Ind.	Wor-thing-ton Ind.
Harosoy	42	48	32	29	47	34	31	48	44	40	43	50	38	41
Harosoy 63	42	51	32	29	46	30	30	49	43	43	46	48	40	44
L2	43	50	32	29	46	35	31	49	43	40	45	49	39	44
Hawkeye	42	48	36	27	43	34	30	46	43	36	41	48	39	42
Hawkeye 63	42	50	36	27	46	34	30	46	44	37	43	48	39	41
Lindarin	38	46	31	26	42	30	29	45	40	35	39	44	36	37
Lindarin 63	39	48	31	27	44	33	29	47	40	35	41	47	38	37
C1315	39	49	31	27	45	32	29	46	42	37	42	45	38	40
A1-939	43	50	35	29	48	31	33	47	46	38	45	47	42	44
A5-5629	43	51	37	31	48	33	31	48	43	41	42	46	43	46
A8-932	42	50	34	29	47	33	30	50	42	38	43	49	41	45
AX50F40-2	38	43	32	23	40	32	27	45	40	35	41	43	34	37
AX56P64-1	43	49	35	28	50	32	29	48	42	41	47	49	42	44
C1264	42	48	34	28	48	32	30	46	41	42	46	48	39	43
C1265	42	50	32	28	46	33	29	50	44	40	47	51	41	44
C1273	36	42	30	22	41	32	28	44	39	34	38	42	36	37
M402	38	47	31	26	43	32	29	43	39	33	38	46	37	38
U7-6804	38	44	32	25	42	31	29	44	39	35	40	45	36	37

*Not included in the mean.
[1]Irrigated.

Table 46. (Continued)

Strain	Madison Wis.	Shabbona Ill.	Dwight Ill.	Urbana Ill.	Girard Ill.	Edgewood Ill.*	Lamberton Minn.	Sutherland Iowa	Kanawha Iowa	Independence Iowa	Ames Iowa	Columbia Mo.	Centerville S.D.	Lincoln Nebr.[1]
Harosoy	35	56	49	45	49	36	40	41	46	45	43	34	34	50
Harosoy 63	36	53	53	47	49	37	42	42	45	45	43	35	35	48
L2	36	60	51	46	49	37	42	41	44	46	42	36	34	52
Hawkeye	35	48	49	46	48	36	40	45	48	46	44	36	36	50
Hawkeye 63	36	51	50	46	48	36	41	46	48	45	44	34	35	50
Lindarin	32	44	44	40	43	31	38	34	43	44	40	29	30	43
Lindarin 63	34	47	48	40	43	33	39	37	43	45	40	31	31	44
C1315	33	45	45	40	44	32	39	38	45	42	41	31	35	45
A1-939	37	50	50	42	49	38	43	42	49	48	47	35	35	50
A5-5629	37	54	53	47	52	35	39	42	46	47	43	36	35	50
A8-932	35	52	53	45	47	37	42	40	44	46	42	33	34	50
AX50F40-2	34	43	44	37	42	35	37	38	44	41	41	30	32	42
AX56P64-1	35	51	49	43	49	40	41	42	49	47	48	34	35	52
C1264	36	47	47	44	49	38	39	43	49	46	47	35	36	48
C1265	37	53	51	44	49	39	41	42	46	49	45	36	27	50
C1273	32	41	40	36	41	31	34	35	40	40	39	28	29	37
M402	34	42	44	39	44	34	36	38	43	44	39	30	30	40
U7-6804	36	42	41	38	41	32	38	38	44	42	39	29	29	42

Table 47. Seed quality for Uniform Test II, 1963.

Strain	Mean of 19 Tests	Ridge-town Ont.	Har-row Ont.	Free-hold N.J.	Hoyt-ville Ohio *	Woos-ter Ohio *	Co-lum-bus Ohio[1]	East Lan-sing Mich.	Dun-dee Mich.	Walk-er-ton Ind.	Bluff-ton Ind. *	Lafa-yette Ind.	Green-field Ind.	Wor-thing-ton Ind.
Harosoy	1.8	2.0	1.6	1.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	2.0	1.5	2.0
Harosoy 63	1.7	2.0	1.5	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.5	1.5	2.0
L2	1.8	2.0	2.5	1.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.5	1.5	2.0
Hawkeye	1.8	3.0	2.1	1.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.5	1.0	2.0
Hawkeye 63	1.8	3.0	2.5	1.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.5	1.5	2.0
Lindarin	1.7	3.0	1.6	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0
Lindarin 63	1.7	3.0	1.5	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0	2.0
C1315	1.8	3.0	2.2	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0	2.5
A1-939	1.8	2.0	1.8	2.0	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.5	1.5	2.0
A5-5629	1.7	2.0	1.6	1.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.0	1.0	1.5
A8-932	1.7	2.0	1.2	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.5	2.0
AX50F40-2	1.9	3.0	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.5	1.0	2.0
AX56P64-1	1.9	3.0	2.6	2.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.5	1.5	2.0
C1264	2.1	3.0	2.6	2.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.5	1.5	3.0
C1265	1.9	2.0	1.9	2.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.5	3.0
C1273	2.1	3.0	2.1	2.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.5	1.5	2.5
M402	2.1	4.0	2.5	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.5	1.5
U7-6804	2.2	2.0	4.5	1.0	1.0	1.0	1.0	1.0	2.0	1.5	1.0	1.0	2.0	2.0

*Not included in the mean.
[1]Irrigated.

Table 47. (Continued)

Strain	Madison Wis.	Shabbona Ill.	Dwight Ill.	Urbana Ill.	Girard Ill.	Edgewood Ill.	Lamberton Minn.	Waseca Minn.	Sutherland Iowa	Kanawha Iowa	Independence Iowa	Ames Iowa	Columbia Mo.	Centerville S.D.	Lincoln Nebr.[1]
	*					*			*	*	*	*			
Harosoy	2.0	1.5	1.9	2.0	1.5	2.7	2.2	2.8	1.0	1.0	1.0	1.0	1.5	2.0	2.0
Har. 63	2.0	1.5	1.9	2.0	1.5	3.0	2.5	3.0	1.0	1.0	1.0	1.0	1.5	2.0	2.0
L2	2.0	1.5	2.4	1.6	2.4	3.3	2.2	2.8	1.0	1.0	1.0	1.0	1.5	2.0	2.0
Hawkeye	1.0	1.5	1.9	1.3	1.8	2.7	3.0	2.0	1.0	1.0	1.0	1.0	2.0	1.0	2.5
Hawk. 63	1.0	1.5	2.0	1.6	2.1	2.8	2.8	2.2	1.0	1.0	1.0	1.0	2.0	1.0	2.0
Lindarin	2.0	1.5	1.8	1.9	1.6	2.7	2.0	2.5	1.0	1.0	1.0	1.0	1.5	3.0	2.0
Lind. 63	2.0	1.3	2.0	2.0	2.0	2.7	2.0	2.2	1.0	1.0	1.0	1.0	1.5	2.0	2.2
C1315	1.0	1.5	2.1	1.9	2.4	2.8	2.5	2.5	1.0	1.0	1.0	1.0	1.5	2.0	2.5
A1-939	2.0	1.5	1.9	2.1	1.8	3.2	2.2	2.5	1.0	1.0	1.0	1.0	1.5	3.0	3.0
A5-5629	1.0	1.5	2.0	1.5	2.0	2.2	3.0	3.0	1.0	1.0	1.0	1.0	2.0	2.0	1.5
A8-932	2.0	1.3	1.8	1.9	1.9	2.3	2.8	2.2	1.0	1.0	1.0	1.0	1.5	3.0	3.0
AX50F40-2	2.0	1.5	2.0	2.0	2.6	2.8	2.8	2.8	1.0	1.0	1.0	1.0	2.0	1.0	2.0
AX56P64-1	2.0	1.5	1.9	2.0	1.8	2.8	2.7	2.5	1.0	1.0	1.0	1.0	1.5	3.0	2.0
C1264	2.0	1.8	2.3	2.3	2.8	3.3	2.5	2.5	1.0	1.0	1.0	1.0	2.0	2.0	2.5
C1265	2.0	2.0	2.5	2.1	2.4	2.7	2.5	2.5	1.0	1.0	1.0	1.0	2.0	3.0	1.5
C1273	2.0	2.0	2.3	2.4	2.8	2.3	3.2	3.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0
M402	2.0	2.0	2.4	2.3	2.4	3.8	2.8	2.5	1.0	1.0	1.0	1.0	3.0	2.0	3.5
U7-6804	2.0	2.0	2.8	3.0	2.6	2.5	3.0	3.5	1.0	1.0	1.0	1.0	2.5	2.0	3.0

Table 48. Percentage of protein for Uniform Test II, 1963.

Strain	Mean of 14 Tests	Harrow Ont.	Free-hold N.J.	Colum-bus Ohio[1]	East Lansing Mich.	Walk-erton Ind.	Lafa-yette Ind.
Harosoy	39.2	39.3	42.8	39.3	36.9	42.8	40.8
Harosoy 63	39.2	39.9	44.0	39.1	36.8	42.7	40.3
L2	39.4	40.5	43.1	39.4	37.2	42.8	40.9
Hawkeye	39.6	40.2	42.7	40.0	36.6	43.2	40.5
Hawkeye 63	39.5	40.3	42.8	39.3	36.8	43.6	41.1
Lindarin	39.2	39.6	43.9	40.5	37.2	42.5	41.3
Lindarin 63	39.0	39.2	43.3	39.7	38.0	42.7	39.9
C1315	39.0	38.6	42.6	40.1	38.1	41.7	39.9
A1-939	37.6	38.5	40.8	37.6	34.2	40.9	39.0
A5-5629	38.6	39.4	40.7	38.5	36.7	42.4	40.2
A8-932	38.4	38.5	40.7	37.9	36.6	42.1	39.0
AX50F40-2	38.9	39.0	42.4	39.7	37.2	42.6	40.4
AX56P64-1	37.7	38.4	40.6	38.0	35.3	41.4	38.7
C1264	38.1	39.6	41.4	38.4	34.3	42.5	38.8
C1265	39.1	40.1	42.8	40.0	37.1	42.3	40.9
C1273	40.1	40.2	43.1	41.6	37.2	42.8	41.7
M402	38.1	38.4	40.8	39.4	35.5	41.1	39.7
U7-6804	38.6	38.5	40.4	38.1	37.4	42.0	39.6

[1]Irrigated.

Table 48. (Continued)

Strain	Madi-son Wis.	Shab-bona Ill.	Urbana Ill.	Lamber-ton Minn.	Kana-wha Iowa	Ames Iowa	Center-ville S.D.	Lin-coln Nebr.[1]
Harosoy	39.5	39.0	39.6	37.6	37.8	39.3	37.4	36.9
Harosoy 63	39.2	38.5	39.4	37.3	39.2	39.5	37.1	36.4
L2	40.0	38.1	39.6	37.7	39.3	38.4	37.3	37.8
Hawkeye	38.7	39.8	40.1	38.4	39.9	40.2	37.0	37.3
Hawkeye 63	39.4	39.8	40.2	38.4	37.9	40.2	35.8	36.9
Lindarin	38.6	38.3	39.8	37.1	38.6	39.6	36.5	35.9
Lindarin 63	38.3	38.3	38.7	37.4	38.9	39.3	36.0	36.1
C1315	39.0	38.4	39.7	36.6	38.9	39.2	35.8	36.8
A1-939	37.7	36.3	38.2	35.2	37.8	38.4	35.3	36.1
A5-5629	38.5	39.2	39.0	37.7	38.5	38.8	35.2	36.2
A8-932	38.6	38.1	38.1	36.9	38.9	38.8	36.1	36.8
AX50F40-2	38.5	38.2	39.4	37.5	39.1	39.0	35.8	36.3
AX56P64-1	36.8	37.3	38.5	35.4	37.7	38.2	35.5	36.0
C1264	38.8	37.6	38.1	36.4	38.0	38.8	35.9	35.0
C1265	38.6	39.3	38.3	37.3	39.0	38.8	36.5	36.3
C1273	39.8	40.6	40.8	38.0	40.3	40.1	38.1	36.5
M402	36.8	38.6	38.7	36.7	37.7	38.4	34.5	36.8
U7-6804	37.8	38.6	38.5	37.7	39.2	39.4	36.0	36.8

Table 49. Percentage of oil for Uniform Test II, 1963.

Strain	Mean of 14 Tests	Harrow Ont.	Free-hold N.J.	Colum-bus Ohio[1]	East Lansing Mich.	Walk-erton Ind.	Lafa-yette Ind.
Harosoy	20.7	20.0	19.7	21.5	19.5	19.4	20.5
Harosoy 63	21.0	20.9	19.8	22.1	20.5	19.6	19.8
L2	20.8	21.1	19.6	22.1	19.2	19.5	20.5
Hawkeye	21.0	21.0	20.9	21.8	19.6	19.6	20.9
Hawkeye 63	21.1	20.7	21.0	22.3	20.1	18.9	20.2
Lindarin	21.1	21.5	19.9	21.2	19.8	19.5	20.5
Lindarin 63	21.3	21.4	20.0	22.1	19.8	20.0	21.4
C1315	20.8	21.0	19.6	20.3	19.5	20.3	19.5
A1-939	21.9	22.2	21.3	22.6	20.3	19.7	21.9
A5-5629	21.3	21.5	21.4	22.0	20.1	19.6	21.2
A8-932	21.0	21.0	20.5	22.2	19.6	19.6	20.7
AX50F40-2	21.4	21.7	20.4	21.6	19.8	20.0	21.7
AX56P64-1	21.8	21.9	21.8	22.4	19.8	20.1	21.7
C1264	21.5	20.9	20.5	21.3	19.5	20.0	21.3
C1265	21.7	21.2	20.9	22.0	20.0	19.9	21.4
C1273	20.3	20.3	19.7	19.7	19.3	19.0	21.0
M402	22.1	21.8	21.7	22.3	19.8	20.2	21.7
U7-6804	21.7	21.9	21.8	22.1	19.1	20.2	21.5

[1]Irrigated.

Table 49. (Continued)

Strain	Madi-son Wis.	Shab-bona Ill.	Urbana Ill.	Lamber-ton Minn.	Kana-wha Iowa	Ames Iowa	Center-ville S.D.	Lin-coln Nebr.[1]
Harosoy	19.5	20.9	21.2	21.8	20.5	21.0	22.4	22.0
Harosoy 63	20.0	21.0	21.7	21.2	21.5	21.3	22.1	22.4
L2	20.9	20.2	21.7	21.4	20.9	20.2	22.4	22.0
Hawkeye	21.5	19.8	21.5	20.5	20.4	20.9	22.5	22.8
Hawkeye 63	21.4	20.4	22.1	20.5	20.9	20.3	23.1	23.0
Lindarin	21.4	21.2	21.6	21.3	20.5	20.9	23.0	23.0
Lindarin 63	21.0	21.6	22.3	20.9	21.0	21.2	23.3	22.3
C1315	20.8	21.3	21.8	20.3	21.3	20.9	23.0	22.2
A1-939	21.7	21.7	22.4	22.1	22.1	21.3	23.7	23.3
A5-5629	22.2	21.0	21.9	20.9	21.1	21.1	22.4	22.3
A8-932	21.1	20.7	21.5	20.9	21.1	21.3	20.7	22.4
AX50F40-2	21.8	21.8	21.7	20.5	21.7	21.9	22.9	22.7
AX56P64-1	22.1	21.1	22.5	21.5	22.0	22.1	23.5	22.8
C1264	21.1	21.3	22.8	22.1	21.9	21.8	23.3	23.6
C1265	21.7	21.6	22.8	21.9	20.8	21.7	23.1	24.3
C1273	20.9	19.7	20.5	20.6	20.6	20.0	20.8	21.8
M402	23.1	21.7	22.3	22.0	21.9	22.1	24.6	23.9
U7-6804	22.6	21.4	22.1	21.5	22.2	21.7	22.8	23.2

Table 50. Three-year summary of data for Uniform Test II, 1961-1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	81	81	63	75	80	65	66	55	55
Harosoy	38.4	4	-3.5	2.7	41	2.0	17.8	40.8	20.6
Harosoy 63	38.0	5	-4.3	2.7	42	2.0	17.6	40.9	20.7
Hawkeye	35.8	8	0	2.4	41	1.9	17.6	41.1	20.8
Hawkeye 63	34.7	9	+0.3	2.4	41	1.9	17.4	41.1	20.8
Lindarin	37.8	6	-3.9	2.1	37	1.8	15.9	40.9	20.9
Lindarin 63	36.4	7	-4.6	2.3	39	2.0	16.1	40.7	21.2
A5-5629	39.6	3	-1.1	2.5	42	1.8	18.0	40.0	21.3
AX50F40-2	40.0	2	-0.5	2.1	37	2.1	18.8	40.5	21.1
AX56P64-1	40.8	1	-1.4	2.4	42	2.1	17.3	39.4	21.7

[1]Days earlier (-) or later (+) than Hawkeye which matured September 24, 125 days after planting. Blackhawk (Group I) matured -6.1. Ford (Group III) matured +5.5.

Table 51. Three-year summary of yield and yield rank for Uniform Test II, 1961-1963.

Strain	Mean of 81 Tests	Ridgetown Ont.	Harrow Ont.	Freehold N.J.	Georgetown Del.	Hoytville Ohio	Wooster Ohio	Columbus Ohio	East Lansing Mich.	Dundee[1] Mich.	Walkerton Ind.	Bluffton Ind.	Lafayette Ind.	Greenfield Ind.	Worthington Ind.
Years Tested		1961-1963	1962-1963	1962-1963	1961-1962	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963
Harosoy	38.4	45.2	29.5	36.6	28.7	34.6	33.4	37.3	34.4	35.1	40.4	42.2	44.4	34.3	45.1
Har. 63	38.0	43.3	31.5	33.6	27.4	34.8	33.7	37.7	34.4	33.3	38.2	42.9	44.4	39.9	47.3
Hawkeye	35.8	36.3	31.9	33.7	26.0	31.8	33.1	34.6	30.7	31.3	33.0	40.2	40.5	30.3	44.8
Hawk. 63	34.7	35.8	30.3	33.8	22.5	29.5	31.8	34.6	29.1	32.0	36.5	39.6	39.0	37.3	42.6
Lindarin	37.8	41.2	31.6	33.7	28.2	32.7	33.0	37.0	32.9	33.5	34.8	42.0	42.6	35.6	47.6
Lind. 63	36.4	41.0	31.5	34.5	24.7	30.7	33.0	35.3	33.4	34.0	36.1	41.6	40.3	40.3	43.7
A5-5629	39.6	50.0	36.0	35.6	30.0	30.4	34.4	39.3	34.9	39.6	38.6	43.8	45.0	38.0	45.7
AX50F40-2	40.0	38.4	34.4	35.4	27.5	35.5	30.6	36.8	33.6	34.9	38.9	44.0	47.7	36.2	47.8
AX56P64-1	40.8	49.1	32.1	38.4	28.7	35.8	33.1	37.7	36.4	34.6	43.6	47.2	46.4	36.0	49.6
		Yield Rank													
Harosoy		4	3	9	2	2	4	3	4	3	2	2	5	4	8	6
Har. 63		5	4	6	9	6	3	2	2	3	7	5	4	4	2	4
Hawkeye		8	8	4	7	7	6	4	8	8	9	9	8	7	9	7
Hawk. 63		9	9	8	6	9	9	8	8	9	8	6	9	9	4	9
Lindarin		6	5	5	7	4	5	6	5	7	6	8	6	6	7	3
Lind. 63		7	6	6	5	8	7	6	7	6	5	7	7	8	1	8
A5-5629		3	1	1	3	1	8	1	1	2	1	4	3	3	3	5
AX50F40-2		2	7	2	4	5	2	9	6	5	3	3	2	1	5	2
AX56P64-1		1	2	3	1	2	1	4	2	1	4	1	1	2	6	1

[1]Ida, Michigan, 1961-1962.

Table 51. (Continued)

Strain	Madison Wis.	Shabbona Ill.	Dwight Ill.	Urbana Ill.	Girard Ill.	Edgewood Ill.	Lamberton Minn.	Waseca Minn.	Sutherland Iowa	Kanawha Iowa	Independence Iowa	Ames Iowa	Columbia Mo.	Centerville S.D.	Lincoln Nebr.
Years Tested	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1962	1962-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1962-1963	1961-1963	1961-1963
Harosoy	32.3	43.5	37.4	49.6	46.3	39.0	36.3	34.4	42.9	38.9	35.7	38.8	31.3	38.2	43.3
Har. 63	31.1	44.4	35.3	49.6	45.8	39.5	36.9	33.1	41.5	36.9	35.0	37.7	29.8	37.8	44.5
Hawkeye	33.4	35.6	33.6	46.2	43.6	36.8	33.5	29.1	41.2	36.8	35.4	36.9	29.6	39.4	41.4
Hawk. 63	31.0	35.7	33.7	42.9	42.9	36.3	31.4	28.2	39.4	34.6	33.2	35.9	27.9	38.3	41.9
Lindarin	31.3	42.4	37.6	48.3	44.1	38.1	35.5	34.5	40.5	40.6	34.6	38.4	29.3	39.7	48.5
Lind. 63	30.6	38.9	35.6	47.0	43.0	36.2	34.1	33.8	40.6	36.0	33.2	35.4	28.1	39.2	42.9
A5-5629	35.3	43.7	36.1	49.3	48.2	36.4	35.2	35.2	45.4	38.9	38.7	37.9	32.0	43.9	45.9
AX50F40-2	37.3	45.9	40.4	50.5	47.3	46.0	35.9	35.3	45.4	41.7	37.6	41.1	32.3	43.8	51.2
AX56P64-1	34.0	47.3	40.4	51.6	47.9	40.4	36.3	34.4	45.4	45.0	37.5	43.0	32.8	41.9	48.2
	Yield Rank														
Harosoy	5	5	4	3	4	4	2	4	4	4	4	3	4	8	6
Har. 63	7	3	7	3	5	3	1	7	5	6	6	6	5	9	5
Hawkeye	4	9	9	8	7	6	8	8	6	7	5	7	6	5	9
Hawk. 63	8	8	8	9	6	8	9	9	9	9	8	8	9	7	8
Lindarin	6	6	3	6	9	5	5	3	8	3	7	4	7	4	2
Lind. 63	9	7	6	7	8	9	7	6	7	8	8	9	8	6	7
A5-5629	2	4	5	5	1	7	6	2	1	4	1	5	3	1	4
AX50F40-2	1	2	1	2	3	1	4	1	1	2	2	2	2	2	1
AX56P64-1	3	1	1	1	2	2	2	4	1	1	3	1	1	3	3

UNIFORM PRELIMINARY TEST II - 1963

Strain	Originating Agency	Origin	Generation Composited
Harosoy	Research Station, Harrow, Ontario	Mandarin (Ottawa) (2) x A.K. (Harrow)	F_5
Hawkeye	Iowa A.E.S. & U.S.R.S.L.	Mukden x Richland	F_4
A1-438	Iowa A.E.S. & U.S.R.S.L.	Harosoy x Capital	F_9
A1-439	Iowa A.E.S. & U.S.R.S.L.	Harosoy x Capital	F_9
A1-647	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Clark	F_8
A1-653	Iowa A.E.S. & U.S.R.S.L.	Hawkeye x Clark	F_8
A1-1051	Iowa A.E.S. & U.S.R.S.L.	Harosoy x Clark	F_8
A8-932	Iowa A.E.S. & U.S.R.S.L.	Harosoy x Capital	F_6

Six lines from three different crosses make up this test. Except for the shattering and poor seed quality of A1-647, there appeared to be no significant differences between lines from the same cross. The three Harosoy x Capital selections were similar to Harosoy in performance and had higher mean yields. The two Hawkeye x Clark selections also yielded well and had improved lodging resistance. The Harosoy x Clark line had unusually good seed quality, large seed size, and high protein content.

