# RESULTS OF THE COOPERATIVE UNIFORM SOYBEAN TESTS

## PART I. NORTH CENTRAL STATES

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1964
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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 ten days or less.

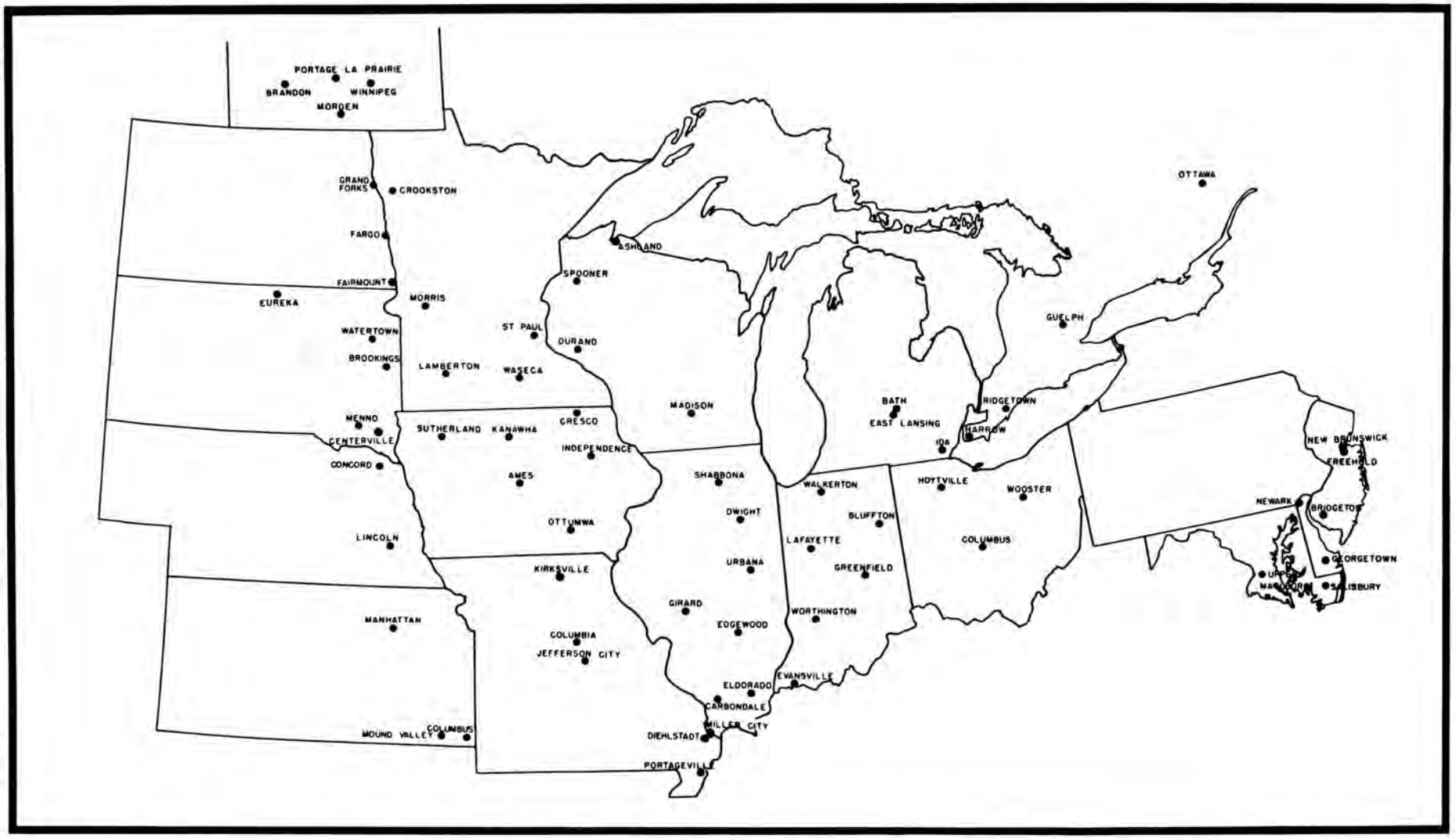
The summary of performance of strains in the first six Uniform Tests is included in Part I of this report. Information on the last four tests, which include strains adapted to the southern part of the United States, is contained in Part II, which is issued separately.