Table 52. Regional testing history and descriptive data for the strains in Uniform Preliminary Test II, 1963.

Strain	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color	Shattering*
Harosoy	P	G	D	Y	Y	Br	2.0
Hawkeye	P	G	D	Y	Ib	Br	3.0
A1-438	P	G	D	Y	Y	Br	1.0
A1-439	P	G	D	Y	Y	Br	1.0
A1-647	P	G	D	Y	Ib	Br	2.7
A1-653	P	G	D	Y	Ib	Br	1.0
A1-1051	P	T	D	Y	Br	Br	1.0
A8-932**	P	G	D	Y	Y	Br	1.0

*Shattering scored at Urbana, Ill., 1 month after maturity, mean of two replications.

**Also in Uniform Test II.

Table 53. Summary of data for Uniform Preliminary Test II, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	15	15	11	12	15	6	11	8	8
Harosoy	39.1	6	-3.9	2.2	40	1.8	17.3	39.4	20.9
Hawkeye	36.2	8	0	2.2	40	2.3	17.9	39.4	21.0
A1-438	40.9	3	-3.5	2.1	38	1.7	14.9	38.4	21.2
A1-439	42.0	1	-3.2	2.1	39	1.7	15.3	38.2	21.3
A1-647	41.5	2	-0.5	1.9	37	2.2	17.9	38.4	21.3
A1-653	40.4	5	-1.1	1.8	34	1.6	19.0	39.3	21.2
A1-1051	38.5	7	-1.5	2.0	36	1.3	20.5	41.5	20.6
A8-932	40.5	4	-2.5	2.2	39	1.8	16.5	38.6	21.2

[1]Days earlier (-) or later (+) than Hawkeye which matured September 24, 128 days after planting. Blackhawk (Group I) matured -5.9. Ford (Group III) matured +7.2.

Table 54. Disease data for Uniform Preliminary Test II, 1963.

Strain	Bacterial Blight	Bacterial Pustule	Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew	
	Ill.	Ill.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.
	a[1]	a	n[1]	a	a	a	n	n
Harosoy	3	4	4	--	--	--	--	2.5
Hawkeye	3	4	4	--	--	--	--	3.5
A1-438	2	4	4	S	--	5	3	1.5
A1-439	3	4	4	S	--	5	2	2.3
A1-647	3	4	4	S	--	5	3	2.8
A1-653	3	4	4	S	--	5	4	1.8
A1-1051	4	3	4	S	--	4	3	4.0
A8-932	3	4	4	S	--	5	1	2.0

[1]a = artificial inoculation; n = natural infection.

Table 55. Yield, yield rank, and maturity, days earlier (-) or later (+) than Hawkeye, for Uniform Preliminary Test II, 1963.

Strain	Mean of 15 Tests	Ridge-town Ont.	Harrow Ont.	Hoyt-ville Ohio	Woos-ter Ohio	Colum-bus Ohio[1]	East Lansing Mich.	Walk-erton Ind.
Harosoy	39.1	38.0	30.5	43.4	36.3	42.4	38.2	35.8
Hawkeye	36.2	35.9	28.1	29.4	31.6	42.4	35.7	36.1
A1-438	40.9	45.6	29.0	45.7	33.9	43.0	39.3	34.4
A1-439	42.0	43.1	30.7	43.9	37.2	45.5	42.8	36.0
A1-647	41.5	34.7	31.2	37.9	35.0	37.1	40.5	39.3
A1-653	40.4	40.9	31.4	38.3	27.1	41.9	38.7	37.0
A1-1051	38.5	33.2	35.8	37.1	28.8	37.1	38.4	38.5
A8-932	40.4	43.9	28.0	34.9	31.9	41.2	40.2	39.8
Coef. of Var. (%)		8.8	5.4	9.7	10.4	11.9	4.9	10.5
L.S.D. (5%)		8.3	3.9	8.9	N.S.	N.S.	N.S.	N.S.
Row Spacing (In.)		24	36	28	28	28	24	40
	Yield Rank							
Harosoy	6	5	5	3	2	3	7	7
Hawkeye	8	6	7	8	6	3	8	5
A1-438	3	1	6	1	4	2	4	8
A1-439	1	3	4	2	1	1	1	6
A1-647	2	7	3	5	3	7	2	2
A1-653	4	4	2	4	8	5	5	4
A1-1051	7	8	1	6	7	7	6	3
A8-932	4	2	8	7	5	6	3	1
	Mean of 11 Tests	Maturity						
Harosoy	-3.9	-3	-4	-4	- 7	- 5	0 *	-3 *
Hawkeye	0	0	0	0	0	0	0	0
A1-438	-3.5	-3	-5	-4	- 3	- 3	0	-2
A1-439	-3.2	-2	-5	0	- 7	- 3	0	-2
A1-647	-0.5	-2	0	-1	- 6	- 2	+1	+1
A1-653	-1.1	-1	0	0	+ 1	- 1	+1	+1
A1-1051	-1.5	-1	0	+1	0	0	0	+2
A8-932	-2.5	-2	-3	+1	- 7	- 4	0	-1
Blackhawk	-5.9	-3	-7	+1	-11	- 5	+1	-7
Ford	+7.2	+8	+5	+6	+ 9	+12	--	--
Date planted	5-19	5-24	5-31	5-14	5-21	5-14	6-5	5-31
Hawkeye matured	9-24	10-11	9-30	9-22	9-29	9-21	10-10	9-30
Days to mature	128	140	122	131	131	130	127	122

*Not included in the mean.
[1]Irrigated.

Table 55. (Continued)

Strain	Lafayette Ind.	Madison Wis.	Dwight Ill.	Urbana Ill.	Kanawha Iowa	Ames Iowa	Columbia Mo.	Centerville S.D.
Harosoy	50.1	33.9	35.4	50.7	45.0	43.0	30.8	32.9
Hawkeye	47.0	36.0	27.4	44.1	46.0	42.2	30.8	31.0
A1-438	50.3	35.4	40.7	52.3	47.4	47.4	34.6	35.0
A1-439	48.1	35.1	40.0	59.4	53.0	50.7	34.0	30.7
A1-647	54.0	41.9	42.9	52.7	47.0	54.0	37.0	36.8
A1-653	49.4	40.9	37.2	52.0	53.5	51.6	33.5	31.9
A1-1051	43.3	32.6	43.4	47.3	46.6	48.2	33.0	34.7
A8-932	46.5	35.4	45.4	60.2	49.8	45.8	34.0	30.2
Coef. of Var. (%)	5.7	7.8	5.7	2.9	4.1	3.9	--	--
L.S.D. (5%)	N.S.	N.S.	5.3	3.5	4.7	4.5	--	--
Row Spacing (In.)	38	36	38	40	40	40	38	42
	Yield Rank							
Harosoy	3	7	7	6	8	7	7	4
Hawkeye	6	3	8	8	7	8	7	6
A1-438	2	4	4	4	4	5	2	2
A1-439	5	6	5	2	2	3	3	7
A1-647	1	1	3	3	5	1	1	1
A1-653	4	2	6	5	1	2	5	5
A1-1051	8	8	2	7	6	4	6	3
A8-932	7	4	1	1	3	6	3	8
	Maturity							
Harosoy	-2	-3	- 1	-2	- 7	-5	-4 *	
Hawkeye	0	0	0	0	0	0	0	
A1-438	0	-4	- 2	-2	- 7	-5	-3	
A1-439	+1	-3	- 1	-2	- 8	-5	-4	
A1-647	+1	+2	0	0	+ 1	+1	-1	
A1-653	0	0	- 1	-2	- 5	-3	-1	
A1-1051	0	-4	- 1	-2	- 6	-3	-3	
A8-932	0	-1	- 1	-1	- 7	-3	-4	
Blackhawk	-3	-6	- 5	-8	-10	-8	--	
Ford	+8	+6	+10	+4	+ 5	+6	+5	
Date planted	5-16	5-21	5-25	5-13	5-9	5-16	5-31	5-22
Hawkeye matured	9-18	9-23	9-22	9-17	9-19	9-19	9-11	--
Days to mature	125	125	120	127	133	126	103	--

UNIFORM TEST III - 1963

Strain	Originating Agency	Origin	Generation Composited
Ford	Iowa A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F_9
Shelby	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F_8
SL2	Ill. and Purdue A.E.S. & U.S.R.S.L.	[Shelby (7) x L49-4091] x [Shelby (5) x Mukden]	F_1
C1276	Purdue A.E.S. & U.S.R.S.L.	Mandarin (Ottawa) x Clark	F_6
C1291	Purdue A.E.S. & U.S.R.S.L.	Mandarin (Ottawa) x C1069	F_6
C1317	Purdue A.E.S. & U.S.R.S.L.	C1223 (8) x Mukden	F_3
CX314-50	Purdue A.E.S. & U.S.R.S.L.	Ford x Shelby	F_3
CX314-56	Purdue A.E.S. & U.S.R.S.L.	Ford x Shelby	F_3
CX314-81	Purdue A.E.S. & U.S.R.S.L.	Ford x Shelby	F_3
L57-2222	Ill. A.E.S. & U.S.R.S.L.	L49-4091 x Clark	F_5
S9-2504	Mo. A.E.S. & U.S.R.S.L.	Radiated Clark	R_5

Identification of Parent Strains

C1069, C1070 — F_7 lines from Lincoln x Ogden; from same F_4 line as Kent.

C1223 — F_6 line from C1070 x Adams; in Uniform Test III in 1960 and 1961.

L49-4091 — Pustule-resistant F_4 line from [F_3 Lincoln (2) x Richland] x (Lincoln x CNS).

Table 56. Regional testing history and descriptive data for the strains in Uniform Test III, 1963.

Strain	Years in Uniform Test III	Previous Regional Test	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color
Ford	8(12)	None	W	T	S	Y	Bl	Br
Shelby	12	None	P	T	D	Y	Bl	Br
SL2	2	None	P	T	D	Y	Bl	Br
C1276	1	P.T.III	P	T	D	Y	Bl	Br
C1291	1	P.T.III	P	T+G	S	Y	Y	Br
C1317	1	None	W	G	S	Y	Bf	T
CX314-50	1	P.T.III	W	T	S	Y	Bl	Br
CX314-56	1	P.T.III	P	T	S	Y	Bl	Br
CX314-81	1	P.T.III	W	T	S	Y	Bl	Br
L57-2222	3	P.T.III	W	T	S	Y	Bl	Br
S9-2504	1	P.T.III	P	T	D	Y	Bl	Br

SL2 again averaged slightly below Shelby in yield. L57-2222, for the third year (see Table 63), showed an appreciable yield advantage over Shelby.

All three Ford x Shelby (CX314) selections appear to be as good or better than either parent in yield and lodging resistance. S9-2504 had the highest yield and matured between Shelby and Clark, which it closely resembled.

C1276 was a distinctive strain with excellent yield and lodging resistance, short plant growth, and high protein content. C1317 outyielded Shelby but was poor in seed quality, especially at the Delaware locations.

Table 57. Summary of data for Uniform Test III, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	20	20	18	18	20	16	15	10	10
Ford	38.0	10	-0.6	1.9	40	2.0	16.9	40.6	20.8
Shelby	39.1	9	0	2.2	41	1.9	16.4	40.2	21.2
SL2	38.0	10	+0.6	2.2	43	2.1	15.4	40.5	20.8
C1276	41.6	2	+4.2	1.5	36	2.1	18.6	42.1	20.9
C1291	40.2	7	+3.6	2.3	43	2.1	17.9	39.5	21.3
C1317	40.4	6	+1.3	1.7	41	2.3	16.8	39.2	21.3
CX314-50	40.9	4	+0.9	1.6	42	2.1	16.4	40.7	20.9
CX314-56	39.4	8	-0.2	1.9	41	1.9	17.4	40.3	20.6
CX314-81	40.8	5	+0.6	1.9	43	2.0	16.9	40.3	21.0
L57-2222	41.3	3	+1.6	1.9	42	2.0	17.8	40.9	20.9
S9-2504	41.8	1	+3.2	1.8	40	2.0	16.7	40.3	21.1

[1]Days earlier (-) or later (+) than Shelby which matured September 23, 123 days after planting. Clark (Group IV) matured +6.4.

Table 58. Disease data for Uniform Test III, 1963.

Strain	Bacterial Blight		Bacterial Pustule		Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew		Purple Stain
	Ill.	Ia.	Ill.	Ia.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.	Ind.
	a[1]	a[2]	a	a	n[1]	a	a	a	n	n	n
Ford	2	5	4	4	4	S	R	4	3.5	3.5	3
Shelby	3	5	4	3	4	S	R	5	3.3	3.0	2
SL2	3	5	2	1	4	R	R	4	3.5	3.0	2
C1276	4	5	3	3	4	S	R	4	1.5	2.5	2
C1291	3	5	3	4	4	S	R	1	2.5	3.0	--
C1317	4	5	4	3	4	R	R	1	3.5	3.0	--
CX314-50	3	5	4	3	4	S	R	5	3.0	3.5	3
CX314-56	2	5	4	4	4	S	R	5	3.3	3.4	3
CX314-81	3	5	4	4	4	S	R	4	3.5	3.0	3
L57-2222	2	4	2	1	4	S	R	3	4.0	3.0	2
S9-2504	3	4	3	3	4	S	--	4	3.5	2.8	2

[1]a = artificial inoculation; n = natural infection.
[2]Causal organism is a bacterium different than Ps. glycinea.

Table 59. Yield and yield rank for Uniform Test III, 1963.

Strain	Mean of 20 Tests	Free-hold N.J.[2]	New-ark Del.	George-town Del.[3]	Hoyt-ville Ohio	Woos-ter Ohio	Co-lum-bus Ohio[3]	Bluff-ton Ind.	Lafa-yette Ind.	Green-field Ind.	Wor-thing-ton Ind.	Evans-ville Ind.
				*								
Ford	38.0	32.0	39.4	21.6	36.4	27.6	39.9	32.8	44.2	41.5	43.6	37.3
Shelby	39.1	24.0	43.2	27.8	36.9	26.3	39.5	30.3	42.0	48.3	50.2	39.4
SL2	38.0	23.4	42.6	25.9	28.3	27.4	35.2	32.3	39.1	43.0	49.0	42.4
C1276	41.6	32.4	40.8	21.0	43.3	28.3	40.2	31.9	46.7	46.2	52.5	45.2
C1291	40.2	31.7	38.8	26.8	34.2	29.6	38.8	37.4	42.2	46.3	49.0	45.6
C1317	40.4	25.6	44.1	23.7	31.6	27.4	38.1	37.2	44.2	49.2	45.6	37.5
CX314-50	40.9	26.1	46.8	23.2	38.2	26.4	42.3	31.2	46.5	47.1	49.8	41.2
CX314-56	39.4	28.6	44.9	29.4	33.7	30.4	34.2	33.9	41.3	46.2	49.1	42.2
CX314-81	40.8	30.0	48.4	26.6	38.2	29.4	36.4	33.8	43.8	46.6	51.9	40.9
L57-2222	41.3	28.6	43.4	25.0	38.2	30.8	36.7	36.8	49.2	48.2	51.1	44.0
S9-2504	41.8	33.9	46.8	30.0	31.8	25.5	43.3	32.4	43.4	44.6	50.7	43.6
C.V. (%)		14.0	10.9	20.2	11.7	10.8	12.0	9.7	7.0	8.1	9.2	5.4
L.S.D. (5%)		5.7	N.S.	N.S.	6.0	N.S.	N.S.	4.7	4.4	N.S.	N.S.	3.3
Row Sp. (In.)		30	36	36	28	28	28	38	38	38	38	40
						Yield Rank						
Ford	10	3	10	10	6	6	4	6	4	11	11	11
Shelby	9	10	7	3	5	10	5	11	9	2	5	9
SL2	10	11	8	6	11	7	10	8	11	10	8	5
C1276	2	2	9	11	1	5	3	9	2	7	1	2
C1291	7	4	11	4	7	3	6	1	8	6	8	1
C1317	6	9	5	8	10	7	7	2	4	1	10	10
CX314-50	4	8	2	9	2	9	2	10	3	4	6	7
CX314-56	8	6	4	2	8	2	11	4	10	7	7	6
CX314-81	5	5	1	5	2	4	9	5	6	5	2	8
L57-2222	3	6	6	7	2	1	8	3	1	3	3	3
S9-2504	1	1	2	1	9	11	1	7	7	9	4	4

*Not included in the mean.
[1]One replication.
[2]Two replications.
[3]Irrigated.

Table 59. (Continued)

Strain	Urbana Ill.	Girard Ill.	Edgewood Ill.[1] *	Eldorado Ill.	Carbondale Ill.	Ames Iowa	Ottumwa Iowa	Columbia Mo.	Lincoln Nebr.[3]	Powhattan Kans.	Manhattan Kans.	Manhattan Kans.[3] *	Grand Jct. Colo.[3] *
Ford	48.5	43.3	31.9	38.1	30.0	45.1	41.2	30.5	49.5	24.4	34.2	38.5	34.5
Shelby	46.9	43.7	47.6	43.9	34.2	44.8	40.6	31.4	51.3	29.1	35.1	38.8	38.8
SL2	45.6	48.6	39.2	42.6	31.0	47.6	40.4	35.4	47.4	24.7	34.4	45.6	38.7
C1276	52.7	40.0	34.1	47.9	34.8	46.4	47.3	34.6	54.6	29.0	37.7	53.2	40.2
C1291	46.9	44.6	48.1	41.7	33.8	47.2	40.0	32.2	55.8	32.3	35.2	47.7	37.9
C1317	53.1	54.1	40.3	41.6	32.4	43.7	42.6	34.0	55.2	34.2	37.5	43.2	45.8
CX314-50	51.2	51.6	34.1	42.1	33.1	47.2	44.8	33.2	54.7	29.7	35.6	48.6	41.3
CX314-56	48.6	43.2	42.8	44.3	33.0	45.2	45.7	31.9	45.8	28.8	36.0	50.1	38.5
CX314-81	51.6	47.7	46.4	45.8	33.7	48.7	44.7	32.5	49.5	28.2	34.2	35.3	41.2
L57-2222	49.1	48.2	47.4	47.3	31.2	49.6	45.4	35.4	52.2	24.9	35.1	56.5	30.1
S9-2504	51.7	50.8	47.3	49.3	32.3	47.2	42.4	35.9	57.1	32.5	40.5	55.5	42.9
C.V.(%)	6.2	11.3	--	4.7	--	5.0	8.6	--	7.7	11.4	8.2	13.7	6.9
L.S.D.(5%)	4.4	7.7	--	3.0	--	3.1	5.0	--	5.5	4.7	4.2	9.1	3.7
R.Sp.(In.)	40	38	37	36	40	40	40	38	40	40	40	36	24

	Yield Rank												
Ford	8	9	11	11	11	9	8	11	8	11	10	10	10
Shelby	9	8	2	6	2	10	9	10	7	5	7	9	6
SL2	11	4	8	7	10	3	10	2	10	10	9	7	7
C1276	2	11	9	2	1	7	1	4	5	6	2	3	5
C1291	9	7	1	9	3	4	11	8	2	3	6	6	9
C1317	1	1	7	10	7	11	6	5	3	1	3	8	1
CX314-50	5	2	9	8	5	4	4	6	4	4	5	5	3
CX314-56	7	10	6	5	6	8	2	9	11	7	4	4	8
CX314-81	4	6	5	4	4	2	5	7	8	8	10	11	4
L57-2222	6	5	3	3	9	1	3	2	6	9	7	1	11
S9-2504	3	3	4	1	8	4	7	1	1	2	1	2	2

Table 60. Maturity, days earlier (-) or later (+) than Shelby, and lodging for Uniform Test III, 1963.

Strain	Mean of 18 Tests	Freehold N.J.	Newark Del.	Georgetown Del.[1]	Hoytville Ohio	Wooster Ohio	Columbus Ohio[1]	Bluffton Ind.	Lafayette Ind.	Greenfield Ind.	Worthington Ind.	Evansville Ind.
				*	*	*						
Ford	-0.6	0	0	- 2	+1	-2	+1	+3	+1	-1	-1	-1
Shelby	0	0	0	0	0	0	0	0	0	0	0	0
SL2	+0.6	0	+1	+ 2	+4	0	+1	+2	+1	+1	0	+2
C1276	+4.2	+4	+3	+ 6	+7	-1	-1	+4	+5	+2	+4	+5
C1291	+3.6	+4	0	+ 6	+9	0	+2	+4	+5	+3	+7	+3
C1317	+1.3	-2	0	+ 4	0	+1	+3	+2	+1	+2	+3	+1
CX314-50	+0.9	+1	0	+ 1	+4	-2	+2	+3	+1	+1	+2	+1
CX314-56	-0.2	+1	-1	- 4	+4	-1	+2	+2	0	-1	0	+1
CX314-81	+0.6	+1	0	0	+5	-1	+3	+3	+1	-1	+2	0
L57-2222	+1.6	0	0	+ 1	+6	-3	+1	+4	+4	+2	+3	+4
S9-2504	+3.2	+3	+1	+ 5	+6	+1	+1	+3	+3	+2	+3	+1
Clark	+6.4	+7	+7	+11	--	--	+6	+4	+6	+3	+8	+5
Date pltd.	5-23	6-5	5-23	6-6	5-14	5-21	5-14	5-23	5-20	5-25	6-1	5-9
Shelby mat.	9-23	10-1	9-21	9-19	9-27	10-10	10-2	9-23	9-25	9-29	9-25	9-20
Days to mat.	123	118	121	105	136	142	141	123	128	127	116	134
	Mean of 18 Tests	Lodging										
				*		*						
Ford	1.9	1.0	1.2	1.7	2.7	1.0	1.0	2.0	2.0	1.3	2.8	1.3
Shelby	2.2	1.0	1.7	1.5	3.5	1.0	1.7	2.3	2.6	1.5	3.0	2.0
SL2	2.2	2.0	2.0	2.0	3.5	1.0	2.0	2.3	2.6	2.0	2.8	1.8
C1276	1.5	1.0	1.7	1.5	1.0	1.0	1.2	1.5	1.6	1.3	1.8	1.0
C1291	2.3	2.0	2.5	1.7	3.2	1.0	2.0	1.8	2.6	2.5	3.0	1.8
C1317	1.7	1.0	1.2	1.7	2.5	1.0	1.0	1.8	2.0	1.5	1.5	1.0
CX314-50	1.6	1.0	1.5	1.7	2.0	1.0	1.0	1.0	2.0	1.5	1.8	1.3
CX314-56	1.9	1.0	1.7	1.2	2.7	1.0	1.5	1.8	2.1	1.8	2.5	1.0
CX314-81	1.9	2.0	1.7	1.5	3.0	1.0	1.5	1.5	2.1	1.5	2.5	1.0
L57-2222	1.9	1.0	2.0	2.0	3.0	1.0	1.7	1.5	1.8	1.8	2.5	1.0
S9-2504	1.8	1.0	2.0	1.5	2.5	1.0	1.2	1.5	2.1	1.5	2.3	1.0

*Not included in the mean.
[1]Irrigated.

Table 60. (Continued)

Strain	Urbana Ill.	Girard Ill.	Edgewood Ill. *	Eldorado Ill.	Carbondale Ill.	Ames Iowa	Ottumwa Iowa	Columbia Mo.	Lincoln Nebr.[1]	Powhattan Kans.	Manhattan Kans.	Manhattan Kans.[1] *	Grand Jct. Colo.[1] *
Ford	-1	0	-2	-1	-1	-4	-3	-3	-1	0	+1	+ 1	0
Shelby	0	0	0	0	0	0	0	0	0	0	0	0	0
SL2	+1	+1	-1	+1	0	0	0	0	0	0	0	0	+5
C1276	+4	+9	+7	+8	+7	+3	+4	+7	+1	+4	+2	+ 1	+7
C1291	+4	+8	+2	+7	+1	+2	+3	+5	0	+4	+2	+ 2	+6
C1317	+1	+1	-2	+1	-1	+2	+2	+2	0	+2	+4	+ 2	+8
CX314-50	+1	+1	+1	+1	0	-2	+1	-1	0	+1	+3	0	+2
CX314-56	0	+1	-1	0	-1	-3	-3	-2	-1	0	+2	+ 1	+2
CX314-81	0	+1	0	+1	0	-1	-1	0	0	0	+2	+ 1	+4
L57-2222	+2	+2	+1	+1	-1	-1	+2	0	+3	+1	+1	+ 3	+4
S9-2504	+3	+7	+4	+7	+5	+3	+5	+5	+1	+3	+1	+ 2	+7
Clark	+9	+9	+6	+9	+7	+6	+8	+7	+5	+4	+5	+10	+8
Date pltd.	5-13	5-24	5-10	5-31	5-8	5-16	5-10	5-31	5-22	6-6	5-30	5-28	5-13
Shelby mat.	9-23	9-21	9-11	9-12	9-1	9-27	9-23	9-16	9-28	9-28	9-26	9-24	9-22
Da. to mat.	133	120	124	104	116	134	136	108	129	114	119	119	132

Lodging

			*					*				*
Ford	2.7	3.1	1.1	2.6	1.0	1.6	2.4	1.0	2.4	1.1	1.2	2.3
Shelby	3.1	2.6	1.3	2.7	1.0	2.1	3.0	1.0	2.5	1.2	1.5	2.7
SL2	2.9	2.7	1.2	2.6	1.0	1.3	2.9	1.0	2.5	1.3	1.2	2.7
C1276	1.6	3.6	1.1	1.3	1.0	1.6	2.0	1.0	1.5	1.3	1.3	2.1
C1291	2.9	3.2	1.5	2.3	1.5	2.0	3.1	1.0	2.6	1.4	1.8	3.0
C1317	2.5	2.2	1.2	2.1	1.0	2.0	2.7	1.0	1.9	1.2	1.4	2.8
CX314-50	2.5	2.2	1.1	2.4	1.0	1.5	2.3	1.0	2.1	1.3	1.2	2.3
CX315-56	2.5	2.9	1.1	2.5	1.0	1.5	2.5	1.0	2.4	1.2	1.4	1.9
CX314-81	2.7	2.8	1.1	2.2	1.0	1.7	2.5	1.0	2.1	1.2	1.3	2.3
L57-2222	2.4	2.8	1.3	2.4	1.0	1.6	2.4	1.0	2.9	1.3	1.3	2.2
S9-2504	2.5	3.1	1.3	1.6	1.0	1.6	2.3	1.0	2.5	1.2	1.4	2.6

Table 61. Plant height and seed quality for Uniform Test III, 1963.

Strain	Mean of 20 Tests	Free-hold N.J.	New-ark Del.	George-town Del.[1]	Hoyt-ville Ohio	Woos-ter Ohio	Co-lum-bus Ohio[1]	Bluff-ton Ind.	Lafa-yette Ind.	Green-field Ind.	Wor-thing-ton Ind.	Evans-ville Ind.
				*								
Ford	40	28	29	29	49	35	42	44	50	41	43	39
Shelby	41	29	30	32	50	34	40	45	47	46	46	42
SL2	43	30	33	33	52	36	40	46	52	47	49	43
C1276	36	25	26	23	45	32	35	40	44	39	39	37
C1291	43	30	31	31	50	35	43	45	52	46	47	43
C1317	41	28	27	31	48	33	41	42	49	44	46	44
CX314-50	42	29	31	30	49	35	44	45	50	46	45	43
CX314-56	41	28	32	31	50	35	41	42	49	46	46	40
CX314-81	43	31	35	33	52	36	41	46	51	46	47	42
L57-2222	42	29	30	30	51	35	40	45	52	45	46	43
S9-2504	40	28	30	30	46	35	38	42	49	43	43	42

	Mean of 16 Tests	Seed Quality										
				*	*	*		*				
Ford	2.0	1.0	3.6	2.6	1.0	1.0	1.0	1.0	2.0	1.5	2.0	2.0
Shelby	1.9	1.0	2.1	2.2	1.0	1.0	1.0	1.0	1.5	1.0	2.0	2.5
SL2	2.1	2.0	2.2	2.2	1.0	1.0	1.0	1.0	1.5	1.5	2.0	2.5
C1276	2.1	2.0	2.3	2.5	1.0	1.0	1.0	1.0	1.5	1.5	1.5	2.5
C1291	2.1	1.0	2.5	2.6	1.0	1.0	2.0	1.0	1.5	1.5	2.0	2.5
C1317	2.3	1.0	5.0	3.2	1.0	1.0	2.0	1.0	1.5	1.5	2.5	2.0
CX314-50	2.1	2.0	2.8	2.8	1.0	1.0	1.0	1.0	1.5	1.5	2.0	2.5
CX314-56	1.9	2.0	2.3	2.5	1.0	1.0	1.0	1.0	2.0	1.5	2.5	2.5
CX314-81	2.0	2.0	2.7	2.7	1.0	1.0	1.0	1.0	1.5	1.0	2.0	2.5
L57-2222	2.0	1.0	2.5	2.7	1.0	1.0	1.0	1.0	1.5	1.5	2.5	2.5
S9-2504	2.0	1.0	2.1	2.3	1.0	1.0	1.0	1.0	1.5	1.5	2.0	2.5

*Not included in the mean.
[1]Irrigated.

Table 61. (Continued)

Strain	Urbana Ill.	Girard Ill.	Edgewood Ill. *	Eldorado Ill.	Carbondale Ill.	Ames Iowa	Ottumwa Iowa	Columbia Mo.	Lincoln Nebr.[1]	Powhattan Kans.	Manhattan Kans.	Manhattan Kans.[1] *	Grand Jct. Colo.[1] *
Ford	43	47	38	42	32	47	46	35	51	27	35	42	41
Shelby	44	51	39	47	33	48	45	35	52	30	35	43	42
SL2	47	54	41	49	34	48	47	39	54	30	37	45	46
C1276	41	40	30	39	31	42	42	29	45	25	31	38	39
C1291	47	53	38	47	34	47	47	34	52	34	37	44	44
C1317	45	49	35	48	30	45	44	35	53	32	36	39	42
CX314-50	45	51	41	47	34	48	48	34	52	31	36	44	42
CX314-56	44	46	37	44	32	48	45	35	50	29	37	46	39
CX314-81	46	51	41	44	34	48	46	37	54	30	35	43	43
L57-2222	46	49	41	46	32	47	48	37	52	28	35	44	38
S9-2504	43	45	37	43	32	47	46	34	48	28	35	43	42

	Seed Quality												
			*			*						*	*
Ford	2.1	2.0	2.5	2.3	4.0	1.0	2.0	1.5	2.0	1.1	2.2	1.3	2.0
Shelby	2.1	1.6	2.3	2.9	3.0	1.0	2.0	1.5	2.5	1.2	2.0	1.6	2.0
SL2	2.3	2.6	3.0	3.5	4.0	1.0	1.8	1.5	2.5	1.1	1.8	1.3	2.0
C1276	2.4	2.5	2.0	3.5	3.0	1.0	3.3	2.0	1.5	1.2	1.5	1.4	2.5
C1291	2.5	2.6	2.8	3.5	3.0	1.0	2.8	1.5	2.5	1.1	1.6	1.3	2.5
C1317	2.3	2.5	3.0	2.6	3.0	1.0	3.2	2.0	2.0	1.2	2.2	1.6	1.5
CX314-50	2.5	1.9	3.0	2.5	3.0	1.0	2.5	1.5	3.0	1.2	1.8	1.5	2.5
CX314-56	2.1	2.0	2.5	2.1	2.0	1.0	2.0	1.5	1.5	1.2	2.0	1.3	2.5
CX314-81	2.4	2.1	2.5	2.4	2.0	1.0	2.4	1.5	3.0	1.1	2.6	1.5	2.0
L57-2222	2.6	2.1	2.5	2.9	2.0	1.0	2.8	1.5	2.0	1.1	2.3	1.4	2.5
S9-2504	2.4	2.3	3.0	3.8	2.0	1.0	3.0	1.5	2.0	1.1	1.5	1.3	2.0

Table 62. Percentages of protein and oil for Uniform Test III, 1963.

Strain	Mean of 10 Tests	Free-hold N.J.	George-town Del.[1]	Colum-bus Ohio[1]	Lafa-yette Ind.	Wor-thington Ind.
			*			
Ford	40.6	43.0	41.6	42.6	39.8	41.5
Shelby	40.2	42.6	41.6	40.4	39.8	41.7
SL2	40.5	42.4	41.2	40.6	40.0	41.1
C1276	42.1	42.3	44.6	43.0	43.3	43.8
C1291	39.5	41.6	42.3	40.1	40.2	40.4
C1317	39.2	41.4	39.9	38.4	40.1	40.2
CX314-50	40.7	44.1	41.9	40.7	40.9	42.5
CX314-56	40.3	43.4	41.6	40.7	40.5	42.0
CX314-81	40.3	41.6	41.2	40.6	40.2	42.3
L57-2222	40.9	41.8	42.3	41.3	40.7	43.1
S9-2504	40.3	40.9	42.6	40.3	40.5	42.7
	Mean of 10 Tests	Percentage of Oil				
			*			
Ford	20.8	19.3	21.3	20.3	20.9	20.3
Shelby	21.2	19.7	21.8	20.1	21.0	20.7
SL2	20.8	18.9	21.3	19.8	20.7	20.4
C1276	20.9	19.7	21.3	20.0	20.4	20.6
C1291	21.3	19.2	21.3	20.7	21.6	21.3
C1317	21.3	20.4	22.1	20.5	20.8	20.4
CX314-50	20.9	18.8	21.5	20.0	21.0	20.4
CX314-56	20.6	19.3	21.8	19.8	20.4	20.4
CX314-81	21.0	21.3	21.8	20.0	20.6	20.3
L57-2222	20.9	20.1	21.3	20.3	20.6	20.3
S9-2504	21.1	20.1	21.1	20.4	21.2	20.6

*Not included in the mean.
[1]Irrigated.

Table 62. (Continued)

Strain	Urbana Ill.	Eldorado Ill.	Ames Iowa	Columbia Mo.	Lincoln Nebr.[1]	Manhattan Kans.	Grand Jct. Colo.[1] *
Ford	39.8	41.9	39.4	41.4	36.8	39.5	41.2
Shelby	40.2	41.7	40.4	40.5	36.5	38.6	39.6
SL2	40.2	45.8	40.1	41.1	36.1	37.5	40.5
C1276	43.1	44.2	42.1	42.5	38.3	38.5	42.7
C1291	39.7	41.5	39.3	39.2	35.6	36.9	39.9
C1317	38.1	40.6	39.0	39.0	35.8	39.0	39.5
CX314-50	40.1	41.9	39.8	41.1	36.7	39.2	42.4
CX314-56	39.0	41.6	39.2	40.5	36.9	38.8	41.6
CX314-81	40.0	41.5	39.5	40.6	36.9	39.5	42.4
L57-2222	41.7	42.1	40.5	40.5	38.2	39.4	41.6
S9-2504	40.2	41.6	40.7	41.4	37.1	37.4	41.8

	Percentage of Oil						
Ford	20.2	21.0	21.0	20.8	21.9	22.4	19.5 *
Shelby	20.6	21.7	20.6	22.1	22.0	23.1	20.0
SL2	20.1	21.2	20.9	21.5	22.0	22.8	19.2
C1276	20.3	20.9	20.8	21.1	21.9	23.1	20.1
C1291	20.8	21.5	20.9	21.5	22.6	23.3	20.2
C1317	20.7	21.5	21.6	22.6	22.0	22.4	19.9
CX314-50	19.6	21.0	21.1	21.3	22.3	23.0	19.2
CX314-56	19.8	21.3	19.6	21.6	21.9	21.5	18.7
CX314-81	20.2	21.5	20.5	21.6	21.8	22.1	19.2
L57-2222	19.9	21.7	20.5	21.6	21.4	22.3	19.6
S9-2504	20.4	21.4	20.0	21.7	22.1	22.7	20.2

Table 63. Three-year summary of data for Uniform Test III, 1961-1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	56	56	51	52	56	45	43	38	38
Ford	39.1	3	-1.0	2.2	41	2.1	16.8	41.1	21.0
Shelby	39.4	2	0	2.3	42	2.0	16.1	40.8	21.3
L57-2222	42.9	1	+1.4	2.2	42	2.2	17.4	41.4	21.1

[1]Days earlier (-) or later (+) than Shelby which matured September 22, 122 days after planting. Clark (Group IV) matured +8.0.

Table 64. Three-year summary of yield and yield rank for Uniform Test III, 1961-1963.

Strain	Mean of 56 Tests	Freehold N.J.[1]	Georgetown Del.	Hoytville Ohio	Wooster Ohio	Columbus Ohio	Bluffton Ind.	Lafayette Ind.	Greenfield Ind.	Worthington Ind.	Evansville Ind.
Years Tested		1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961, 1963
Ford	39.1	36.9	27.8	34.9	27.0	40.4	41.1	40.4	36.0	43.2	41.2
Shelby	39.4	36.6	30.3	32.4	28.6	39.3	38.2	39.8	38.0	47.5	47.0
L57-2222	42.9	39.5	33.1	36.0	34.3	40.7	45.9	46.6	43.6	51.8	47.6
	Yield Rank										
Ford	3	2	3	2	3	2	2	2	3	3	3
Shelby	2	3	2	3	2	3	3	3	2	2	2
L57-2222	1	1	1	1	1	1	1	1	1	1	1

[1]Jamesburg, N.J., 1961.
[2]Irrigated.

Table 64. (Continued)

Strain	Urbana Ill.	Girard Ill.	Edge-wood Ill.	Eldo-rado Ill.	Carbon-dale Ill.	Ames Iowa	Ottum-wa Iowa	Colum-bia Mo.	Lin-coln Nebr.	Man-hat-tan Kans.	Man-hat-tan Kans.[2]
Years Tested	1961-1963	1961-1963	1961-1962	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963	1961-1963
Ford	47.5	43.7	42.2	42.4	32.2	41.1	44.5	33.6	49.4	35.7	39.8
Shelby	46.8	44.1	39.6	44.8	32.6	40.7	43.3	35.5	50.2	38.3	42.7
L57-2222	50.6	48.5	45.2	49.9	33.0	42.0	47.7	39.0	49.5	42.7	49.6
	Yield Rank										
Ford	2	3	2	3	3	2	2	3	3	3	3
Shelby	3	2	3	2	2	3	3	2	1	2	2
L57-2222	1	1	1	1	1	1	1	1	2	1	1

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Strain	Originating Agency	Origin	Generation Composited
Ford	Iowa A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F_9
Shelby	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F_8
CX198-H37	Ohio A.E.S. & U.S.R.S.L.	Perry x Monroe	F_5
CX282-H16	Ohio A.E.S. & U.S.R.S.L.	Mukden x Mandarin (Ottawa)	F_5
L60-1312	Ill. A.E.S. & U.S.R.S.L.	Shelby x Clark	F_3
L60-1327	Ill. A.E.S. & U.S.R.S.L.	Shelby x Clark	F_3
L60-1331	Ill. A.E.S. & U.S.R.S.L.	Shelby x Clark	F_3
L61-987	Ill. A.E.S. & U.S.R.S.L.	Harosoy (4) x P.I. 86024	F_3
L61-1112	Ill. A.E.S. & U.S.R.S.L.	Clark (3) x T117	F_3

Identification of Parent Strains

P.I. 86024	Introduced from Japan in 1930 by Dorsett and Morse.
T117	Selection from AK114 x P.I. 65394 (both from Manchuria).

Table 65. Regional testing history and descriptive data for the strains in Uniform Preliminary Test III, 1963.

Strain	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color
Ford	W	T	S	Y	Bl	Br
Shelby	P	T	D	Y	Bl	Br
CX198-H37	P	G	D	Y	Ib	Br
CX282-H16	P+W	G	D+S	Y	Ib+Bf	Br
L60-1312	P	T	D	Y	Bl	Br
L60-1327	P	T	D	Y	Bl	Br
L60-1331	P	T	D	Y	Bl	Br
L61-987	P	G	D	Y	Y	Br
L61-1112	P	T	D	Y	Bl	Br

CX198-H37 and CX282-H16 are both Phytophthora-resistant selections which also showed excellent lodging resistance. It is difficult to evaluate their yielding ability since they are several days earlier than the other strains in the test.

The three selections from Shelby x Clark prefixed L60- represent an attempt to combine Shelby maturity with Clark lodging resistance without yield loss, and these lines show some progress in that direction.

The remaining two strains are of backcross origin and might be designated a "late Harosoy" (L61-987) and an "early, determinate (Dt_2) Clark" (L61-1112). Since the number of backcrosses is few, three and two, respectively, there are probably many other gene differences between these and their recurrent parents. However, it is interesting that L61-987 resembled Harosoy except in maturity. L61-1112 was considerably shortened and perhaps somewhat improved in lodging resistance by the Dt_2 gene without a noticeable loss in yield.

Table 66. Summary of data for Uniform Preliminary Test III, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	12	12	11	10	12	8	8	8	8
Ford	39.8	6	-0.9	2.0	41	2.0	17.7	39.9	21.2
Shelby	42.9	3	0	2.1	43	1.8	16.8	39.9	21.4
CX198-H37	38.5	7	-3.9	1.4	37	1.9	15.9	39.1	22.0
CX282-H16	35.4	8	-4.6	1.6	41	1.8	16.3	40.0	21.4
L60-1312	43.6	2	+0.6	1.9	43	2.0	16.5	40.2	21.2
L60-1327	42.0	5	+1.7	2.0	42	1.8	17.1	39.9	21.2
L60-1331	42.5	4	+1.0	1.8	43	2.0	16.5	39.4	21.3
L61-987	35.3	9	+4.2	2.8	46	2.1	18.5	40.1	21.1
L61-1112	43.7	1	+2.5	1.8	36	1.9	16.4	40.6	20.7

[1]Days earlier (-) or later (+) than Shelby which matured September 24, 125 days after planting. Clark (Group IV) matured +7.3.

Table 67. Disease data for Uniform Preliminary Test III, 1963.

Strain	Bacterial Blight	Bacterial Pustule	Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew	
	Ill.	Ill.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.
	a[1]	a	n[1]	a	a	a	n	n
Ford	2	4	4	--	--	--	--	3.5
Shelby	3	4	4	--	--	--	--	3.0
CX198-H37	3	4	4	R	--	4	2.5	3.3
CX282-H16	3	4	4	R	--	4	2.5	3.3
L60-1312	3	4	4	S	--	4	2.0	2.8
L60-1327	2	4	4	S	R	4	3.5	2.5
L60-1331	3	3	4	S	R	5	2.0	2.8
L61-987	4	2	4	S	--	4	2.0	1.0
L61-1112	3	3	4	S	--	5	3.5	3.8

[1]a = artificial inoculation; n = natural infection.

Table 68. Yield and yield rank for Uniform Preliminary Test III, 1963.

Strain	Mean of 12 Tests	Georgetown Del.[1]	Hoytville Ohio *	Wooster Ohio	Columbus Ohio[1]	Lafayette Ind.	Worthington Ind.
Ford	39.8	24.6	36.3	32.3	41.0	47.2	40.1
Shelby	42.9	27.8	30.1	35.1	40.8	51.8	52.2
CX198-H37	38.5	22.1	30.4	33.0	37.0	48.7	47.1
CX282-H16	35.4	15.8	28.5	29.3	32.8	41.4	42.6
L60-1312	43.6	26.9	32.6	41.7	41.0	45.6	44.7
L60-1327	42.0	23.9	30.7	32.9	34.2	47.7	43.2
L60-1331	42.5	23.9	27.3	30.2	43.8	47.4	44.8
L61-987	35.3	19.3	36.9	30.7	37.9	41.8	37.5
L61-1112	43.7	18.8	35.3	34.4	41.5	52.9	51.5
Coef. of Var. (%)		14.7	23.6	12.5	13.0	11.3	8.1
L.S.D. (5%)		N.S.	N.S.	N.S.	N.S.	N.S.	8.4
Row Spacing (In.)		36	28	28	28	38	38

	Yield Rank						
Ford	6	3	2	6	3	6	8
Shelby	3	1	7	2	5	2	1
CX198-H37	7	6	6	4	7	3	3
CX282-H16	8	9	8	9	9	9	7
L60-1312	2	2	4	1	3	7	5
L60-1327	5	4	5	5	8	4	6
L60-1331	4	4	9	8	1	5	4
L61-987	9	7	1	7	6	8	9
L61-1112	1	8	3	3	2	1	2

*Not included in the mean.
[1]Irrigated.

Table 68. (Continued)

Strain	Urbana Ill.	Girard Ill.	Ames Iowa	Ottumwa Iowa	Columbia Mo.	Lincoln Nebr.[1]	Manhattan Kans.
Ford	51.5	40.1	47.4	47.2	30.4	45.2	30.2
Shelby	49.6	46.1	47.4	45.4	34.6	51.2	32.8
CX198-H37	47.1	39.3	42.8	41.2	28.2	46.7	28.6
CX282-H16	47.6	43.1	42.6	37.9	29.2	40.2	22.0
L60-1312	53.2	48.6	51.0	46.6	34.9	54.9	33.6
L60-1327	53.9	51.8	49.2	50.4	35.6	49.0	32.6
L60-1331	49.6	46.6	50.4	45.8	36.2	58.0	32.9
L61-987	42.9	32.9	42.4	38.4	35.1	36.8	28.2
L61-1112	52.2	49.7	51.6	49.4	36.8	50.3	35.2
Coef. of Var. (%)	5.9	7.2	4.6	9.0	--	9.2	6.6
L.S.D. (5%)	N.S.	7.4	5.0	9.3	--	7.2	N.S.
Row Spacing (In.)	40	38	40	40	38	40	40
	Yield Rank						
Ford	4	7	5	3	7	7	6
Shelby	5	5	5	6	6	3	4
CX198-H37	8	8	7	7	9	6	7
CX282-H16	7	6	8	9	8	8	9
L60-1312	2	3	2	4	5	2	2
L60-1327	1	1	4	1	3	5	5
L60-1331	5	4	3	5	2	1	3
L61-987	9	9	9	8	4	9	8
L61-1112	3	2	1	2	1	4	1

Table 69. Maturity, days earlier (-) or later (+) than Shelby, for Uniform Preliminary Test III, 1963.

Strain	Mean of 11 Tests	Georgetown Del.[1]	Hoytville Ohio	Wooster Ohio	Columbus Ohio[1]	Lafayette Ind.	Worthington Ind.
			*	*			
Ford	-0.9	+ 1	+1	-1	-3	+1	0
Shelby	0	0	0	0	0	0	0
CX198-H37	-3.9	- 4	-9	0	-4	-5	+ 3
CX282-H16	-4.6	- 6	-7	-1	-4	-6	+ 3
L60-1312	+0.6	+ 2	0	+3	-3	+1	+ 3
L60-1327	+1.7	+ 4	+3	+3	+2	+1	+ 4
L60-1331	+1.0	+ 3	+2	+4	-2	+2	+ 4
L61-987	+4.2	+ 3	+4	+3	+2	+2	+11
L61-1112	+2.5	+ 4	+4	+4	+1	+2	+ 1
Clark	+7.3	+11	--	--	+6	+6	+ 8
Date planted	5-22	6-6	5-14	5-21	5-14	5-16	6-1
Shelby matured	9-24	9-19	9-27	10-8	10-1	9-26	9-25
Days to mature	125	105	136	140	140	133	116

*Not included in the mean.
[1]Irrigated.