Most of the Uniform Tests in the North Central Region are grown in rod-row size plots, using four replications. 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.

Two new soybean varieties were released to seed producers in the summer of 1964, Portage of Group 00 maturity, and Wayne of Group III maturity. History on the development and performance of each strain is included in this report.

In 1956 the maturity range for each Uniform Test was established to reduce the spread within each group and the overlap between groups. These maturity ranges are redefined in the following table, based on the current reference varieties:

| Maturity Group | Reference Variety | Range in days (expected means) |
|---|---|---|
| 00 | Acme | -2 to +6 |
| 0 | Merit | -4 to +4 |
| I | Chippewa | -2 to +6 |
| II | Harosoy 63 | -3 to +5 |
| III | Shelby | -4 to +4 |
| IV | Clark | -1 to +9 |




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

## UNIFORM TEST LOCATIONS - 1964

| 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. | J. W. Tanner, Ont. Agr. Col. | x | x | | | | | | | | | | |
| Ridgetown, Ont. | J. D. Curtis and W. W. Snow, W. Ont. Agr. School | | x | x | x | | | | x | x | x | | |
| Harrow, Ont. | L. J. Anderson, Canada D. A. Res. Sta. | | x | x | x | x | | | | x | x | | |
| Freehold, N. J. | J. C. Anderson, N. J. A.E.S. | | | | x | x | | | | | | | |
| Newark, Del. | R. H. Cole, Del. A.E.S. | | | | | x | x | | | | | | |
| Georgetown, Del. | Univ. Substation | | | | | x | x | | | | | x | x |
| Upper Marlboro, Md. | E. H. Beyer, Univ. of Md. Tobacco Farm | | | | | | 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 P. Houpt & Son | | | x | x | | | | | | | | |
| Walkerton, Ind. | Frank Pulver | | | x | x | | | | | | x | | |
| Bluffton, Ind. | Gerald Bayless | | | | x | x | | | | | | | |
| Lafayette, Ind. | O. W. Luetkemeier, Purdue A.E.S. | | | x | x | x | | | | | x | x | |
| Greenfield, Ind. | Mrs. R. Roney | | | | x | x | | | | | | | |
| Worthington, Ind. | Frederic Sloan | | | | x | x | x | | | | | x | x |
| Evansville, Ind. | B. Wagner | | | | | x | x | | | | | | x |
| Ashland, Wis. | G. H. Tenpas and M. L. Jones, Ashland Exp. Farm | x | | | | | | x | | | | | |
| Spooner, Wis. | C. O. Rydberg, Spooner Exp. Farm | | 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 | | | x | x | | | | | | x | | |
| Urbana, Ill. | C. H. Farnham, Ill. A.E.S. | | | | x | x | | | | | x | x | |
| Girard, Ill. | Lloyd Brothers | | | | x | x | | | | | | x | |
| Edgewood, Ill. | John Wilson | | | | x | x | x | | | | | | |
| Eldorado, Ill. | Marshall Grisham | | | | x | x | x | | | | | | x |
| Carbondale, Ill. | D. R. Browning, Southern Ill. U. | | | | x | x | x | | | | | | x |
| Miller City, Ill. | M. B. Patton | | | | | | x | | | | | | x |
| Crookston, Minn. | Freeman Johnson | x | | | | | | | | | | | |
| Morris, Minn. | Roy L. Thompson | | x | | | | | | | | | | |
| St. Paul, Minn. | R. L. Cooper, Univ. of Minn. | x | | x | | | | x | x | x | | | |
| Lamberton, Minn. | W. W. Nelson | | | x | x | | | | | | | | |
| Waseca, Minn. | John R. Thompson | | | x | 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 | | | | | x | | | | | | x | |
| Columbia, Mo. | Mo. Agr. Exp. Sta. | | | | x | x | x | | | | x | x | |