Table 69. (Continued)

Strain	Urbana Ill.	Girard Ill.	Ames Iowa	Ottumwa Iowa	Columbia Mo.	Lincoln Nebr.[1]	Manhattan Kans.
Ford	-1	-1	-3	-2	-2	0	0
Shelby	0	0	0	0	0	0	0
CX198-H37	-4	-6	-5	-7	-4	-7	0
CX282-H16	-5	-7	-5	-7	-4	-9	-1
L60-1312	0	0	+1	-1	+2	+2	0
L60-1327	0	+2	+1	0	+2	+2	+1
L60-1331	0	-1	+1	0	+2	+2	0
L61-987	+3	+8	+3	+6	+2	+5	+1
L61-1112	+3	+2	+2	+4	+5	+3	+1
Clark	+9	+9	+6	+8	+7	+5	+5
Date planted	5-13	5-24	5-16	5-10	5-31	5-22	5-30
Shelby matured	9-23	9-22	9-27	9-21	9-15	9-26	9-26
Days to mature	133	121	134	134	107	127	119

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Strain	Originating Agency	Origin	Generation Composited
Clark	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F_8
Clark 63	Ill. and Mo. A.E.S. & U.S.R.S.L.	[Clark (4) x S54-1714] x [Clark (6) x Blackhawk]	F_1
Kent	Purdue A.E.S. & U.S.R.S.L.	Lincoln x Ogden	F_7
C1266	Purdue A.E.S. & U.S.R.S.L.	Harosoy x C1079	F_6
C1278	Purdue A.E.S. & U.S.R.S.L.	Clark x C1069	F_6
C1282	Purdue A.E.S. & U.S.R.S.L.	Clark x C1069	F_6
K646	Kansas A.E.S. & U.S.R.S.L.	Unknown*	
L60-1385	Ill. A.E.S. & U.S.R.S.L.	L46-1503 x C985	F_8
Md59-285	Md. A.E.S. & U.S.R.S.L.	Lincoln x C985	F_6

Identification of Parent Strains

C985	F_4 line from Lincoln x Ogden; progenitor of Kent.
C1069, C1079	F_7 lines from C985.
L46-1503	F_5 line from Lincoln (2) x Richland.
S54-1714	Pustule-resistant selection from L49-4091 x Clark; in Uniform Test IV in 1957. L49-4091 is a pustule-resistant F_4 line from [F_3 Lincoln (2) x Richland] x (Lincoln x CNS).

*Records destroyed by fire in 1957.

Table 70. Regional testing history and descriptive data for the strains in Uniform Test IV, 1963.

Strain	Years in Uniform Test IV	Previous Regional Test	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color	Shattering*
Clark	13	None	P	T	D	Y	Bl	Br	1.0
Clark 63	2(3)	None	P	T	D	Y	Bl	Br	1.0
Kent	10	P.T.IV	P	T	D	Y	Bl	Br	2.0
C1266	2	P.T.IV	P	G	D	Y	Bf	Br	2.2
C1278	1	P.T.IV	P	T	S	Y	Bl	Br	1.2
C1282	1	P.T.IV	P	T	D	Y	Bl	Br	1.0
K646	2	P.T.IV	W	T	S	Y	Bl	Br	1.0
L60-1385	1	P.T.IV	P	G	S	Y	Ib	Br	1.0
Md59-285	2	P.T.IV	W	T	S	Y	Bl	Br	1.8

*Shattering scored at Newark, Del.

Clark 63 again averaged slightly below Clark in yield but was almost identical in other traits. C1266 did not outyield Clark as it did in 1962. K646 and Md59-285 again showed no advantage over Clark in mean performance.

All three new strains had higher mean yields than Kent and were several days earlier.

None of the strains in the test showed any improvement in seed quality and L60-1385, the highest yielding, was particularly deficient. In view of the importance of this trait in this area, none of the experimental strains look very promising as a commercial variety.

Table 71. Summary of data for Uniform Test IV, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	14	14	14	12	14	12	10	8	8
Clark	39.7	5	0	1.6	37	2.1	16.3	39.8	21.5
Clark 63	38.4	8	0	1.7	38	2.2	15.6	39.4	21.7
Kent	40.1	4	+6.6	1.4	37	2.5	17.0	40.1	21.8
C1266	39.7	5	+1.5	1.7	40	2.5	16.3	41.7	21.1
C1278	40.6	3	+2.2	1.5	37	2.4	17.7	40.3	21.3
C1282	40.9	2	+3.9	1.8	38	2.5	16.9	41.7	21.1
K646	37.7	9	+5.6	2.1	41	2.5	15.8	40.2	21.2
L60-1385	41.1	1	+3.6	1.6	39	2.8	18.4	40.6	22.6
Md59-285	39.6	7	+4.7	1.5	35	2.3	15.7	40.3	21.7

[1]Days earlier (-) or later (+) than Clark which matured September 23, 125 days after planting.

Table 72. Disease data for Uniform Test IV, 1963.

Strain	Bacterial Blight		Bacterial Pustule		Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew		Purple Stain
	Ill.	Ia.	Ill.	Ia.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.	Ind.
	a[1]	a[2]	a	a	n[1]	a	a	a	n	n	n
Clark	3	5	4	4	4	S	R	5	3.5	3.0	2
Clark 63	3	5	1	1	4	R	R	4	3.8	3.0	2
Kent	3	5	3	3	4	S	R	1	1.0	1.3	3
C1266	3	5	3	4	4	S	R	3	1.8	1.0	3
C1278	1	5	4	3	4	S	R	2	2.5	3.0	2
C1282	3	5	3	3	4	S	R	5	4.0	2.6	2
K646	3	5	4	4	4	S	--	3	4.0	1.7	2
L60-1385	4	5	3	3	4	S	--	4	2.0	1.0	3
Md59-285	4	5	2	3	4	S	R	4	2.8	3.8	2

[1]a = artificial inoculation; n = natural infection.
[2]Causal organism is a bacterium different than Ps. glycinea.

Table 73. Yield and yield rank for Uniform Test IV, 1963.

Strain	Mean of 14 Tests	Bridgeton N.J.[2]	Newark Del.	Georgetown Del.[3]	Columbus Ohio[3]	Worthington Ind.	Evansville Ind.	Edgewood Ill.[1]	Eldorado Ill.
				*				*	
Clark	39.7	35.2	53.4	21.5	48.3	45.7	49.3	41.1	48.5
Clark 63	38.4	33.2	53.3	20.3	42.4	44.0	45.4	49.4	44.6
Kent	40.1	28.5	51.5	29.3	42.7	46.0	48.0	43.1	42.1
C1266	39.7	30.2	53.4	23.4	41.1	38.6	48.3	48.9	46.1
C1278	40.6	25.7	53.7	15.3	42.3	51.3	52.1	48.7	46.7
C1282	40.9	34.3	55.1	29.5	40.3	47.0	49.5	42.1	48.0
K646	37.7	33.7	45.8	19.0	35.5	42.4	44.2	49.1	41.5
L60-1385	41.1	30.8	56.8	12.3	40.0	48.9	48.8	40.3	42.9
Md59-285	39.6	33.0	56.1	19.7	43.6	46.0	47.5	40.2	44.7
Coef. of Var. (%)		15.6	7.3	23.8	12.4	8.7	5.6	--	6.1
L.S.D. (5%)		8.0	5.7	7.5	N.S.	5.6	3.7	--	4.0
Row Spacing (In.)		40	36	36	28	38	40	37	36

	Yield Rank								
Clark	5	1	5	4	1	6	3	7	1
Clark 63	8	4	7	5	4	7	8	1	6
Kent	4	8	8	2	3	4	6	5	8
C1266	5	7	5	3	6	9	5	3	4
C1278	3	9	4	8	5	1	1	4	3
C1282	2	2	3	1	7	3	2	6	2
K646	9	3	9	7	9	8	9	2	9
L60-1385	1	6	1	9	8	2	4	8	7
Md59-285	7	5	2	6	2	4	7	9	5

*Not included in the mean.
[1]One replication.
[2]Three replications.
[3]Irrigated.

Table 73. (Continued)

Strain	Carbon-dale Ill.	Miller City Ill.	Colum-bia Mo.	Portage-ville Mo.	Powhat-tan Kans.	Manhat-tan Kans.	Manhat-tan Kans.[3] *	Mound Valley Kans.	Colum-bus Kans.
Clark	32.4	46.7	34.8	48.5	30.5	41.3	53.3	22.4	18.8
Clark 63	30.4	48.4	33.1	51.8	31.4	40.0	59.6	22.8	17.4
Kent	30.7	49.9	34.9	61.2	37.8	48.8	52.5	21.1	18.5
C1266	30.2	53.1	36.7	55.1	35.4	42.4	44.3	22.6	22.0
C1278	32.3	55.6	31.2	54.4	36.8	46.3	51.0	22.2	17.8
C1282	32.1	54.0	36.3	56.8	35.2	45.4	50.8	21.2	17.6
K646	32.7	47.7	34.2	50.7	36.4	44.0	55.0	21.1	17.3
L60-1385	33.5	59.6	35.5	56.7	33.5	47.6	48.9	19.3	22.1
Md59-285	30.6	55.7	32.3	50.7	35.2	42.9	49.8	20.7	14.9
Coef. of Var.(%)	--	11.2	--	7.5	11.0	14.5	14.3	9.5	--
L.S.D.(5%)	--	N.S.	--	5.9	N.S.	N.S.	N.S.	1.5	--
Row Sp.(In.)	40	38	38	38	40	40	36	40	40
	Yield Rank								
Clark	3	9	5	9	9	8	3	3	3
Clark 63	8	7	7	6	8	9	1	1	7
Kent	6	6	4	1	1	1	4	6	4
C1266	9	5	1	4	4	7	9	2	2
C1278	4	3	9	5	2	3	5	4	5
C1282	5	4	2	2	5	4	6	5	6
K646	2	8	6	7	3	5	2	6	8
L60-1385	1	1	3	3	7	2	8	9	1
Md59-285	7	2	8	7	5	6	7	8	9

Table 74. Maturity, days earlier (-) or later (+) than Clark, and lodging for Uniform Test IV, 1963.

Strain	Mean of 14 Tests	Bridgeton N.J.	Newark Del.	Georgetown Del.[1]	Columbus Ohio[1]	Worthington Ind.	Evansville Ind.	Edgewood Ill.	Eldorado Ill.
				*				*	
Clark	0	0	0	0	0	0	0	0	0
Clark 63	0	-3	0	+1	0	0	-1	0	0
Kent	+6.6	+4	+5	+3	+2	+7	+7	+ 5	+8
C1266	+1.5	0	+2	+2	+3	+7	+2	+ 3	+3
C1278	+2.2	+1	+2	+3	0	+3	+4	- 1	+1
C1282	+3.9	0	+4	+4	+3	+5	+6	+ 3	+5
K646	+5.6	+4	+3	+3	+1	+7	+6	+10	+7
L60-1385	+3.6	+2	+3	+3	+2	+5	+5	+ 5	+6
Md59-285	+4.7	+2	+3	+3	+1	+6	+5	+ 3	+6
Date planted	5-21	5-16	5-23	6-6	5-14	6-1	5-9	5-10	5-31
Clark matured	9-23	9-23	9-28	9-30	10-8	10-5	9-24	9-17	9-21
Days to mature	125	130	128	116	147	126	138	130	113
	Mean of 12 Tests	Lodging							
				*				*	
Clark	1.6	1.0	1.2	1.7	1.0	2.0	1.3	1.2	2.0
Clark 63	1.7	1.0	1.5	1.7	1.5	2.0	1.3	1.1	1.7
Kent	1.4	1.0	1.0	1.2	1.2	1.5	1.0	1.1	1.5
C1266	1.7	1.0	1.0	1.2	1.2	3.3	1.0	1.3	2.1
C1278	1.5	1.0	2.0	1.7	1.2	1.8	1.0	1.1	1.5
C1282	1.8	1.0	1.5	2.0	1.5	2.8	1.0	1.2	2.1
K646	2.1	2.0	3.0	2.0	1.5	2.3	2.0	1.1	2.0
L60-1385	1.6	1.0	1.7	2.5	1.0	1.8	1.0	1.2	1.9
Md59-285	1.5	1.0	2.0	1.7	1.0	1.3	1.0	1.2	1.4

*Not included in the mean.
[1]Irrigated.

Table 74. (Continued)

Strain	Carbon-dale Ill.	Miller City Ill.	Colum-bia Mo.	Portage-ville Mo.	Powhat-tan Kans.	Manhat-tan Kans.	Manhat-tan Kans.[1] *	Mound Valley Kans.	Colum-bus Kans.
Clark	0	0	0	0	0	0	0	0	0
Clark 63	0	+1	+1	- 1	0	0	0	+3	0
Kent	+6	+8	+9	+ 9	+7	+10	+6	+4	+6
C1266	0	+3	+3	- 1	0	0	+1	-1	0
C1278	+1	+4	+4	+ 1	+2	+ 2	+2	+2	+4
C1282	+4	+6	+7	+ 5	+3	+ 3	+2	-2	+5
K646	+5	+8	+9	+10	+7	+ 5	+6	-1	+7
L60-1385	+5	+6	+6	+ 3	+2	+ 3	+1	+2	0
Md59-285	+6	+8	+8	+ 7	+3	+ 3	+2	+3	+5
Date planted	5-8	5-9	5-31	5-17	6-6	5-30	5-28	5-22	5-22
Clark matured	9-9	9-10	9-23	9-14	10-2	10-1	10-4	9-23	9-13
Days to mature	124	124	115	120	118	124	129	124	114

	Lodging								
							*	*	*
Clark	1.0	3.8	2.5	1.2	1.2	1.3	2.1	1.0	1.0
Clark 63	1.0	4.2	2.3	1.2	1.2	1.3	2.0	1.0	1.0
Kent	1.0	2.9	2.4	1.2	1.2	1.4	2.1	1.0	1.0
C1266	1.0	3.2	2.4	1.6	1.2	1.3	1.5	1.0	1.0
C1278	1.0	2.5	2.4	1.0	1.3	1.3	1.5	1.0	1.0
C1282	1.0	3.7	2.4	1.3	1.2	1.5	1.9	1.0	1.0
K646	1.5	3.7	3.1	1.3	1.3	1.5	2.4	1.0	1.0
L60-1385	1.0	3.0	2.5	1.3	1.2	1.3	1.6	1.0	1.0
Md59-285	1.5	2.6	2.4	1.1	1.3	1.4	1.7	1.0	1.0

Table 75. Plant height and seed quality for Uniform Test IV, 1963.

Strain	Mean of 14 Tests	Bridgeton N.J.	Newark Del.	Georgetown Del.[1] *	Columbus Ohio[1]	Worthington Ind.	Evansville Ind.	Edgewood Ill. *	Eldorado Ill.
Clark	37	28	33	28	40	44	44	40	45
Clark 63	38	31	34	28	41	47	44	41	47
Kent	37	33	35	26	41	46	43	36	45
C1266	40	32	36	28	41	48	47	45	50
C1278	37	28	36	24	40	45	45	39	46
C1282	38	33	35	28	42	45	45	38	45
K646	41	35	42	27	45	48	42	46	47
L60-1385	39	33	38	25	43	47	47	43	47
Md59-285	35	27	35	24	39	43	38	36	41
	Mean of 12 Tests	Seed Quality							
		*		*	*			*	
Clark	2.1	1.0	1.2	2.6	1.0	2.5	2.5	3.2	3.4
Clark 63	2.2	1.0	1.7	2.5	1.0	2.5	2.5	3.2	3.4
Kent	2.5	1.0	1.2	2.3	1.0	2.5	3.0	3.2	4.0
C1266	2.5	1.0	1.7	2.5	1.0	3.0	3.0	3.3	4.0
C1278	2.4	1.0	1.5	2.2	1.0	2.5	2.5	2.5	3.1
C1282	2.5	1.0	1.6	2.2	1.0	2.0	3.0	4.0	3.5
K646	2.5	1.0	2.8	2.5	1.0	2.5	3.0	4.3	3.5
L60-1385	2.8	1.0	2.6	3.0	1.0	3.0	3.0	3.5	5.0
Md59-285	2.3	1.0	1.8	1.5	1.0	2.5	2.0	2.8	3.9

*Not included in the mean.
[1]Irrigated.

Table 75. (Continued)

Strain	Carbon-dale Ill.	Miller City Ill.	Colum-bia Mo.	Portage-ville Mo.	Powhat-tan Kans.	Manhat-tan Kans.	Manhat-tan Kans.[1] *	Mound Valley Kans.	Colum-bus Kans.
Clark	33	44	35	46	29	36	45	25	31
Clark 63	34	43	36	45	30	36	49	27	31
Kent	34	43	34	46	31	36	45	26	29
C1266	38	47	37	50	34	40	48	25	32
C1278	35	46	33	46	32	36	48	26	28
C1282	37	45	34	48	30	38	48	26	30
K646	40	45	38	49	36	41	49	26	33
L60-1385	37	48	36	46	31	39	48	24	32
Md59-285	32	43	32	43	28	33	45	30	26

	Seed Quality								
Clark	2.0	3.1	1.5	2.1	1.4	1.3	1.2 *	2.0	2.0
Clark 63	2.0	3.5	1.5	2.0	1.5	1.2	1.3	2.0	2.0
Kent	4.0	2.9	1.5	2.2	1.6	1.5	1.3	2.0	3.0
C1266	4.0	3.0	2.5	2.3	1.3	1.4	1.2	2.0	2.0
C1278	3.0	3.1	2.0	2.0	1.4	1.4	1.3	3.0	3.0
C1282	4.0	4.1	1.5	2.3	1.2	1.4	1.2	2.0	3.0
K646	3.0	3.3	2.0	2.1	1.7	1.6	1.3	2.0	3.0
L60-1385	4.0	3.3	2.5	2.1	1.5	1.4	1.3	3.0	2.0
Md59-285	3.0	2.8	2.0	1.8	1.8	1.4	1.4	2.0	3.0

Table 76. Percentages of protein and oil for Uniform Test IV, 1963.

Strain	Mean of 8 Tests	Bridgeton N.J.	Georgetown Del.[1] *	Columbus Ohio[1]	Evansville Ind.	Eldorado Ill.	Miller City Ill.	Columbia Mo.	Powhattan Kans.	Manhattan Kans.
Clark	39.8	41.6	42.4	40.4	39.9	40.9	39.4	41.1	38.1	37.1
Clark 63	39.4	39.8	42.5	40.5	40.3	39.6	39.4	41.1	37.5	36.9
Kent	40.1	41.1	42.7	40.1	41.3	41.1	39.4	41.1	38.7	37.6
C1266	41.7	42.9	44.4	42.6	42.1	42.2	41.4	43.6	40.1	39.0
C1278	40.3	40.9	43.2	40.7	41.1	40.6	40.3	42.5	38.5	37.7
C1282	41.7	41.7	44.8	42.3	42.3	42.5	41.4	44.6	40.5	38.4
K646	40.2	39.8	41.9	40.8	41.6	42.3	40.0	41.1	38.5	37.3
L60-1385	40.6	42.0	43.1	39.7	42.1	41.7	41.0	42.2	37.7	38.1
Md59-285	40.3	41.6	42.1	40.4	40.6	41.1	39.8	41.1	39.5	37.9
	Mean of 8 Tests	Percentage of Oil								
Clark	21.5	21.3	21.3 *	20.4	22.0	21.2	21.8	21.0	22.1	22.5
Clark 63	21.7	21.3	20.8	21.1	22.4	21.6	22.0	20.8	22.3	22.0
Kent	21.8	21.1	20.7	21.0	22.5	21.4	21.4	21.5	22.7	22.7
C1266	21.1	20.4	20.1	19.7	21.6	21.0	21.3	21.0	21.6	22.4
C1278	21.3	20.6	20.9	20.3	22.1	21.5	21.7	21.1	21.0	22.2
C1282	21.1	21.7	20.3	20.1	20.8	21.0	21.1	20.5	21.3	22.5
K646	21.2	21.2	20.7	20.5	21.3	19.9	21.4	20.7	21.7	22.5
L60-1385	22.6	21.9	21.4	21.6	23.1	21.7	22.9	22.6	22.9	23.7
Md59-285	21.7	21.8	20.5	21.2	20.8	21.7	22.0	22.1	21.8	22.2

*Not included in the mean.
[1]Irrigated.

UNIFORM PRELIMINARY TEST IV - 1963

Strain	Originating Agency	Origin	Generation Composited
Clark	Ill. A.E.S. & U.S.R.S.L.	Lincoln (2) x Richland	F_8
Kent	Purdue A.E.S. & U.S.R.S.L.	Lincoln x Ogden	F_7
C1306	Purdue A.E.S. & U.S.R.S.L.	Clark x C1069	F_6
C1311	Purdue A.E.S. & U.S.R.S.L.	Wabash x C1069	F_6
C1316	Purdue A.E.S. & U.S.R.S.L.	Rogue in Kent	
S3	Mo. A.E.S. & U.S.R.S.L.	[Clark 63 x L46-2132-A14 (2)] x [L49-4091 x Clark (7)]	F_1
S61-386	Mo. A.E.S. & U.S.R.S.L.	Clark 63 x L46-2132-A14 (2)	F_3
S62-4064	Mo. A.E.S. & U.S.R.S.L.	Clark (3) x L46-1503-4	F_3
UD1020-8-2	Del. A.E.S. & U.S.R.S.L.	F.C. 33243 x D49-2491	F_5
UD1112-9-1	Del. A.E.S. & U.S.R.S.L.	F.C. 33243 x D49-2491	F_5

Identification of Parent Strains

C1069	F_7 line from Lincoln x Ogden; from same F_4 line as Kent.
D49-2491	Sel. from S100 x CNS; a sib of Lee.
F.C. 33243	Rogue in Lincoln, selected by H. J. Anderson, Calamus, Iowa; resistant to root knot.
L46-1503	F_5 line from Lincoln (2) x Richland.
L46-2132-A14	Sel. from Lincoln (2) x Richland; sib of Clark and Shelby.
L49-4091	Pustule-resistant F_4 line from [F_3 Lincoln (2) x Richland] x (Lincoln x CNS).

Table 77. Regional testing history and descriptive data for the strains in Uniform Preliminary Test IV, 1963.

Strain	Flower Color	Pubescence Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Pod Color
Clark	P	T	D	Y	Bl	Br
Kent	P	T	D	Y	Bl	Br
C1306	P	T	--	Y	Bl	Br
C1311	W	G	S	Y	Bf	T
C1316	P	G	D	Y	Ib	Br
S3	W	T	D	Y	Bl	Br
S61-386	P	T	--	Y	Bl	Br
S62-4064	W	G	S	Y	Lbf	Br
UD1020-8-2	P+W	G	S	Y	G+Y	T
UD1112-9-1	P	G	S	Y	G	T

None of the experimental strains had as high a mean yield as Kent, but two of them, C1306 and C1311, yielded nearly as well and were several days earlier. These two also tended to have better seed quality than the check varieties.

The three S strains are Clark backcrosses and performed as well or better than Clark in most respects. S62-4064 is of interest since it carries the genes w for white flowers and t for gray pubescence and therefore has buff hilum color.

UD1112-9-1 was the better of the two root knot-resistant strains, yielding almost as well as Clark but maturing almost as late as Kent.

Table 78. Summary of data for Uniform Preliminary Test IV, 1963.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	8	8	8	8	8	8	5	5	5
Clark	38.9	8	0	1.9	38	2.1	16.3	40.3	21.7
Kent	44.2	1	+ 7.0	1.4	38	2.5	17.5	41.0	21.4
C1306	43.6	2	+ 2.1	1.6	38	1.9	17.4	40.8	21.9
C1311	42.7	3	+ 4.4	1.5	42	1.8	15.6	40.8	21.3
C1316	39.0	7	+ 3.1	1.5	38	2.4	16.7	41.0	20.6
S3	39.6	6	- 0.6	1.9	39	2.2	15.5	40.2	21.5
S61-386	40.3	5	+ 1.6	1.9	39	2.2	14.5	40.0	21.5
S62-4064	40.7	4	+ 2.6	1.7	38	1.9	16.0	39.8	22.2
UD1020-9-2	36.0	10	+10.0	2.5	48	2.6	15.5	40.1	21.6
UD1112-9-1	38.4	9	+ 5.6	1.8	42	2.5	14.6	40.3	21.7

[1]Days earlier (-) or later (+) than Clark which matured September 23, 123 days after planting.

Table 79. Disease data for Uniform Preliminary Test IV, 1963.

Strain	Bacterial Blight	Bacterial Pustule	Brown Stem Rot	Phytophthora Rot	Frogeye Ind.		Downy Mildew		Purple Stain
	Ill.	Ill.	Ill.	Ind.	Race 1	Race 2	Ind.	Del.	Ind.
	a[1]	a	n[1]	a	a	a	n	n	n
Clark	3	4	4	--	--	--	--	3.0	--
Kent	3	3	4	--	--	--	--	1.3	--
C1306	2	3	4	S	R	1	2.0	2.5	2
C1311	3	3	5	S	R	1	3.0	3.0	2
C1316	3	4	4	R	R	1	2.0	3.3	--
S3	3	2	4	R	R	4	3.0	2.5	--
S61-386	3	2	4	Seg.	R	4	3.0	2.5	--
S62-4064	4	3	4	S	--	4	2.5	3.5	--
UD1020-8-2	4	3	4	S	--	4	1.0	1.0	--
UD1112-9-1	3	2	4	S	--	4	1.0	1.0	--

[1]a = artificial inoculation; n = natural infection.

Table 80. Yield and yield rank for Uniform Preliminary Test IV, 1963.

Strain	Mean of 8 Tests	Georgetown Del.[1]	Worthington Ind.	Evansville Ind.	Eldorado Ill.	Carbondale Ill.	Miller City Ill.	Columbia Mo.	Portageville Mo. *	Manhattan Kans.
Clark	38.9	26.3	40.4	48.7	42.9	27.7	51.2	36.0	53.6	38.3
Kent	44.2	31.2	49.4	51.4	48.4	28.3	59.8	40.6	61.6	44.7
C1306	43.6	29.6	50.8	51.9	54.4	30.0	58.6	38.1	53.6	35.6
C1311	42.7	29.9	44.1	48.6	45.3	30.2	63.7	41.1	54.3	38.6
C1316	39.0	28.1	42.4	44.3	43.2	25.8	59.2	35.2	52.0	33.4
S3	39.6	30.9	43.1	46.5	45.8	28.0	46.9	37.4	56.9	38.1
S61-386	40.3	28.0	47.0	46.3	46.9	30.8	46.9	41.0	55.3	35.3
S62-4064	40.7	30.3	44.0	46.8	46.9	31.6	48.5	37.5	55.5	39.6
UD1020-8-2	36.0	22.7	33.2	47.0	36.6	28.4	50.6	34.5	53.3	34.9
UD1112-9-1	38.4	30.6	39.3	43.9	41.1	26.4	58.9	32.4	53.9	34.4
Coef. of Var. (%)		11.7	8.7	4.0	6.7	--	10.8	--	11.7	8.7
L.S.D. (5%)		N.S.	8.5	4.3	6.8	--	N.S.	--	--	N.S.
Row Spacing (In.)		36	38	40	36	40	38	38	38	40

	Yield Rank									
Clark	8	9	8	3	8	8	6	7	7	4
Kent	1	1	2	2	2	6	2	3	1	1
C1306	2	6	1	1	1	4	5	4	7	6
C1311	3	5	4	4	6	3	1	1	5	3
C1316	7	7	7	9	7	10	3	8	10	10
S3	6	2	6	7	5	7	9	6	2	5
S61-386	5	8	3	8	3	2	9	2	4	7
S62-4064	4	4	5	6	3	1	8	5	3	2
UD1020-8-2	10	10	10	5	10	5	7	9	9	8
UD1112-9-1	9	3	9	10	9	9	4	10	6	9

*Not included in the mean.
[1]Irrigated.

Table 81. Maturity, days earlier (-) or later (+) than Clark, for Uniform Preliminary Test IV, 1963.

Strain	Mean of 8 Tests	Georgetown Del.[1]	Worthington Ind.	Evansville Ind.	Eldorado Ill.	Carbondale Ill.	Miller City Ill.	Columbia Mo.	Portageville Mo. *	Manhattan Kans.
Clark	0	0	0	0	0	0	0	0	0	0
Kent	+ 7.0	+7	+ 8	+6	+7	+ 6	+ 8	+9	+10	+5
C1306	+ 2.1	+3	+ 1	+3	+2	0	+ 2	+4	+ 4	+2
C1311	+ 4.4	+7	+ 8	+1	+3	+ 1	+ 9	+6	+ 7	0
C1316	+ 3.1	+7	+ 7	+2	-1	+ 1	+ 5	+4	+ 7	0
S3	- 0.6	0	- 1	-2	-1	- 1	0	-1	+ 1	+1
S61-386	+ 1.6	+5	0	+1	+2	+ 1	+ 3	+1	+ 5	0
S62-4064	+ 2.6	+6	+ 6	+1	0	+ 2	+ 2	+2	+ 5	+2
UD1020-8-2	+10.0	+8	+10	+6	+9	+13	+23	+9	+16	+2
UD1112-9-1	+ 5.6	+7	+ 8	+2	+5	+ 6	+11	+5	+13	+1
Date planted	5-23	6-6	6-1	5-9	5-31	5-8	5-9	5-31	5-17	5-30
Clark matured	9-23	9-28	10-4	9-25	9-22	9-9	9-11	9-24	9-13	10-1
Days to mature	123	114	125	139	114	124	125	116	119	124

*Not included in the mean.
[1]Irrigated.

SOYBEAN DISEASE INVESTIGATIONS IN 1963

Data for this and other sections of the Report were furnished by:

K. L. Athow, Indiana
D. W. Chamberlain, Illinois
H. W. Crittenden, Delaware
J. M. Dunleavy, Iowa
A. F. Schmitthenner, Ohio

Disease survey data are listed in the following table for each state in which a disease survey was made. The disease data are calculated as follows: severity index is determined on a 1 (no disease) to 5 (very severe infection) basis; prevalence index is based on the percent of a field infected on a 1 (1-25%), 2 (26-50%), 3 (51-75%), and 4 (76-100%) basis. The disease index = percent of fields showing infection x average severity x average prevalence. Averages are based on infected fields only.

Four diseases, namely, Phytophthora rot, stem canker, purple stain, and pod and stem blight, are rated in a separate category because of either their destructive potential or their effect on the value of seed. The severity classes for these diseases are determined as follows: 1 (no diseased plants in the field, or no diseased seed in sample); 2 (1-3% of the plants diseased, or seed diseased); 3 (4-8% of plants or seed diseased); 4 (9-19% of plants or seed diseased); and 5 (20-100% of plants or seed diseased). Prevalence rating is determined by the same method for all diseases.

SUMMARY OF DISEASE SURVEY DATA - 1963

Disease	Percent of Fields Infected	Average Severity	Average Prevalence	Disease Index
	Illinois, August 5-7			
Bacterial Blight	55	2.6	3.4	4.9
Bacterial Pustule	49	2.3	3.5	3.9
Downy Mildew	40	2.5	3.9	3.9
Brown Spot	33	2.0	3.7	2.4
Brown Stem Rot	13	2.5	1.7	0.6
Phytophthora Rot	13	trace	--	--
Bud Blight	10	trace	--	--
Yellow Mosaic	9	trace	--	--
	Iowa, September 10-11			
Bacterial Blight	94	2.5	2.4	5.6
Stem Canker	60	2.6	1.0	1.6
Bacterial Wilt	58	2.4	1.8	2.5
Downy Mildew	55	2.4	2.2	2.9
Root Rot	50	2.3	2.0	2.3
Brown Stem Rot	47	2.9	2.6	3.5
Bacterial Pustule	42	2.5	2.2	2.3
Brown Spot	26	2.0	1.5	0.8
Bud Blight	5	2.0	1.0	0.1

SUMMARY OF DISEASE SURVEY DATA - 1963 (Continued)

Disease	Percent of Fields Infected	Average Severity	Average Prevalence	Disease Index
	Indiana, July 30-August 8			
Bacterial Pustule	81	2.6	2.8	5.9
Brown Spot	76	3.0	1.8	4.1
Bacterial Blight	63	2.8	2.9	5.1
Downy Mildew	34	2.7	3.4	3.1
Phytophthora Rot	19	3.2	1.9	1.2
Bud Blight	15	2.7	2.1	0.9
	Ohio, September 5-6			
Bacterial Pustule	61	2.1	3.3	4.1
Bacterial Blight	43	2.2	4.0	3.9
Stem Canker	46	2.1	1.9	1.8
Downy Mildew	32	2.1	4.0	2.7
Seedling Kill*	29	2.5	2.5	1.8
Phytophthora Rot	11	3.7	1.7	0.7

*Because of the season, it was not possible to distinguish Pythium from Phytophthora seedling kill.

REGIONAL DISEASE REACTION TEST - 1963

Strain	Bacterial Blight		Strain	Bacterial Pustule	
	Ill. a[1]	Ia. a		Ill. a	Ia. a
P.I. 68521	2	2	P.I. 90763	1	2
68554	2	2	96333	1	1
68708	1	2	153213	4	1
90763	3	3	215693	1	1
153213	2	4	L57-2222	1	1
P.I. 166147	2	3	Harosoy 63	3	3
L56-1513***	3	3	L2	2	3
L57-1885***	2	2	Clark*	4	3
P.I. 181550***	4	5	Clark 63	1	1
248511	5	5	Scott	2	2
P.I. 248514	4	5	Lee**	1	1
Hawkeye	3	3	P.I. 181550	2	2
Flambeau**	3	4	248511	3	3
Lincoln*	4	4	248514	3	3

*Susceptible check variety. **Resistant check variety. ***Delaware strains from H. W. Crittenden.
[1]a = artificial inoculation.

WEATHER CONDITIONS AND GENERAL GROWTH RESPONSES AT MOST OF THE NURSERY LOCATIONS DURING THE 1963 SEASON

The following general notes compiled from information supplied by the cooperators may be helpful in interpreting performance of the nurseries at individual locations.

Temperature and rainfall at most of the nursery locations for the 1963 season are presented in graphs at the end of this section of the report. The daily maximum and minimum temperatures and rainfall are taken from "Climatological Data" published by the Weather Bureau.

Ottawa, Ontario, Canada. All tests were planted on May 21, 1963. Early season (late May - early June) temperatures and rainfall were near normal. Germination was good and emergence uniform. Prolonged periods of above normal temperatures, and below normal rainfall occurred in late June and late July. The tests received an estimated one-half inch of irrigation water in each of these periods. August and September temperatures were below normal, and rainfall above normal.

Soil Type: Grenville loam.
Fertilizer Application: 500 lbs. 8-16-16.

Ridgetown, Ontario, Canada. The soybean growing season was below normal in temperature and precipitation for all months. Vine growth was excellent but pod development poor. Differences in maturity were exaggerated above any other season.

Soil Type: Brookston clay loam.
Fertilizer Application: 3-100-100.

Guelph, Ontario, Canada. A prolonged drouth extending from early June through to harvest severely affected growth. The moisture deficit from March 31 to November 1 was approximately 11 inches. The excellent location of the tests and the high fertility level produced good average yields, however.

Soil Type: Guelph loam.
Fertilizer Application: 300 lbs. 0-12-24.
Soil Analysis: pH, 7.3; OM, 4.0%; N, 45; P, 1050; K, 500; Ca, H+; Mg, 250.

Harrow, Ontario, Canada. Stands were good and weed control was aided by a pre-emergence application of Amiben at 2 lbs./A. Growth was fair; rainfall was 28 percent below the long-term average of 12.6 inches for May through September. There was no rain from June 14 to July 13 which contributed to the effect of soil variation within the tests. Very little disease was present. A fairly general infestation of spider mites was observed in late August. Conditions were warm and dry during the ripening and harvesting period.

Soil Type: Brady sandy loam.
Fertilizer Application: 500 lbs./A. 5-10-10 following oats-alfalfa in a 2-year rotation.
Soil Analysis: pH, 5.7; OM, 1.5%; P, 144 V.H.; K, 220 M.; Ca, 1200 H.; Mg, -- V.L.

Freehold, New Jersey. June, July, and August were about normal in temperature but were two to three inches short on rainfall each month. Except for showers on July 15 and August 20, all other precipitation was ineffective for plant growth. Only a good, deep soil saved the crop.

September had normal rain but was cold (-3.7° departure) and contributed to delayed and uneven maturity. October temperatures were well above normal and helped to get the crop ready for harvest.

Soil Type: Sandy loam.
Fertilizer Application: 200 lbs. 0-20-20.
Soil Analysis: pH, 6.0; P, 15; K, 65; Mg, 75.

Bridgeton, New Jersey. Growing conditions were normal for June both as to temperature and rainfall. July was 0.8° below normal and 2.14" short on rain, which affected plots on the thinner soils. August was 2.5° below normal and 1.5" short on rain. The distribution of rainfall in both July and August was such that it was not very effective in helping the soybeans. September was 4.4° below normal but had average rainfall. The below normal temperatures delayed maturity but they also relieved the effect of the moisture shortage.

Soil Type: Sandy loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.2; P, 15; K, 90; Mg, 80.

Newark, Delaware. Test plots were planted early in 1963 in a weed-free field following alfalfa which was plowed down early in the spring. Although rainfall throughout the season was deficient, the soil moisture conditions were excellent. The significant moisture was perfectly timed, coming early in the season, at flowering, and four weeks prior to harvest. Growth was about average. The pod set, however, was considerably greater than is usually evidenced. Temperatures were near normal.

Soil Type: Matapeake silt loam.
Fertilizer Application: 0-30-60.
Soil Analysis: pH, 5.6; OM, 3.0%; P, 261; K, 411; Mg, 422.

Georgetown, Delaware. The lack of sufficient soil moisture was primarily responsible for the poor growth, small seed size, and low yields obtained in the 1963 trials. No significant moisture was obtained prior to flowering when the tests were irrigated. Three weeks later they were irrigated again. Pod set was satisfactory. The only heavy rain of the season was obtained in mid-September. The light showers that occurred throughout the summer months were sufficient to maintain minimum growth but not to produce a satisfactory soybean crop. Temperatures were normal.

Soil Type: Norfolk sandy loam.
Fertilizer Application: 0-45-90.
Soil Analysis: pH, 6.2; OM, 1.5%; P, 294; K, 112; Mg, 179; P_2O_5, H; K_2O, M.

Hoytville, Ohio. The planting season began with rainfall deficiency and nearly exhausted subsoil moisture. Below normal rainfall and temperatures existed during May with a frost (26° F.) during the last week. Rainfall during June and July was only slightly below normal. August and September had much below normal rainfall, however, temperatures were also below normal with drouth injury being held to a minimum. The yield of Harosoy in all test plots was 40.5 bus./a. compared to a 5-year average (1959-63) of 32.9 bus./a.

Soil Type: Hoytville clay.
Fertilizer Application: 800 lbs./A. 0-20-20.
Soil Analysis: pH, 6.0; OM, 3.5; P, 86; K, 360; Mg, 560; Mn, 11; Boron, 1.

Wooster, Ohio. Subsoil moisture was nearly exhausted at the beginning of the growing season. Except for the first two weeks of June and the first and last week of August, soil moisture was much below normal during the entire growing season. An unseasonably late frost occurred during the last week of May. Except for the first part of June, temperatures were below normal throughout the growing season. The yield of Harosoy in all test plots was 36.3 bus./a. compared to a 5-year average (1959-63) of 36.1 bus./a.

Soil Type: Wooster silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.6; OM, 2.0; P, 72; K, 114; Mg, 360; Mn, 509; Boron, .5.

Columbus, Ohio. The spring planting season started with the subsoil moisture almost completely exhausted. May was characterized by below normal rainfall and near normal temperatures except the last week during which a slight frost occurred. Soil moisture continued to be deficient in June with near normal temperatures. All plots were irrigated (2") on June 26. During July, August, and September rainfall was light but well distributed and together with below normal temperatures kept the soybeans from being damaged extensively by drouth. The yield of Harosoy was 38.5 in all tests compared to a 5-year average (1959-63) of 38.4 bus./a.

Soil Type: Miami-Brookston silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.8; OM, 3.5; P, 230; K, 276; Mg, 540; Mn, 168; Boron, 1.

Bath, Michigan. This nursery was planted May 27 and good stands were obtained. On June 21-22, a severe frost wilted the tops down to just above the cotyledons. The morning of the 22nd the area was irrigated, but too late to save the plants. However, it was decided to wait before plowing up the area. By June 26, the buds just above the cotyledons began to grow. The area was irrigated as needed. Mn was applied once by boom when the plants were small, and once by air blast when the plants were rather large. The second spraying tended to damage the upper leaves, causing browning. This condition gradually was masked out as new leaves appeared. The plots were kept weeded (by hand) throughout the season. Colored slides were taken at intervals to show the progress of regrowth. Varieties showed distinct differences in survival. Counts of live and dead plants were made on July 18 and again of those which survived until harvest.

The first fall frost that caused permanent wilting of the leaves was on September 14. No varieties were fully mature at that time. By September 24, the earlier lines were dried down enough to call them mature and so were pulled. The remainder were pulled October 1. All lots had to be dried by heat.

Soil Type: Houghton muck.
Fertilizer Application: 300 lbs./A. 5-10-20 without minor elements was broadcast before final preparation for planting.

East Lansing, Michigan. This area had been in Sudan grass the year before. There was a wet area in the north quarter of the area which prevented early preparation of the soil. Planting was finished June 6 immediately followed by a heavy rain (3") with some run-off. The wet soil and adverse breezes kept us from applying Amiben. However, weeds were no great problem. The growing season had some showers but not enough for record yields.

A late frost allowed most varieties to mature. Maturity was prolonged by the cool spells we had in September.

Soil Type: Loam to sandy loam.
Fertilizer Applications: 300 lbs./A. 5-20-20 before spring plowing.
300 lbs./A. 5-20-20 just before planting.
Soil Analysis: pH, 6.4-7.8; OM, 3.07-4.69%; P, 16-21; K, 64-96; Ca, 2200-4030; Mg, 182-416.

Dundee, Michigan. The previous crop was corn which had been well fertilized and treated with Atrazine. Apparently there was enough residual effect to cause stunting and stand reduction in some rows. After a rather long dry spell, showers promoted the growth of velvet leaf, lambs quarters, and ragweed which were pulled out before harvest. Fall weather was good, allowing ample opportunity for the soybeans to mature.

Soil Type: Loam to sandy loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.0-6.4; P, 29-39; K, 168-248; Ca, 3458-4700; Mg, 304-432.

Walkerton, Indiana. Planting was timely, May 31, with some delay in emergence due to low soil moisture and a cloddy seedbed. The growing-season temperatures were below normal with August unusually cool and part of June very hot. Growing-season precipitation was below normal except July, which had twice normal with 8.29 inches. Growth and yields were below normal. Drouth effects were very evident. Harvest conditions were very good. Phytophthora was the most prevalent disease and occurred with severity in irregular areas of the plot.

Soil Type: Maumee loam.
Fertilizer Application: 350 lbs./A. 60% potash broadcast.
Soil Analysis: pH, 6.8; P, 92; K, 123.

Bluffton, Indiana. Planting was timely on May 23 and emergence was good. Growing-season temperatures were generally below normal with August rather cool and part of June very hot. Only July had somewhat above normal precipitation with 5.28 inches. September was unusually dry with 0.65 inches of rain. Growth was fairly good with average yields of 40 and 33 bushels per acre, respectively, for Groups II and III, or about 10% and 25% below normal. Phytophthora was scattered throughout the plot with severity occurring especially in M402. Brown stem rot was severe in all plants examined and probably, along with drouth, caused the marked reduction in yields, especially in the later maturing Group III varieties. Harvest conditions were very good.

Soil Type: Nappanee silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.6; P, 82; K, 215.

Lafayette, Indiana. Planting was timely on May 16 and May 20 in a good seedbed. Emergence was good. June growth was poor but final height was the tallest ever. Growing-season precipitation was only 12.2 inches with only 1.36 inches in May and 0.74 inches in September. July rains were abundant and much needed. June temperatures were very high. Late July and August were very cool and ideal for development of brown stem rot which was very abundant and damaging. Considerable stem canker and bud blight were present throughout the test area. Downy mildew was moderate. Harvest conditions were ideal.

Soil Type: Chalmers silty clay loam.
Fertilizer Application: 150 lbs./A. 7-28-14 in the row.
Soil Analysis: pH, 6.4; P, 193; K, 125.

Greenfield, Indiana. Planting was timely on May 25. Emergence and stands were somewhat irregular due to soil crusting. Temperatures were high in June and below normal in late July and August. Precipitation was normal with 3.95 inches in July but well below normal in May and June and only 0.20 inches in September. Although soybeans followed two years of a clover and weed mixture, Phytophthora was observed to a limited extent scattered throughout the plot. There was considerable bud blight throughout the plot. Brown spot and bacterial blight were observed also in moderate amounts. Harvest conditions were excellent.

Soil Type: Brookston-Crosby Complex.
Fertilizer Application: 300 lbs./A. 5-20-20 in row; 90 lbs./A. N broadcast prior to planting.
Soil Analysis: pH, 6.4; P, 83; K, 176.

Worthington, Indiana. Planting was June 1, 10 to 14 days late, due to continued rains in May. Emergence and growth were excellent. June was hot with 10 days of 90° F. or above. Late July and all of August were rather cool with the average maximum monthly temperatures 4° and 5° F. below normal. Precipitation was normal in May, June, July, and August, but only 1.12 inches occurred in September. Maturity was irregular with green-stemmed plants in abundance which caused some threshing difficulties. Lodging was above average. Yields, generally, were good to above average. Downy mildew was heavy with a 4-5 rating on susceptible varieties. Bacterial pustule was rated 3-4 on susceptible varieties. Brown stem rot was prevalent. Phytophthora was not observed.

Soil Type: Genessee silt loam.
Fertilizer Application: Manured to about 4 T/A.
Soil Analysis: pH, 7.6; P, 307; K, 215.

Evansville, Indiana. Planting was about 6 days earlier than usual on May 9. Emergence was good but growth slow and final height about 4 to 6 inches below normal. Plants were the shortest and lodging the least ever observed at this location. Average yields, however, were only about 10 - 12 percent below normal and were undoubtedly helped by early planting. Precipitation was -.57, -2.51, -0.60, and -1.87 inches below normal for May, June, August, and September, respectively. July precipitation was 5.20 inches, 1.88 inches above normal. The growing season was hot with 44 days of 90° F. or above equally distributed in June, July, and August. Downy mildew rated about 4 on susceptible varieties throughout the plot. There was scattered killing throughout the plot due to Rhizoctonia and/or Phytophthora. There was some scattered stem canker. Harvest was early and harvest conditions very good.