UNIFORM TEST LOCATIONS - 1964 (Continued)

| Location | Cooperator | Uniform Tests | | | | | | Preliminary Tests | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 00 | 0 | I | II | III | IV | 00 | 0 | I | II | III | IV |
| Portageville, Mo. | Arnold Matson, Mo. Delta Center | | | | | | x | | | | | | x |
| Winnipeg, Man. | B. R. Stefansson, Univ. of Man. | x | | | | | | x | | | | | |
| Brandon, Man. | H. Gross, Exp. Farm | x | | | | | | | | | | | |
| Morden, Man. | John Giesbrecht, Exp. Farm | x | | | | | | x | | | | | |
| Fargo, N. D. | R. E. Bothun, State Univ. Sta. | | x | | | | | | x | | | | |
| Eureka, S. D. | S. D. North Central Substa. | | x | x | | | | | 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 | | |
| Concord, Nebr. | J. H. Williams, Nebr. A.E.S. | | | | x | | | | | | x | | |
| Powhattan, Kans. | Kans. Agr. Exp. Sta. | | | | | x | x | | | | | x | x |
| Manhattan, Kans. | E. L. Mader, Kans. A.E.S. | | | | | x | x | | | | | x | x |
| Mound Valley, Kans. | Oliver G. Russ, Branch Exp. Sta. | | | | | | x | | | | | | |
| Grand Junction, Colo. | Carl Barnes, Western Slope Br. Exp. Sta. | | | | | x | | | | | | | |
| Ontario, Ore. | L. A. Fitch, Malheur Br. Exp. Sta. | | 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 to 17 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: Test 00, Acme; Test 0, Merit; Test I, Chippewa; Test II, Harosoy 63; Test III, Shelby; and Test IV, Clark.

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. 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 most recent 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
Pod color: Br = brown, T = tan
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

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

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

## UNIFORM TEST 00, 1964

| Strain | Originating Agency | Origin | Generation Composited |
|---|---|---|---|
| Acme | Central Exp. Farm, Ottawa, Ont. | Sel. from Pagoda | |
| Flambeau | Wis. Agr. Exp. Sta. | Introduction from Russia | |
| Portage (UM4) | Univ. of Manitoba, Winnipeg, Man. | Acme x Comet | $F_5$ |
| M384 | 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 | $F_5$ |
| M412 | Minn. A.E.S. & U.S.R.S.L. | P.I. 132207 | |
| 057-2921 | Central Exp. Farm, Ottawa, Ont. | Blackhawk x Capital | $F_7$ |
| UM14 | Univ. of Manitoba, Winnipeg, Man. | 052-903 x Flambeau | $F_5$ |
| UM15 | Univ. of Manitoba, Winnipeg, Man. | 052-903 x Flambeau | $F_5$ |

### Identification of Parent Strains

| | |
|---|---|
| 052-903 | Selection 753-1 by Sven A. Holmberg, Norrkoping, Sweden; same as P.I. 194654. |
| P.I. 132207 | No. D.14 from Dr. L. Koch, Zeist, Netherlands. |

This year appeared to favor the yields of early lines in this test relative to the late ones, although the reverse is true in most years. UM14 and UM15, the two top yielders, are also the earliest strains in the test, averaging a day or two earlier than Acme. Most of the strains are higher in oil content than Acme and Flambeau, but P.I. 132207 is distinctly low in oil and high in protein.

The three-year means show Portage to have an advantage in yield over Acme and 057-2921 to be superior to Flambeau in erectness and oil content.

### PORTAGE

Portage is quite similar to Acme in most characteristics. However, in a large number of tests, seed yields from Portage have been somewhat higher than those from Acme.

The plants are erect with a bushy habit of growth and are resistant to lodging. Pubescence is grey, flower color is purple, and the seed is yellow with a yellow hilum. The history of its development follows:

1952 - Acme x Merit (0-48-36) cross made at Winnipeg, Manitoba, $F_1$ grown in greenhouse.

1953 to 1956 - $F_2$, $F_3$, $F_4$ and $F_5$ lines were grown in the soybean nursery at Winnipeg. Individual plants were selected each year.

1957 - Progeny tested in Preliminary Yield Trial at Winnipeg.

1958 to 1964 - Tested in Cooperative Soybean Test in Manitoba as S56-142.

1959 - Entered in Uniform Preliminary Test 00, as UM4.

1960 to 1964 - Included in Uniform Test 00.