Soil Type: Montgomery silty-clay loam.
Fertilizer Application: 250 lbs./A. 4-12-12 in the row plus 10 lbs./A. of Manganese sulfate spray in late June.
Soil Analysis: pH, 6.7; P, 204; K, 183.

Ashland, Wisconsin. The growing season was characterized by above normal temperatures and below normal rainfall. If the six months of April through September are considered, only August had slightly below normal temperatures. The other five months had up to 1.7 degrees above the normal mean. The rainfall pattern was just

the opposite with only the month of September showing .38 inches above normal. Seventy-three percent of normal moisture occurred during the six-month period of April through September. The most critical shortage, however, occurred in the three main growing months of June, July, and August when there was only 56 percent of normal precipitation. Insects and diseases were of no major importance in the soybean nursery; however, the dry season did favor a heavy population of leafhoppers and aphids which did damage other crops. We had a very short growing season this year; the last killing frost in the spring occurred on May 23 with 26 degrees, the first killing frost this fall came on September 13 with 24 degrees.

Soil Type: Ontonagon silty clay loam.
Fertilizer Application: 10 tons manure plowed down.
Soil Analysis: pH, 5.8; P, 112; K, 245.

Spooner, Wisconsin. The temperature and rainfall were very near normal in May and soil conditions were ideal at planting time, May 27. Temperatures in June were 1.7 degrees above normal, but rainfall was 2.28 inches below normal. Temperatures in July were very near normal but rainfall was 2.44 inches below normal. This extended drouth made it necessary to irrigate the nursery July 9 and July 22. One and one-half inches of water were applied in each irrigation. Temperatures in August were 2.6 degrees below normal and rainfall was 1.55 inches below normal. The continued drouth conditions required irrigation on August 9, with the usual amount applied. Total precipitation was 2.62 inches. Temperatures in September were normal, 60° F. A .67 inch rain on September 2 and another .5 inch September 12 was sufficient to carry the crop to maturity. The first killing frost occurred September 13.

Soil Analysis: pH, 6.5; OM, 25 T/A.; P, 120; K, 285.

Durand, Wisconsin. Temperature and rainfall conditions were similar to those at Madison. Timely showers resulted in yields only slightly below normal in spite of short total rainfall. Stands were normal. Disease injury and insects were minor. A killing frost occurred September 13; however, yields were little affected as later varieties were within a week of maturity at this time.

Soil Type: Boone fine sandy loam.
Fertilizer Application: 100 lbs. 0-20-20.
Soil Analysis: pH, 7.1; P, 90; K, 140.

Madison, Wisconsin. Temperature was above normal during April, June, and July and below normal during May, August, and September. Rainfall received where the plots were located during the 6-month period April through September was 5 inches below normal as compared to .5 of an inch for the official Madison Weather Station. Yields were reduced by about 25 percent by lack of rainfall. Stands were normal. There was little damage from disease and insects. All varieties matured prior to frost.

Soil Type: Dodge silt loam.
Fertilizer Application: 200 lbs. 0-20-20.
Soil Analysis: pH, 7; P, 130; K, 210.

Shabbona, Illinois. Planting was on May 14 in a moist but rough seedbed. Emergence and stands were very good. Growth was good, with lodging starting in late June and increasing through the remainder of the growing season. Insect damage was negligible. There was a light epiphytotic of bacterial blight and bacterial pustule in early summer.

Soil Type: Flanagan silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.0; P_1, 29; P_2, 116+; K, 244.

Dwight, Illinois. Planting was on May 25 in a moist but very rough seedbed. Emergence and stands were fair to good. Some cultivator damage was apparent. Growth was good with lodging starting in early August. Within plots there was a great difference in lodging, causing uneven maturity. There was a small amount of bacterial blight and downy mildew in mid-summer with some stem canker late in the growing season.

Fertilizer Application: None.
Soil Analysis: pH, 6.7; P_1, 17; P_2, 84; K, 184.

Urbana, Illinois. Planting was in mid-May in a good seedbed. Emergence and stands were good for all strains except Chippewa. Growth was good with lodging starting in late July. Severe but small areas of bacterial blight were noted in late June followed by bacterial pustule. Stem canker was present in varying amounts.

Soil Type: Drummer silty clay loam and Flanagan silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.3; P_1, 60; P_2, 116+; K, 300.

Girard, Illinois. Planting was on May 24 in a moist, rough seedbed. Stands and emergence were fair to good. Moisture was more than adequate through most of the growing season, resulting in excellent growth. Lodging started the end of June and was very severe by harvest time. Bacterial blight and brown spot were moderate to severe while bacterial pustule and downy mildew were slight.

Fertilizer Application: None.
Soil Analysis: pH, 6.1; P_1, 37; P_2, 116+; K, 244.

Edgewood, Illinois. Planting was on May 10 in a rough, moist seedbed. Over eight inches of rain fell during the week following planting. The resulting soil compaction and the naturally poor subsoil drainage caused very poor to fair stands. Plant growth in many plots was stunted, and these had to be discarded. The data on variety differences in this test are therefore not reliable and were not included in the regional means. There was slight to moderate bacterial blight, bacterial pustule, downy mildew, and brown stem rot over the entire field. Early in the season it was noted that a root rot was killing plants, including Blackhawk and L2.

Soil Type: Cisne silt loam.
Fertilizer Application: 125 lbs./A. 60% potash.
Soil Analysis: pH, 6.4; P_1, 15; P_2, 98; K, 144.

Eldorado, Illinois. Planting was on the last day of May in a smooth, tight seedbed. The field dried out very fast, and emergence was very uneven. Stands were fair to good. Rains during the early part of the growing season made the plants large and helped make up for the uneven stands. August and September were very dry causing a reduction in seed production. Downy mildew was heavy on all susceptible varieties. There was a light epiphytotic of bacterial blight and bacterial pustule.

Fertilizer Application: 300 lbs./A. 10-10-10.
Soil Analysis: pH, 6.4; P_1, 41; P_2, 116+; K, 254.

Carbondale, Illinois. Planting was during the early part of May and an excellent stand was obtained. Although a severe deficiency of moisture existed for the year, timely light showers gave near optimum growth. The continued dry weather during the end of the growing period for the late-maturing varieties probably reduced their yields more than was the case for the early-maturing strains.

Soil Type: Stoy silt loam.
Fertilizer Application: 300 lbs./A. 0-20-20.
Soil Analysis: pH, 6.5; P_1, 39; P_2, 116+; K, 184.

Miller City, Illinois. Planting was on May 9 in an excellent seedbed. Emergence was very good and an excess of moisture all season contributed to rank growth. The plants started to lodge in late June. Bacterial pustule was slight to severe, bacterial blight was moderate to severe, and there was light downy mildew and wildfire over the entire field.

Soil Type: Riley fine sandy loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.6; P_1, 65; P_2, 116+; K, 264.

Crookston, Minnesota. Planting was timely and good stands resulted. Nodulation was poor. Growth and development were very good. There was rather adequate moisture throughout most of the growing season and weeds were well controlled. Maturity was early and there were good harvesting conditions. These plots were on land which produced sugar beets in 1962.

Morris, Minnesota. Planting was timely and good stands with good early growth resulted. Weeds were well controlled. There was some drouth stress in July and early August. The first killing frost was late and harvesting conditions were good.

St. Paul, Minnesota. Planting was timely, emergence good, and early growth excellent. Rainfall in June and July was very scanty, but pod set and seed production were good, nevertheless. Temperatures were rather higher than normal. Killing frost came unusually late. The weather was warm and dry for harvesting. The soil was very high in fertility as a result of liming and frequent heavy applications of barnyard manure. Weeds were controlled by a 3-pound per acre pre-emergence application of Amiben plus two cultivations and a small amount of hand labor.

Soil Type: Waukegon silt loam.

Lamberton, Minnesota. Planting was timely and stands were good. Growth was rather tall and weeds were well controlled. Some heavy summer storms caused considerable lodging. Rainfall was generally adequate to excessive, but the yield plots were well drained. As in other locations in southern Minnesota, there was a long growing season and good harvest conditions.

Waseca, Minnesota. This was a very favorable year for soybeans. Planting was timely, stands good, and weeds well controlled. Rainfall was timely and adequate. Warm, dry harvest conditions prevailed. The first killing frost was very late. Bacterial blight was rather heavy on highly susceptible material in late June and early July.

Cresco, Iowa. This nursery is located in northeast Iowa on Carrington Plastic Till Phase soil which is tight, cold, wet, slowly drained, and low in productivity. The nursery was planted on May 22 on corn land. Stands were good and weeds controlled.

Precipitation averaged -4.7 inches below normal and temperatures averaged near normal for the growing season. In spite of below normal precipitation, growth response and yields were the best experienced at this location in a long time. Above normal July rains and other timely rains helped to make this possible. Frost did not injure any of the strains. This nursery was considered very good for making strain comparisons.

Soil Type: Carrington Plastic Till Phase.
Fertilizer Application: 40 lbs. K_2O/A.
Soil Analysis: pH, 6.8; OM, Medium; N, 69; P, 7.5; K, 148.

Sutherland, Iowa. This nursery represents the northwest section of Iowa with Primghar silt loam soil, medium high in productivity, and generally slightly undulating in topography. The nursery was planted May 8 and replanted May 29 due to a freeze on May 22. Stands were excellent and plots were kept weed-free. Precipitation was below normal for May, June, and September and above normal for July and August which gave a season's average of -2.3 inches below normal. Temperatures for May through September averaged above normal (+1.2° F.) with June and September departing greatest with 4.6 and 2.0° F., respectively. Frost occurred later than normal after all strains were mature. Growth response and yields were considered above average. Disease was of little consequence throughout the season. This nursery was considered good for making strain comparisons.

Soil Type: Primghar silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.1; OM, Medium; N, 72; P, 7.0; K, 212.

Kanawha, Iowa. This nursery is located in north-central Iowa on level, productive Webster silt loam. Planting was completed on May 9 on land previously grown to corn. Stands were generally good to excellent and plots were kept weed-free. There was a moderate amount of bacterial blight and other diseases in the nursery. During the growing season temperatures averaged -0.8° F. below normal with most of the cool temperatures occurring in July and August. Although precipitation was deficient in June, August, and September, the over-all average from May through September was 0.4 inches above normal. Heavy rains in July, 5.6 inches above normal, caused some lodging. These conditions permitted above average growth and excellent yields. A later than normal frost permitted all strains to mature. Harvesting was completed under good conditions. This nursery was considered very good for making strain comparisons.

Soil Type: Webster silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 7.3; OM, High; N, 66; P, 25.0; K, 200.

Independence, Iowa. This nursery is located in northeast central Iowa on well drained Carrington silt loam, medium in productivity. Planting was completed on May 14. Stands were good and plots were kept weed-free. Temperatures averaged +0.3° F. above normal. Precipitation was a little below normal for June and September and departed 3.6 inches above normal for May through September. Growth, yield, and general response was slightly above normal. Lodging due to storms was greater than normally encountered. Strains were not injured due to frost. This nursery was considered good for making strain comparisons.

Soil Type: Carrington silt loam.
Fertilizer Application: 40 lbs. K_2O/A.
Soil Analysis: pH, 6.7; OM, Medium; N, 57; P, 7.0; K, 144.

Ames, Iowa. This nursery is centrally located on level, productive Nicollet silt loam. Planting was completed on May 16 with subsequent stands excellent. Temperatures averaged near normal for the growing season, May through September. Precipitation for May through September averaged -0.3 inches below normal. June and September were the only months below normal. Growth, yield, and general response was considerably above normal. A low incidence of diseases occurred. Later than normal frost permitted all strains to mature. Strain comparisons are believed to be very good.

Soil Type: Nicollet silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.2; OM, Medium; N, 48; P, 7.5; K, 156.

Ottumwa, Iowa. This nursery is in southeastern Iowa on flat, very productive Haig silt loam. The nursery was planted May 10. Stands were good and weeds were controlled. Temperatures averaged slightly below normal (-0.6° F.). Precipitation averaged below normal for May through September (-4.3 inches) with the greatest departures occurring in May (-1.8) and June (-3.4). Growth and yield response were slightly above average because of the good moisture in July. There was very poor seed quality, more pronounced in later strains--mostly bleeding of hila and defective seed coats--believed to be due to some peculiar environmental condition. Lodging was excessive. Killing frost occurred October 29, later than normal (October 10). Strain comparisons are believed to be very good.

Soil Type: Haig silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.4; OM, Medium; N, 72; P, 15; K, 276.

Portage la Prairie, Manitoba, Canada. The growing season was characterized by above normal precipitation and temperature. Precipitation from April 1 to August 31 was 14.3 inches compared to an average of 11.2. Daily mean temperatures averaged 4°, 2°, and 2° F. above normal for June, July, and August, respectively. May was equal to the average. Our frost-free period (above 32° F.) was 142 days compared to an average of 122 days. Plots were flooded for a short period in the spring. Slight hail damage occurred on July 31. There was no serious injury from insects or diseases.

Soil Type: Riverdale silty clay loam.
Fertilizer Application: None.

Winnipeg, Manitoba, Canada. Temperatures were 4.5°, 3.0°, and 1.2° F. above normal in June, July, and August. Precipitation was above normal in May and June but slightly below normal in July and August. Emergence was uniform and early growth was excellent. Late maturing strains performed relatively well. The first killing frost was unusually late (October 30).

Brandon, Manitoba, Canada. This year was excellent for production of special crops. Rainfall was adequate and ideally distributed. No disease, insect injury, lodging, or shattering was considered a problem. A very late fall frost (October 11) allowed

development of even the late varieties to a desirable grade and yield of seed. Very high yields were recorded.

Soil Type: Black earth on medium textured alluvium.
Fertilizer Application: None.

Morden, Manitoba, Canada. The 1963 season was the most favorable to date for the production of soybeans at Morden. The average yields for the Uniform Tests exceeded 35 bushels per acre. Precipitation for the period May 1 to August 31 was 15.8 inches compared to a 40-year average of only 10.5 inches. Above average temperatures prevailed during the growing season; June, July, and August averaged 2.8, 0.9, and 1.5 degrees per day above average, respectively. Just what factors were responsible for the high yields of soybeans is hard to tell. It appears that the high yields were largely due to the favorable climatic conditions. The high rate of fertilizer used probably played a minor role in increasing the soybean yields. This conclusion is reached because in a fertilizer test on the same field only a one bushel increase in yield was obtained for Flambeau with the application of 150 lbs. of 16-20-0 (This was the only fertilizer rate used in this test.). Cropping history of this field was: 1962 - barley; 1961 - flax.

Soil Type: Morden heavy clay loam.
Fertilizer Application: 250 lbs. 27-14-0 after planting.

Grand Forks, North Dakota. Planting was on May 22 and fairly good stands were obtained. Temperatures averaged above normal throughout the growing season while precipitation averaged below normal. All varieties were mature before the occurrence of a killing frost on October 27. Diseases were of no consequence during the season. Variety comparisons were considered fair.

Soil Type: Silty clay loam.
Fertilizer Application: None.

Fargo, North Dakota. Planting was on May 14 and excellent stands were obtained. Temperatures averaged above normal throughout the growing season. Precipitation was below normal except during August when needed rains came. Diseases were of no consequence throughout the growing season. A killing frost occurred on October 27, well after all varieties had matured. Variety comparisons were considered good.

Soil Type: Fargo clay.
Fertilizer Application: None.

Fairmount, North Dakota. The Uniform and Preliminary 0 Tests were abandoned because prolonged wet conditions following planting prevented cultivation and weeding.

Soil Type: Silty clay loam.
Fertilizer Application: None.

Watertown, South Dakota. The beans followed a 40 bushels per acre oat crop. The stubble was fall-plowed 7 inches deep. In the spring the land was double-disked and double-harrowed. Before planting, 150 lbs. of 16-20-0 fertilizer was applied and harrowed in. At the time of planting, there was ample soil moisture. During July and August, moisture was lacking. It was dry and hot during the blooming and seed set period. Pod set was from fair to good. The beans suffered the effects of the

drouth. There was some injury due to mildew, but nowhere near the injury that occurred at Brookings.

Soil Type: Kransberg silt loam.
Fertilizer Application: 150 lbs. 16-20-0.

Brookings, South Dakota. The beans followed the small grain variety test. The stubble was fall-plowed 7 inches deep, adding 200 lbs. of 16-20-0 at the time of plowing. In the spring the land was double-disked and double-harrowed. At the time of planting and throughout the growing season there was abundant moisture. The rainfall during July was over 12 inches. The bean growth throughout the growing season was very good. Seed set was excellent. There was no hot weather. There appeared to be a very high infestation of mildew, producing many discolored and rotted beans.

Soil Type: Barnes sandy loam.
Fertilizer Application: 200 lbs. 16-20-0.

Centerville, South Dakota. The beans followed a 65 bushels per acre oat crop. The land was fall-plowed 7 inches deep. In the spring the land was double-disked and double-harrowed. Before planting, 200 lbs. of fertilizer was applied and harrowed in. Throughout the season there was just enough moisture to produce a normal crop. It was quite hot during July and August. Seed set was good. There was a fairly high injury due to mildew, producing discolored and rotted beans.

Soil Type: Poinsett sandy loam.
Fertilizer Application: 200 lbs. 16-20-0.

Lincoln, Nebraska. Conditions for comparing varieties in tests at Lincoln were very good. Good uniform stands were obtained. Plants were not under stress at any time during the growing season. Dry warm weather prevailed during June and July. One 5-inch rain in late June and one irrigation in late July provided adequate moisture during the early part of the growing season. Better than normal rainfall occurred in August and September. Warmer than normal temperatures prevailed during the latter part of the growth period. Soybeans matured about a week earlier than normal. All matured before frost.

Soil Type: Wabash silty clay loam.
Fertilizer Application: None.
Soil Analysis: pH, 5.8; N, 11 ppm (low); P, 95 ppm (very high); K, 360 ppm (high).

Mound Valley, Kansas. The weather at this location was quite unsatisfactory for optimum soybean production in 1963. April, May, and the first half of June were very dry--only 2.5 inches in many small showers. This was about nine inches below normal. The soybeans emerged in uniform stands, but developed very slowly until rains about June 20. Total precipitation during late June, July, and August was about normal but ineffective due to heavy torrential rains with long intervals between. No rainfall was received after August. Temperatures were unusually high during July and the first half of August and throughout the month of September. Thirty-eight days during July and August had maximum temperatures of 95 degrees or higher with many of these well above 100 degrees. Over one-half of the days in September had a maximum of 90 degrees or over. The soil apparently had sufficient plant nutrients for optimum development and was kept completely free of weeds.

Soil Type: Parsons silty clay loam.
Fertilizer Application: 0-30-30.
Soil Analysis: pH, 5.4; OM, 1.6; P, 18; K, 144.

Columbus, Kansas. Inadequate moisture was the most limiting factor in soybean production during 1963. Precipitation recorded for each month of the growing season was below normal; consequently, yields were reduced and seed quality lowered.

Soil Type: Cherokee silt loam.
Fertilizer Application: 0-60-60.
Soil Analysis: pH, 5.6; OM, 1.2; P, 30 lbs./a. available phosphorus; K, 100 lbs./a. exchangeable potassium.

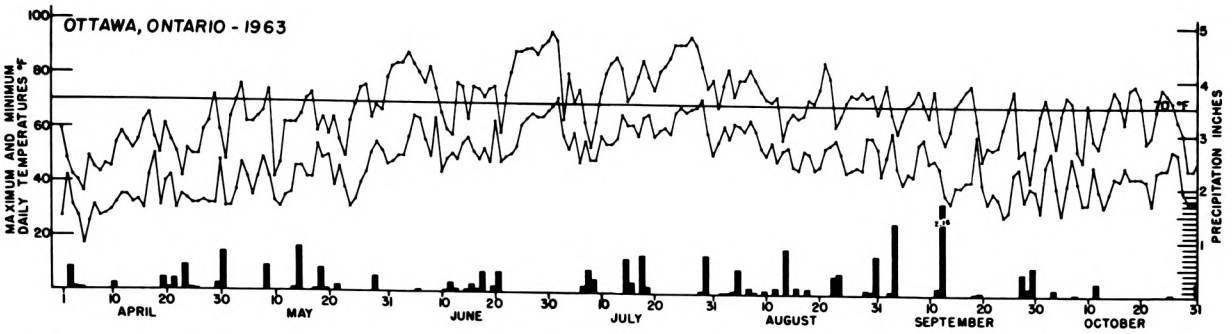
Grand Junction, Colorado. Six irrigations were applied: May 15, June 5, June 30, July 18, August 5, and August 23. Approximately 3-4 acre-inches of water were applied per irrigation. Damage from insects or disease was not noticeable. A rain and wind storm on August 11 caused severe lodging of all entries in the test. This year, as last, poor nodule formation was observed on first-year soybean ground. Twelve of the 68 plots were on such an area, and plant growth and yield was greatly reduced in these plots. Samples and data reported were taken from only those plots that were on second-year soybean ground where growth was quite normal.

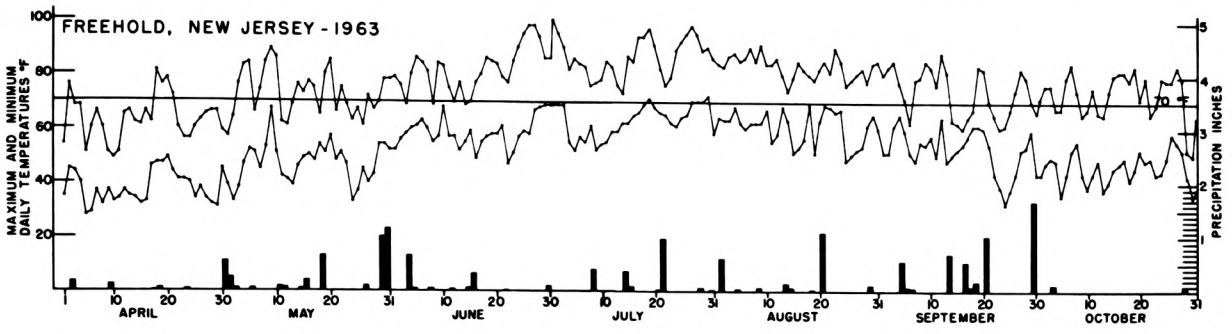
Soil Type: Hinman clay loam, 0-2% slopes.

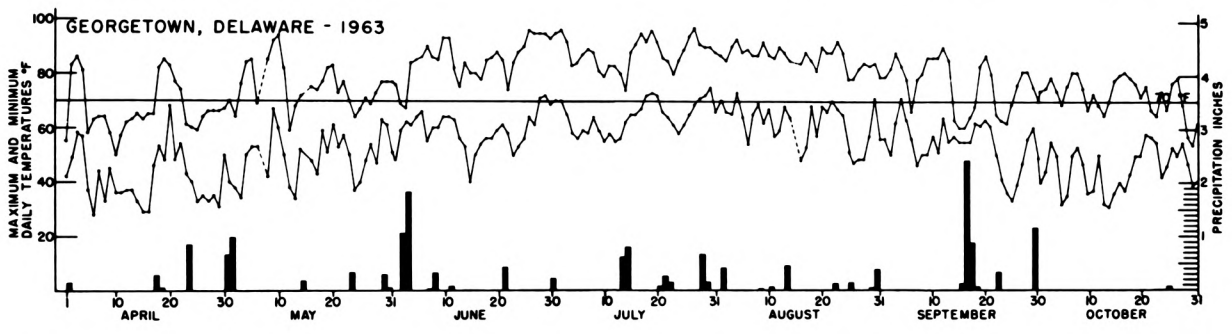
Kimberly, Idaho. Good stands were obtained with slow emergence and early growth. Maturity within a variety was quite uniform, but flowering date seemed to vary considerably. The total growth was very uniform between replications; however, the lodging varied as if a wind had been the principle cause. The weather was cooler and wetter than normal during June and early July. All of the varieties would have suffered some frost injury had not the first frost been delayed 37 days beyond normal. The varieties, Grant and Merit, were lost for yield purposes before they were dry enough to thresh. Apparently there were no disease problems on any varieties. There was bronzing and disfiguration of a few leaves that might have been virus, however, it could have been wind burning, etc.

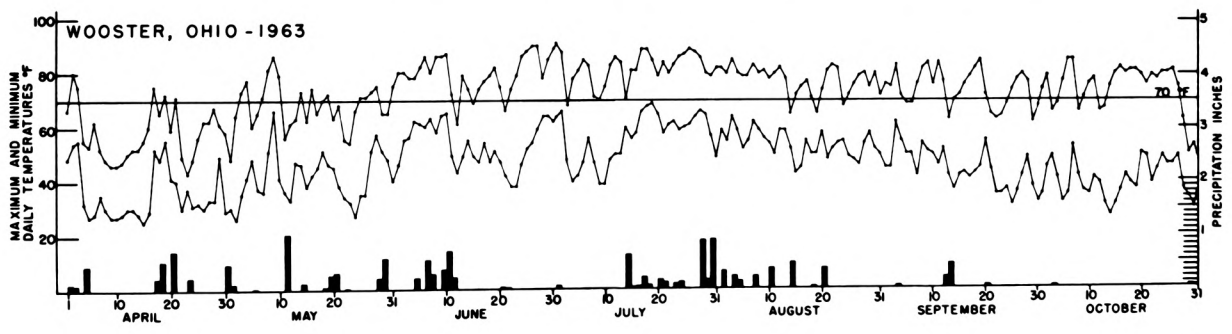
Ontario, Oregon. Planting was timely and stands were good, but the growing season was generally characterized by below normal temperatures. Irrigations of approximately 2" per irrigation were made May 29 and then, starting on June 22, at approximately 10-day intervals with the last irrigation for Group 00 on August 5, and for Groups 0 and I on August 29. Growth was rank and some varieties lodged severely. Spider mites were present from mid-season on and infestations became heavy enough to do considerable damage to Groups 0 and I lines. Diseases were incidental. Because of the mite infestations, Group 0 and Preliminary I trials are considered only fair for strain comparisons.

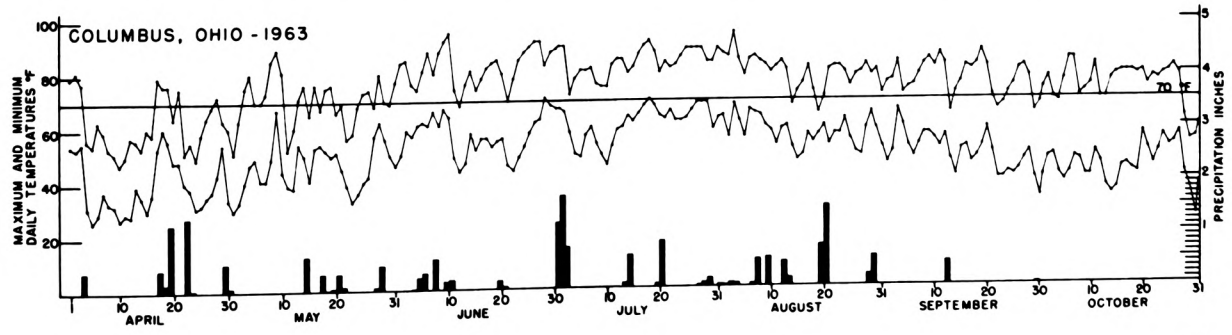
Soil Type: Owyhee silt loam.
Fertilizer Application: 90 lbs./A. P_2O_5 (fall).
Soil Analysis: pH, 7.2.

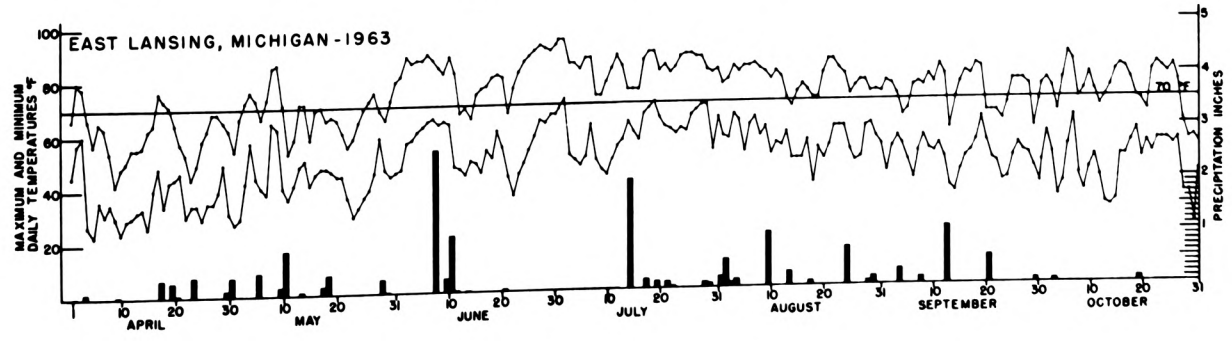

OTTAWA, ONTARIO - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
1.14
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

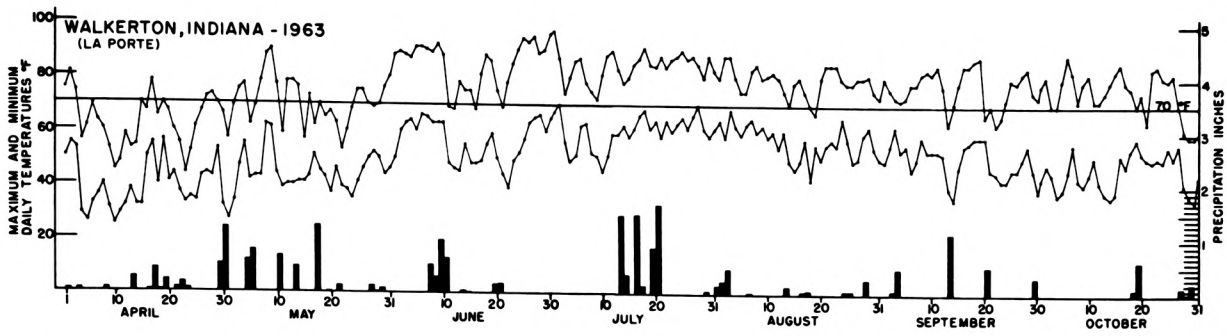

FREEHOLD, NEW JERSEY - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

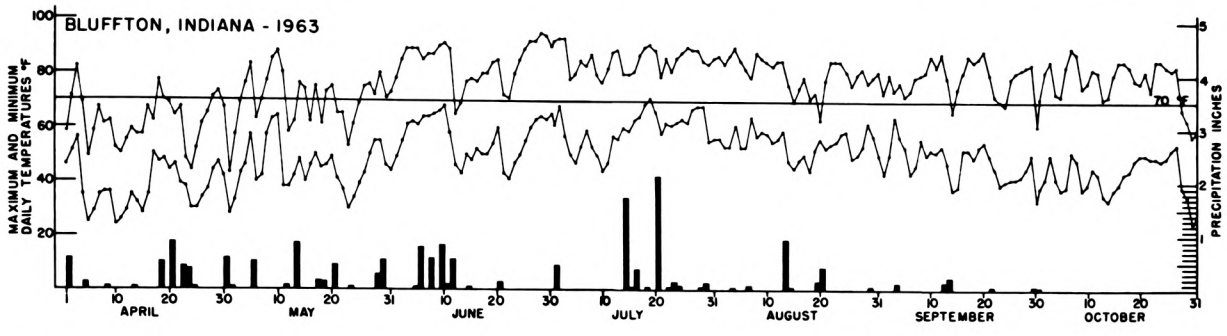

GEORGETOWN, DELAWARE - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

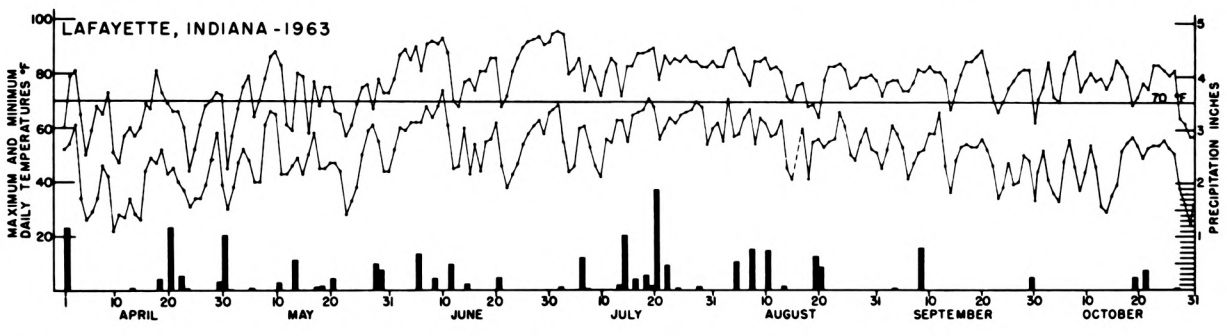

WOOSTER, OHIO - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

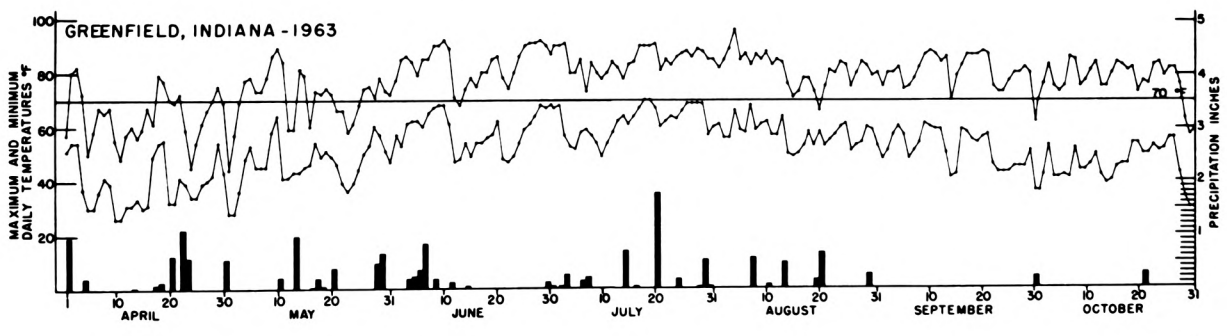

COLUMBUS, OHIO - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

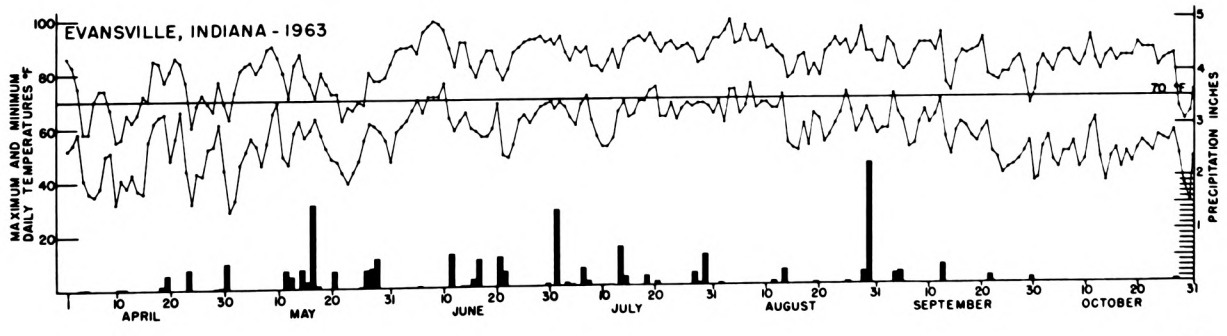

EAST LANSING, MICHIGAN - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

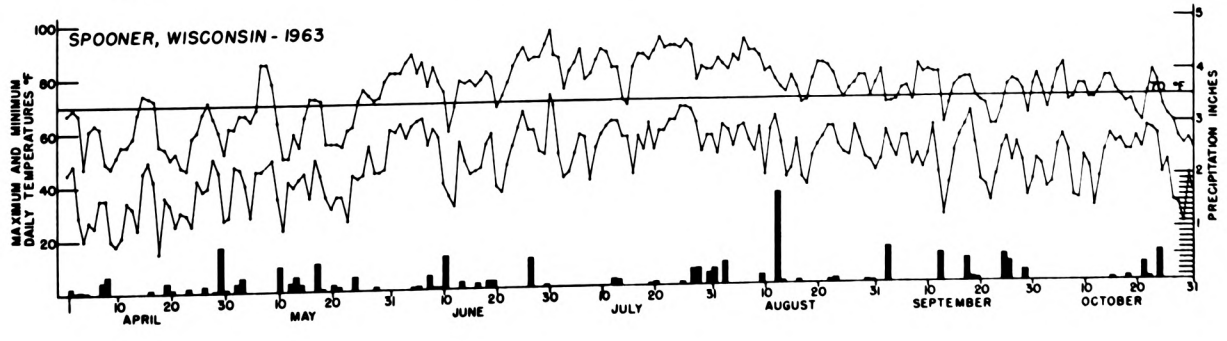

WALKERTON, INDIANA - 1963
(LA PORTE)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

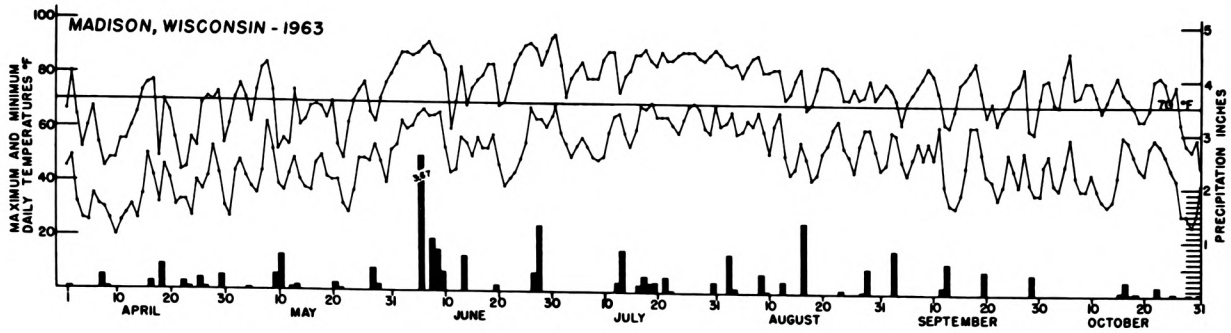

BLUFFTON, INDIANA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

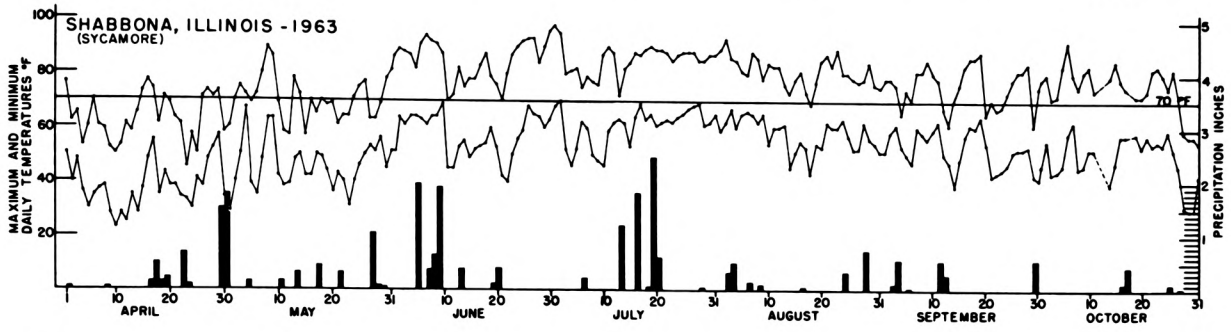

LAFAYETTE, INDIANA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

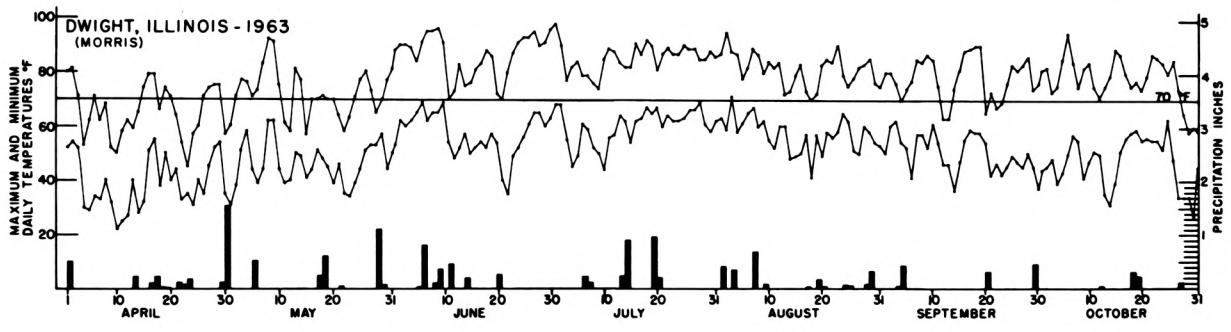

GREENFIELD, INDIANA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

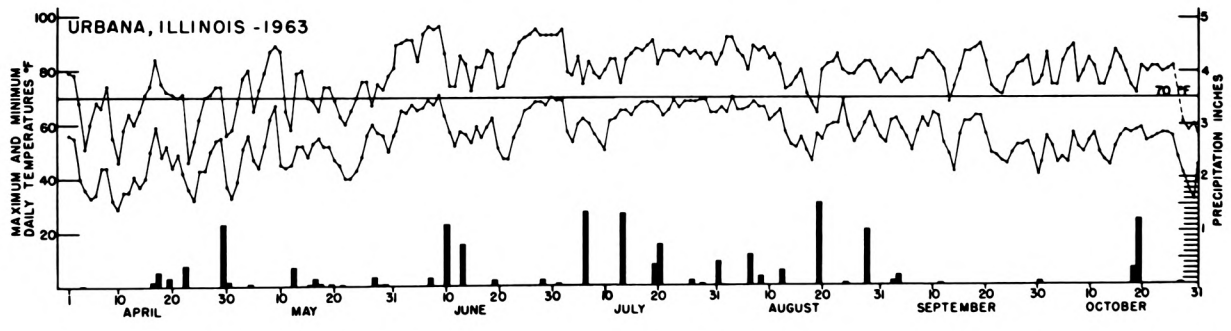

EVANSVILLE, INDIANA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

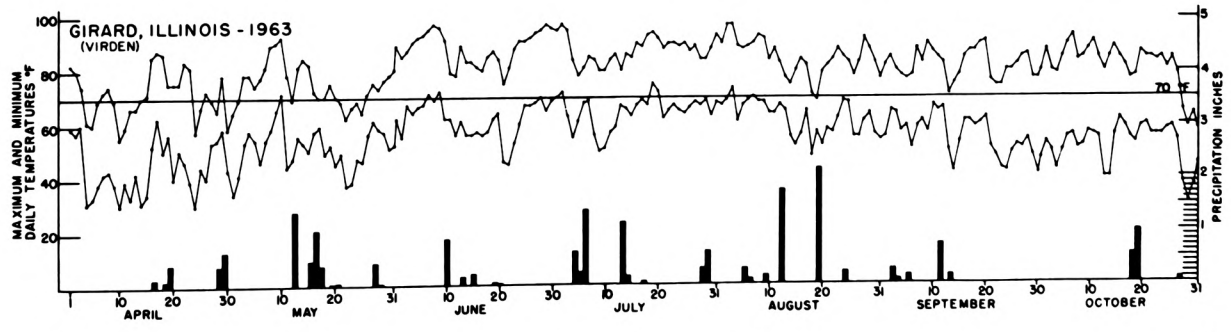

SPOONER, WISCONSIN - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

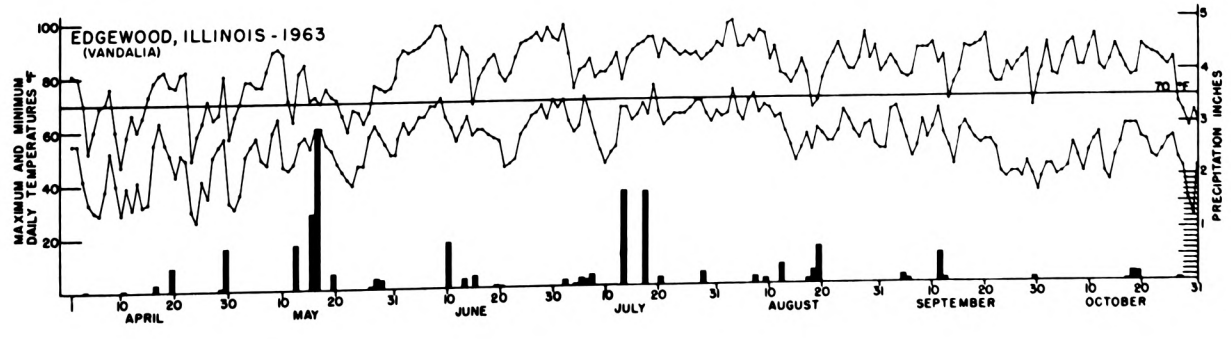

MADISON, WISCONSIN - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

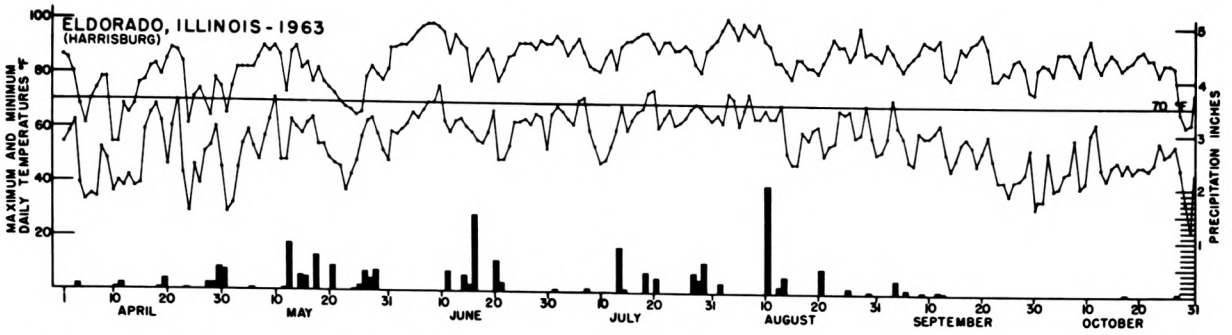

SHABBONA, ILLINOIS - 1963
(SYCAMORE)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