1964 - UM4 named Portage and licensed by Plant Products Division, Department of Agriculture, Ottawa, in April 1964. Thirty-six bushels of registered seed were distributed to four seed growers (9 bus. each) in Manitoba to produce registered seed in 1964. Approximately 545 bushels of this seed are expected to be available to growers for 1965 planting. Breeder's seed is to be produced in 1965.

Table 1. Regional testing history and descriptive data for the strains in Uniform Test 00, 1964.

| Strain | Years in Uniform Test 00 | Previous Regional Test | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color | Shattering** 1101 | Shattering** M10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Acme | 7 | None | P | G | Br | S | Y | Y | 3.5 | 4.0 |
| Flambeau | 7 | 43-56 U.T. 0 | P | T | Br | S | Lg | Bl | 2.0 | 1.5 |
| Portage | 5 | P.T. 00 | P | G | Br | D | Y | Y | 5.0 | 4.5 |
| M384 | 2 | P.T. 00 | P+W | G | Br | S | Y | Y | 3.0 | 2.0 |
| M388 | 2 | P.T. 00 | W | G | Br | S | Y | Y | 1.0 | 2.0 |
| M412 | 1 | P.T. 00 | P | G | Br | S | Y | Y | 3.0 | 2.5 |
| 057-2921 | 3 | 60-61 U.T. 0 | P+W | G | Br | D | Y | Y | 3.0 | 2.5 |
| UM14 | 1 | P.T. 00 | P | T | Br | S | Lg | Bl* | 4.0 | 2.5 |
| UM15 | 1 | P.T. 00 | P | T | Br | S | Lg | Bl | 3.0 | 2.5 |

*Segregating normal and abnormal (imperfect abscission) hilum.
**Average of 2 replications at Urbana, Illinois. in Field 1101 planted May 6 and in Field M10 planted June 3. Notes taken 1 month after maturity.

Table 2. Summary of data for Uniform Test 00, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 8 | 8 | 6 | 6 | 7 | 6 | 6 | 5 | 5 |
| Acme | 21.2 | 7 | 0 | 1.4 | 26 | 3.0 | 17.0 | 39.5 | 18.2 |
| Flambeau | 22.9 | 4 | +4.7 | 2.8 | 27 | 3.3 | 15.4 | 41.2 | 17.7 |
| Portage | 22.2 | 5 | -0.5 | 1.4 | 26 | 3.1 | 16.0 | 38.4 | 18.8 |
| M384 | 24.1 | 3 | +4.3 | 1.8 | 24 | 3.2 | 14.5 | 39.4 | 19.2 |
| M388 | 22.1 | 6 | +6.2 | 2.2 | 26 | 3.4 | 14.5 | 39.2 | 19.8 |
| M412 | 20.0 | 9 | +5.7 | 1.8 | 27 | 3.1 | 17.5 | 43.7 | 16.4 |
| 057-2921 | 20.6 | 8 | +5.2 | 1.4 | 28 | 2.9 | 12.3 | 38.9 | 19.8 |
| UM14 | 24.5 | 2 | -1.3 | 1.8 | 25 | 2.8 | 17.3 | 39.6 | 19.3 |
| UM15 | 25.0 | 1 | -1.7 | 1.9 | 26 | 2.9 | 16.7 | 39.8 | 19.3 |

[1]Days earlier (-) or later (+) than Acme which matured September 10, 110 days after planting.

Table 3. Disease data for Uniform Test 00, 1964.

| Strain | Bacterial Blight | Bacterial Pustule | Phytophtora Rot | Frogeye Ind. | Chocolate Spot[2] |
|---|---|---|---|---|---|
| | Ill. a[1] | Ia. a | Ind. a | Race 2 a | Ia. a |
| Acme | 4 | - | Seg. | 5 | 5 |
| Flambeau | 3 | 5 | S | 3 | 4 |
| Portage | 4 | 5 | S | 3 | 4 |
| M384 | 3 | 5 | S | 5 | 4 |
| M388 | 3 | 5 | S | 5 | 4 |
| M412 | 3 | 5 | S | 5 | 4 |
| 057-2921 | 2 | 5 | R | 5 | 3 |
| UM14 | 2 | 5 | R | 3 | 4 |
| UM15 | 3 | 5 | R | 3 | 4 |

[1]a = artificial inoculation; n = natural infection.
[2]A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 4. Yield and yield rank for Uniform Test 00, 1964.

| Strain | Mean of 8 Tests | Ottawa Ont. | Guelph Ont. | Bath Mich.[1] * | East Lansing Mich. | Ashland Wis. | Crookston Minn. | St. Paul Minn. | Winnipeg Man. | Brandon Man. * | Morden Man. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acme | 21.2 | 28.6 | 27.8 | 28.6 | 20.8 | 28.9 | 15.3 | 15.0 | 16.2 | 14.6 | 16.7 |
| Flambeau | 22.9 | 31.9 | 30.8 | 39.8 | 27.1 | 26.6 | 19.2 | 16.2 | 18.6 | 12.0 | 12.5 |
| Portage | 22.2 | 23.6 | 32.0 | 31.5 | 25.9 | 27.8 | 15.5 | 14.7 | 18.7 | 14.4 | 19.6 |
| M384 | 24.1 | 27.3 | 32.9 | 31.4 | 28.3 | 28.8 | 21.5 | 16.3 | 17.8 | 17.1 | 20.0 |
| M388 | 22.1 | 27.6 | 24.3 | 32.8 | 27.3 | 26.8 | 21.0 | 15.0 | 18.5 | 16.0 | 16.5 |
| M412 | 20.0 | 26.9 | 30.6 | 28.0 | 28.8 | 20.0 | 16.0 | 13.4 | 13.2 | 14.4 | 11.4 |
| 057-2921 | 20.6 | 27.3 | 27.9 | 26.2 | 27.7 | 24.7 | 20.0 | 13.3 | 10.8 | 12.3 | 12.8 |
| UM14 | 24.5 | 29.2 | 31.3 | 28.7 | 27.8 | 32.2 | 18.0 | 13.1 | 22.6 | 16.6 | 21.6 |
| UM15 | 25.0 | 32.0 | 31.3 | 30.8 | 28.7 | 28.3 | 20.0 | 16.4 | 22.7 | 13.7 | 20.9 |
| Coef. of Var. (%) | | 10.9 | 10.4 | 10.0 | 8.6 | 7.7 | -- | -- | 8.0 | 22.5 | 11.2 |
| L.S.D. (5%) | | 4.5 | 10.0 | 4.5 | 3.4 | 2.9 | -- | -- | 2.0 | N.S. | 2.7 |
| Row Spacing (In.) | | 38 | 27 | 32 | 24 | 24 | 24 | 36 | 24 | 36 | 36 |
| | Yield Rank | | | | | | | | | | |
| Acme | 7 | 4 | 8 | 7 | 9 | 2 | 9 | 4 | 7 | 4 | 5 |
| Flambeau | 4 | 2 | 5 | 1 | 7 | 7 | 5 | 3 | 4 | 9 | 8 |
| Portage | 5 | 9 | 2 | 3 | 8 | 5 | 8 | 6 | 3 | 5 | 4 |
| M384 | 3 | 6 | 1 | 4 | 3 | 3 | 1 | 2 | 6 | 1 | 3 |
| M388 | 6 | 5 | 9 | 2 | 6 | 6 | 2 | 4 | 5 | 3 | 6 |
| M412 | 9 | 8 | 6 | 8 | 1 | 9 | 7 | 7 | 8 | 5 | 9 |
| 057-2921 | 8 | 6 | 7 | 9 | 5 | 8 | 3 | 8 | 9 | 8 | 7 |
| UM14 | 2 | 3 | 3 | 6 | 4 | 1 | 6 | 9 | 2 | 2 | 1 |
| UM15 | 1 | 1 | 3 | 5 | 2 | 4 | 3 | 1 | 1 | 7 | 2 |

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

Table 5. Maturity, days earlier (-) or later (+) than Acme, and lodging for Uniform Test 00, 1964.

| Strain | Mean of 6 Tests | Ottawa Ont. | Guelph Ont. | Bath Mich.[1] | East Lansing Mich. | Ashland Wis. | Crookston Minn. | St. Paul Minn. | Winnipeg Man.[2] | Brandon Man. | Morden Man.[2] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | * | | | | | * | * | * |
| Acme | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Flambeau | +4.7 | +15 | -3 | +8 | +4 | +6 | +4 | +2 | +7 | +10 | -- |
| Portage | -0.5 | 0 | -4 | 0 | 0 | +3 | +1 | -3 | +1 | - 1 | 0 |
| M384 | +4.3 | +14 | -6 | +2 | +2 | +7 | +3 | +6 | +7 | 0 | -- |
| M388 | +6.2 | +13 | +4 | +2 | +3 | +7 | +4 | +6 | +6 | + 7 | -- |
| M412 | +5.7 | +16 | -5 | +2 | +6 | +8 | +3 | +6 | +7 | +11 | -- |
| 057-2921 | +5.2 | +19 | -5 | +4 | +1 | +7 | +5 | +4 | -- | + 9 | -- |
| UM14 | -1.3 | + 4 | -7 | +2 | +1 | -3 | +1 | -4 | +3 | - 2 | 0 |
| UM15 | -1.7 | + 4 | -8 | +2 | +1 | -4 | +1 | -4 | +3 | - 1 | 0 |
| Date planted | 5-23 | 5-15 | 5-29 | 5-22 | 5-28 | 5-29 | 5-26 | 5-14 | 5-21 | 5-13 | 5-13 |
| Acme matured | 9-10 | 9-6 | 9-21 | 9-10 | 9-9 | 9-20 | 9-13 | 8-25 | 9-17 | 9-14 | 9-16 |
| Days to mature | 110 | 114 | 115 | 111 | 104 | 114 | 110 | 103 | 119 | 124 | 126 |

| | Mean of 6 Tests | Lodging | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | * | | | * | | | * |
| Acme | 1.4 | 1.8 | 1.3 | 3.0 | 1.0 | 1.5 | 1.0 | 1.0 | 1.5 | 1.0 |
| Flambeau | 2.8 | 2.9 | 4.8 | 4.0 | 2.0 | 2.3 | 1.0 | 1.0 | 3.5 | 1.0 |
| Portage | 1.4 | 1.3 | 3.3 | 2.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| M384 | 1.8 | 1.4 | 3.0 | 4.0 | 2.0 | 1.0 | 1.0 | 1.0 | 2.5 | 1.0 |
| M388 | 2.2 | 1.8 | 4.3 | 4.0 | 2.0 | 1.8 | 1.0 | 1.2 | 2.2 | 1.0 |
| M412 | 1.8 | 2.4 | 3.0 | 4.0 | 1.0 | 1.3 | 1.0 | 1.0 | 1.8 | 1.0 |
| 057-2921 | 1.4 | 1.0 | 1.5 | 4.0 | 1.0 | 1.0 | 1.0 | 1.0 | 3.0 | 1.0 |
| UM14 | 1.8 | 1.8 | 2.5 | 4.0 | 2.0 | 1.3 | 1.0 | 1.0 | 2.3 | 1.0 |
| UM15 | 1.9 | 2.0 | 2.5 | 4.0 | 2.0 | 1.3 | 1.0 | 1.0 | 2.3 | 1.0 |

*Not included in the mean.
[1]Irrigated.
[2]Missing dates due to frost before maturity.

Table 6. Plant height and seed quality for Uniform Test 00, 1964.

| Strain | Mean of 7 Tests | Ottawa Ont. | Guelph Ont. | Bath Mich.[1] | East Lansing Mich. | Ash-land Wis. | Crooks-ton Minn. | St. Paul Minn. | Bran-don Man. | Morden Man. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | * | | | | | * | |
| Acme | 26 | 27 | 33 | 34 | 21 | 27 | 17 | 25 | 24 | 31 |
| Flambeau | 27 | 30 | 34 | 47 | 25 | 25 | 19 | 24 | 28 | 33 |
| Portage | 26 | 25 | 35 | 34 | 24 | 25 | 19 | 22 | 27 | 31 |
| M384 | 24 | 25 | 32 | 41 | 25 | 26 | 20 | 24 | 24 | 33 |
| M388 | 26 | 25 | 34 | 40 | 23 | 24 | 20 | 23 | 27 | 32 |
| M412 | 27 | 29 | 35 | 39 | 27 | 25 | 18 | 25 | 26 | 32 |
| 057-2921 | 28 | 25 | 34 | 40 | 27 | 28 | 22 | 26 | 27 | 34 |
| UM14 | 25 | 25 | 32 | 38 | 25 | 24 | 18 | 20 | 27 | 32 |
| UM15 | 26 | 27 | 33 | 38 | 25 | 24 | 20 | 21 | 26 | 32 |
| | Mean of 6 Tests | Seed Quality | | | | | | | | |
| | | | | * | * | | | | * | |
| Acme | 3.0 | 2.5 | 2.0 | 2.0 | 3.0 | 3.0 | 3.8 | 3.5 | 3.0 | 3.0 |
| Flambeau | 3.3 | 2.5 | 3.0 | 3.0 | 3.0 | 2.0 | 3.5 | 4.5 | 4.0 | 4.0 |
| Portage | 3.1 | 2.5 | 3.0 | 2.0 | 3.0 | 4.0 | 3.5 | 3.8 | 3.0 | 2.0 |
| M384 | 3.2 | 2.5 | 2.0 | 3.0 | 3.0 | 4.0 | 3.8 | 3.8 | 4.0 | 3.0 |
| M388 | 3.4 | 2.5 | 4.0 | 2.0 | 3.0 | 4.0 | 3.8 | 3.8 | 4.0 | 2.0 |
| M412 | 3.1 | 2.5 | 2.0 | 2.0 | 3.0 | 3.0 | 3.5 | 3.5 | 4.0 | 4.0 |
| 057-2921 | 2.9 | 2.0 | 1.0 | 2.0 | 3.0 | 2.0 | 3.5 | 3.8 | 4.0 | 5.0 |
| UM14 | 2.8 | 2.5 | 2.0 | 3.0 | 3.0 | 2.0 | 3.5 | 3.8 | 3.0 | 3.0 |
| UM15 | 2.9 | 2.5 | 2.0 | 3.0 | 3.0 | 2.0 | 3.8 | 3.8 | 4.0 | 3.0 |

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

Table 7. Percentages of protein and oil for Uniform Test 00, 1964.

| Strain | Mean of 5 Tests | Ottawa Ont. | East Lansing Mich. | Ashland Wis. | Crookston Minn. | Morden Man. |
|---|---|---|---|---|---|---|
| Acme | 39.5 | 39.7 | 41.7 | 38.4 | 38.1 | 39.6 |
| Flambeau | 41.2 | 41.6 | 42.5 | 40.4 | 39.8 | 41.9 |
| Portage | 38.4 | 38.5 | 39.6 | 38.1 | 37.1 | 38.9 |
| M384 | 39.4 | 41.0 | 40.6 | 38.0 | 37.7 | 39.7 |
| M388 | 39.2 | 39.0 | 41.2 | 38.3 | 37.4 | 40.2 |
| M412 | 43.7 | 43.4 | 45.6 | 43.4 | 41.6 | 44.3 |
| 057-2921 | 38.9 | 39.1 | 40.3 | 38.3 | 37.5 | 39.5 |
| UM14 | 39.6 | 40.0 | 41.7 | 38.3 | 38.2 | 39.9 |
| UM15 | 39.8 | 39.5 | 41.4 | 39.4 | 38.5 | 40.2 |
| | Mean of 5 Tests | Percentage of Oil | | | | |
| Acme | 18.2 | 17.4 | 19.8 | 18.5 | 18.3 | 17.2 |
| Flambeau | 17.7 | 18.0 | 18.8 | 18.1 | 17.0 | 16.5 |
| Portage | 18.8 | 19.4 | 20.5 | 18.7 | 18.0 | 17.2 |
| M384 | 19.2 | 19.4 | 20.5 | 19.0 | 19.1 | 18.0 |
| M388 | 19.8 | 20.3 | 21.1 | 19.2 | 20.2 | 18.0 |
| M412 | 16.4 | 16.5 | 17.6 | 16.3 | 16.0 | 15.6 |
| 057-2921 | 19.8 | 20.8 | 20.2 | 19.4 | 19.6 | 18.8 |
| UM14 | 19.3 | 20.1 | 20.0 | 18.8 | 18.8 | 18.6 |
| UM15 | 19.3 | 20.2 | 20.1 | 18.9 | 19.1 | 18.2 |

Table 8. Three-year summary of data for Uniform Test 00, 1962-1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 27 | 27 | 21 | 21 | 26 | 21 | 22 | 17 | 17 |
| Acme | 25.4 | 4 | 0 | 1.4 | 27 | 2.5 | 17.4 | 38.8 | 19.2 |
| Flambeau | 28.3 | 2 | +6.7 | 3.0 | 31 | 2.8 | 15.6 | 39.4 | 18.9 |
| Portage | 26.8 | 3 | +0.2 | 1.5 | 27 | 2.6 | 17.1 | 38.1 | 19.6 |
| 057-2921 | 28.5 | 1 | +6.7 | 1.8 | 31 | 2.7 | 12.9 | 37.9 | 20.1 |

[1]Days earlier (-) or later (+) than Acme which matured September 10, 109 days after planting.

Table 9. Three-year summary of yield and yield rank for Uniform Test 00, 1962-1964.

| Strain | Mean of 27 Tests | Ottawa Ont. | Guelph Ont. | Bath Mich. | East Lansing Mich. | Ashland Wis. | Crookston Minn. | St. Paul Minn. | Portage la Prairie Man. | Winnipeg Man. | Brandon Man. | Morden Man. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Years Tested | | 1962-1964 | 1962-1964 | 1963-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1963-1964 | 1962-1963 | 1963-1964 | 1962-1964 | 1962-1964 |
| Acme | 25.4 | 31.2 | 29.0 | 17.6 | 25.9 | 29.6 | 17.7 | 19.2 | 30.5 | 22.0 | 30.9 | 21.0 |
| Flambeau | 28.3 | 35.6 | 32.6 | 26.5 | 29.5 | 28.6 | 23.7 | 19.9 | 31.7 | 26.2 | 32.5 | 22.7 |
| Portage | 26.8 | 30.3 | 29.0 | 20.7 | 29.0 | 30.5 | 19.4 | 19.6 | 32.3 | 23.7 | 33.9 | 22.5 |
| 057-2921 | 28.5 | 35.0 | 28.9 | 17.4 | 30.0 | 27.9 | 22.9 | 19.0 | 37.8 | 21.2 | 37.0 | 23.9 |
| | Yield Rank | | | | | | | | | | | |
| Acme | 4 | 3 | 2 | 3 | 4 | 2 | 4 | 3 | 4 | 3 | 4 | 4 |
| Flambeau | 2 | 1 | 1 | 1 | 2 | 3 | 1 | 1 | 3 | 1 | 3 | 2 |
| Portage | 3 | 4 | 2 | 2 | 3 | 1 | 3 | 2 | 2 | 2 | 2 | 3 |
| 057-2921 | 1 | 2 | 4 | 4 | 1 | 4 | 2 | 4 | 1 | 4 | 1 | 1 |

## UNIFORM PRELIMINARY TEST 00 - 1964

| Strain | Originating Agency | Origin | Generation Composited |
|---|---|---|---|
| Acme | Central Exp. Farm, Ottawa, Ont. | Sel. from Pagoda | |
| Flambeau | Wis. Agr. Exp. Sta. | Introduction from Russia | |
| CM1 | Canada Dept. of Agr., Morden, Man. | Crest x L48-7289 | $F_5$ |
| CM2 | Canada Dept. of Agr., Morden, Man. | Crest x L48-7289 | $F_5$ |
| CM3 | Canada Dept. of Agr., Morden, Man. | Acme x Monroe | $F_5$ |
| CM4 | Canada Dept. of Agr., Morden, Man. | Acme x Monroe | $F_5$ |
| CM5 | Canada Dept. of Agr., Morden, Man. | Acme x Monroe | $F_5$ |
| M385 | Minn. A.E.S. & U.S.R.S.L. | Capital x Renville | $F_5$ |
| M386 | Minn. A.E.S. & U.S.R.S.L. | Capital x Renville | $F_5$ |
| M399 | Minn. A.E.S. & U.S.R.S.L. | Harosoy x Norchief | $F_5$ |
| M424 | Minn. A.E.S. & U