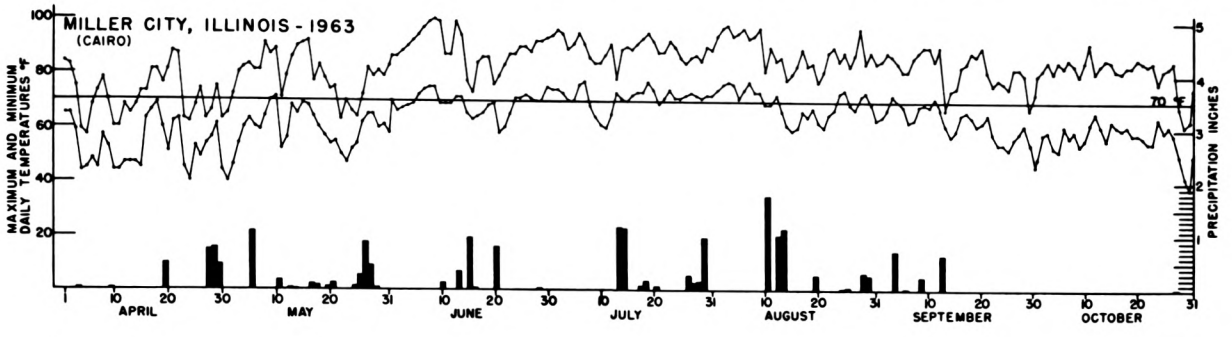

DWIGHT, ILLINOIS - 1963
(MORRIS)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

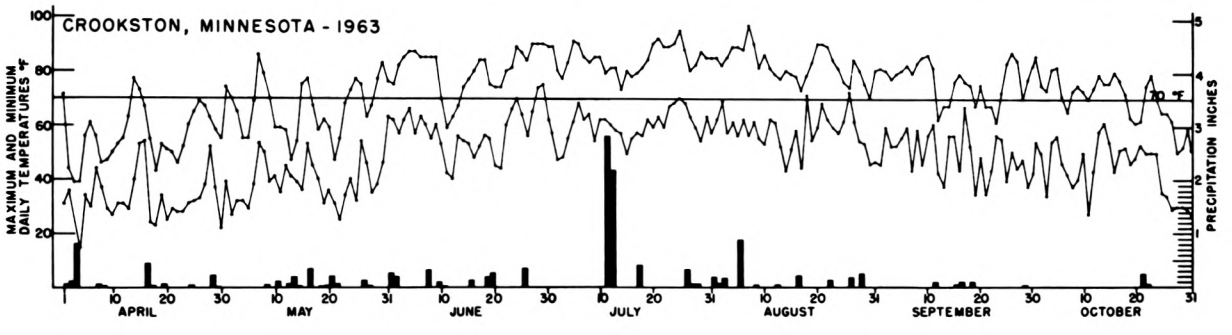

URBANA, ILLINOIS - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

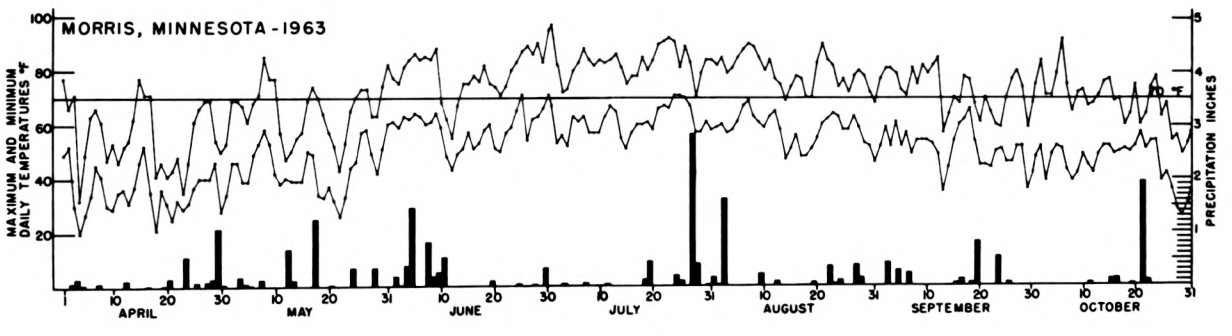

GIRARD, ILLINOIS - 1963
(VIRDEN)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

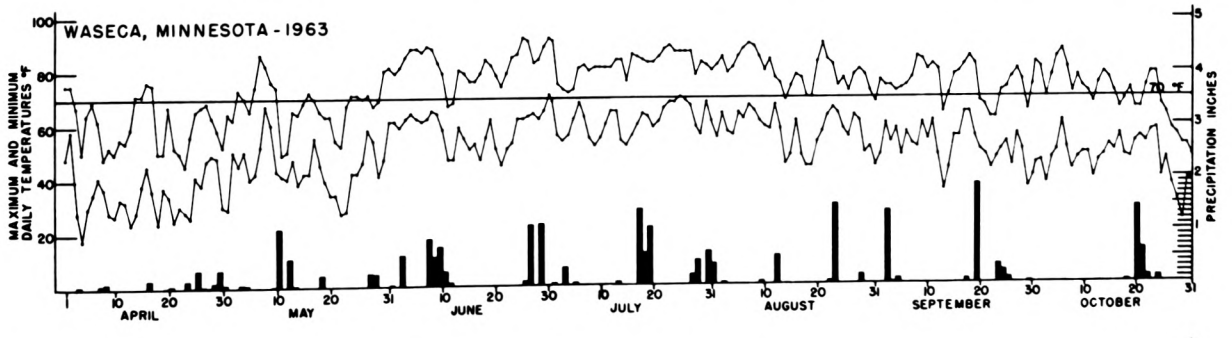

EDGEWOOD, ILLINOIS - 1963
(VANDALIA)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

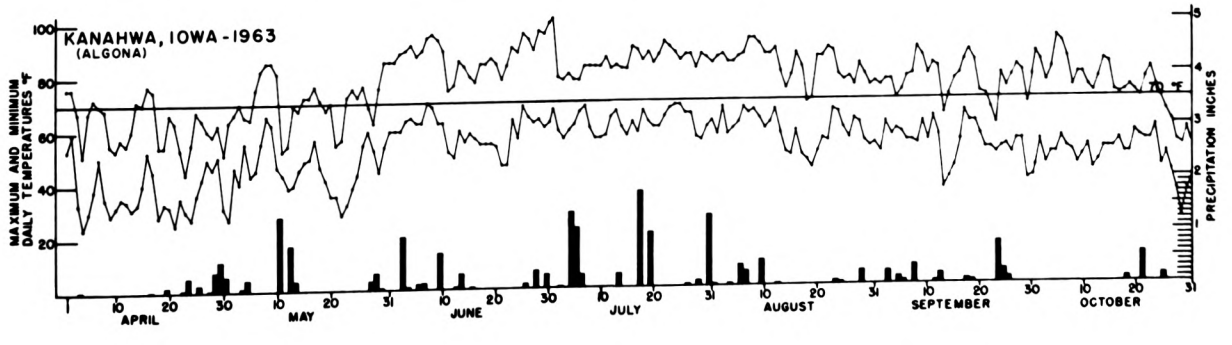

ELDORADO, ILLINOIS - 1963
(HARRISBURG)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

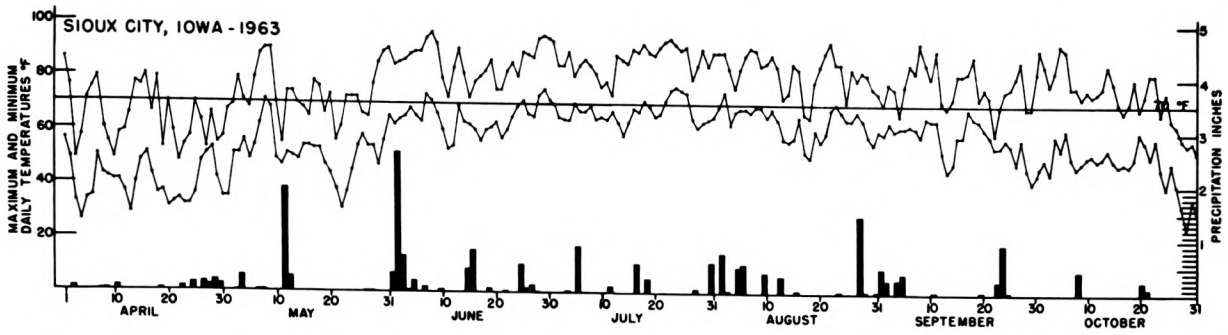

MILLER CITY, ILLINOIS - 1963
(CAIRO)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

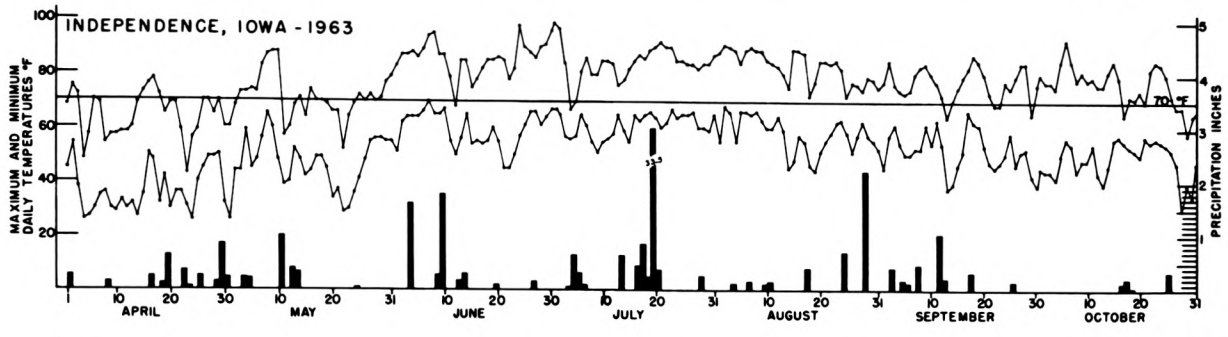

CROOKSTON, MINNESOTA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

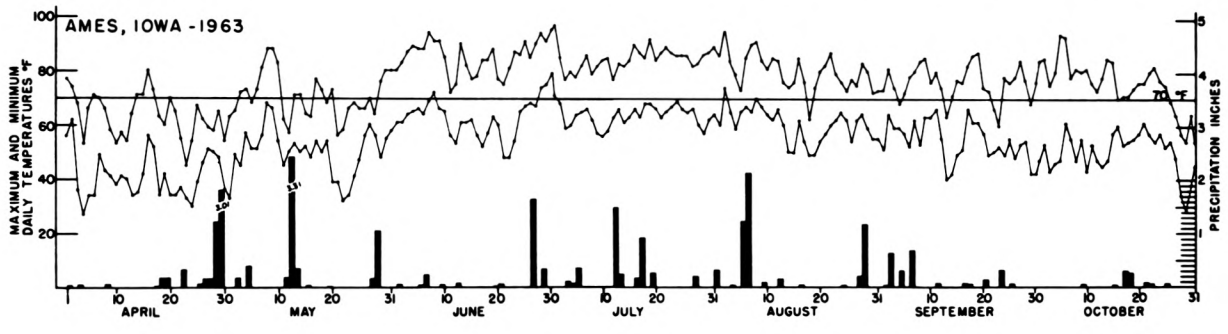

MORRIS, MINNESOTA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

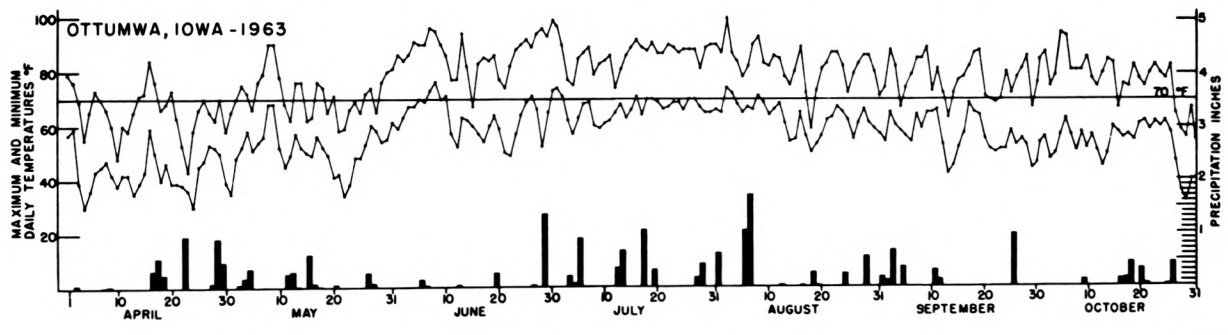

WASECA, MINNESOTA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

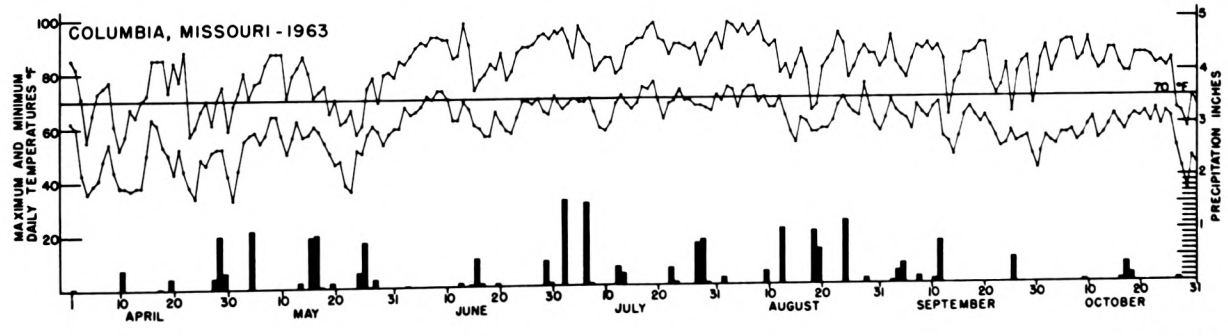

KANAHWA, IOWA - 1963
(ALGONA)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

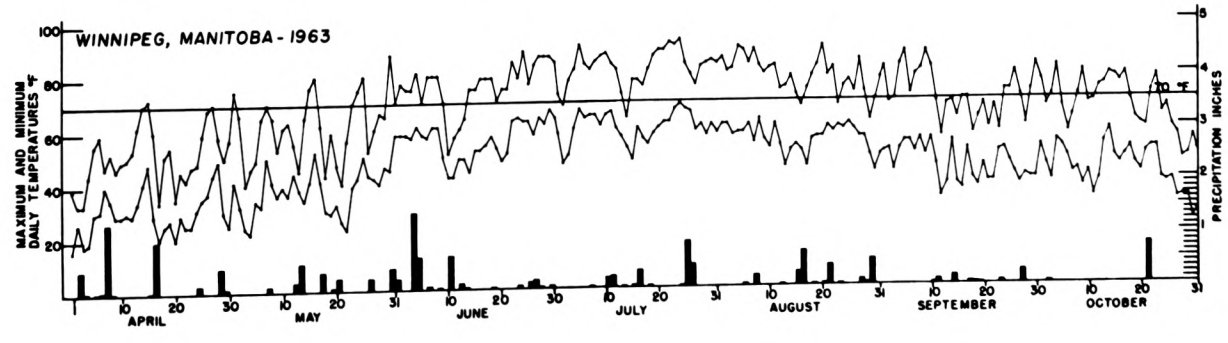

SIOUX CITY, IOWA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

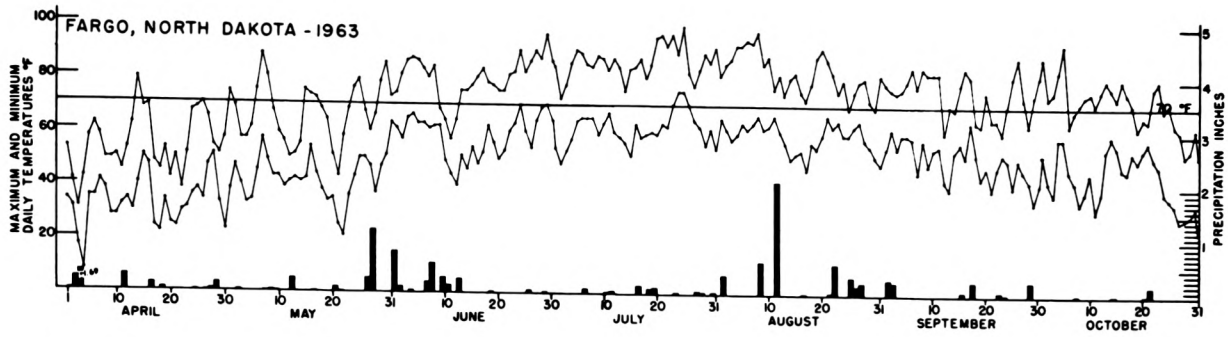

INDEPENDENCE, IOWA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

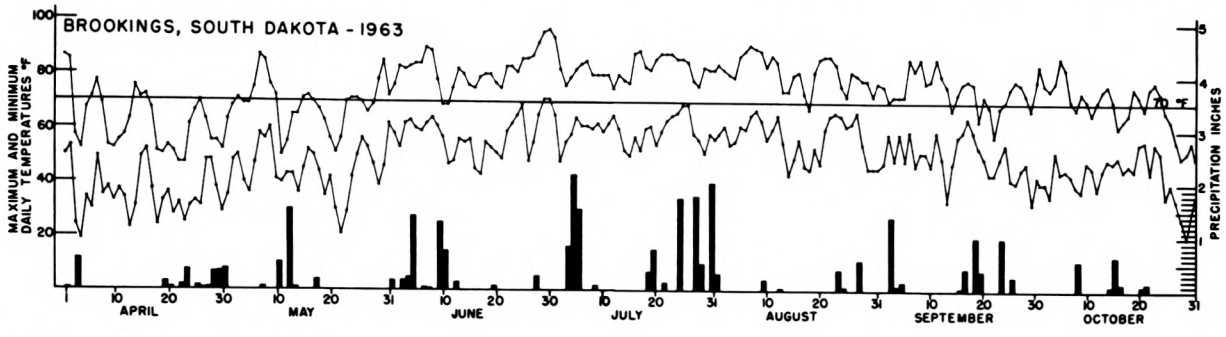

AMES, IOWA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

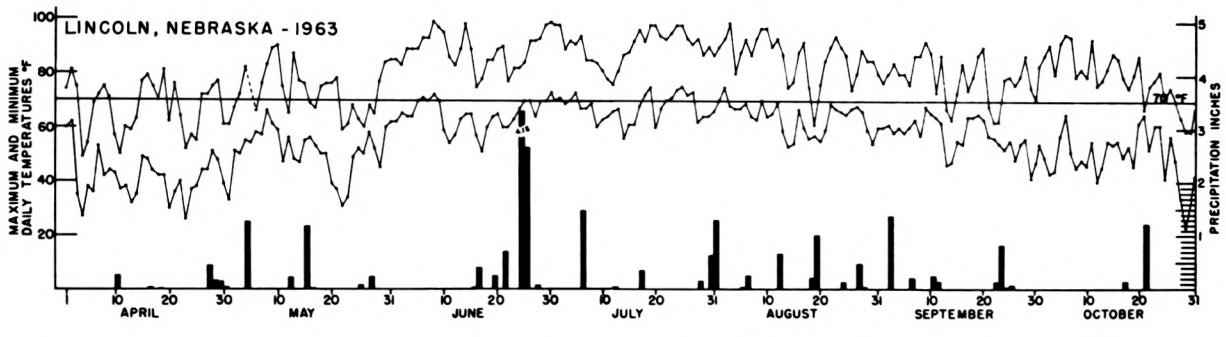

OTTUMWA, IOWA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

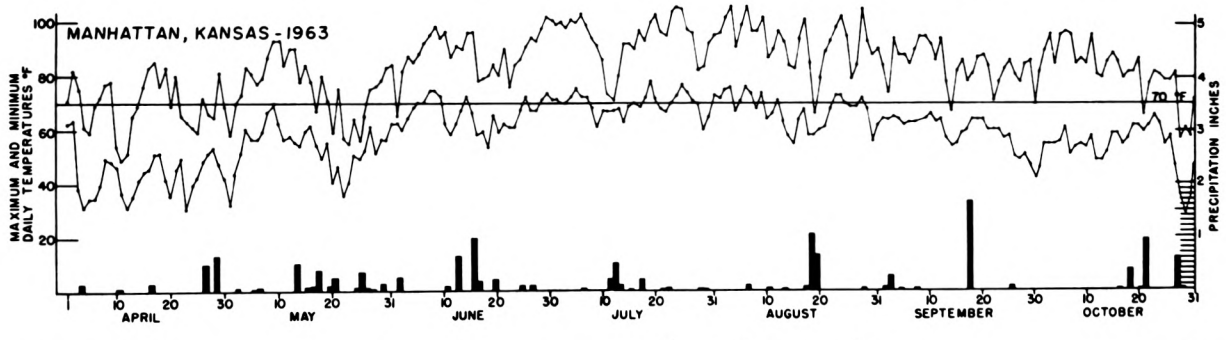

COLUMBIA, MISSOURI - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

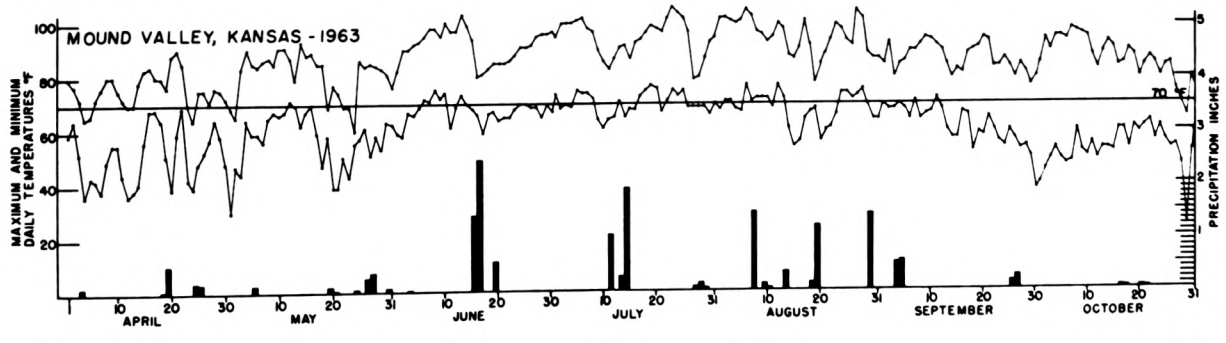

WINNIPEG, MANITOBA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

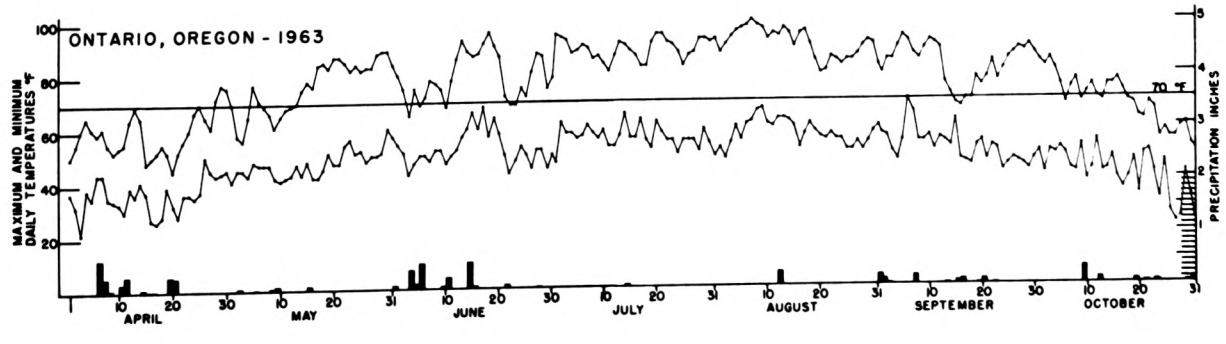

FARGO, NORTH DAKOTA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


BROOKINGS, SOUTH DAKOTA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


LINCOLN, NEBRASKA - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


MANHATTAN, KANSAS - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


MOUND VALLEY, KANSAS - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


ONTARIO, OREGON - 1963
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER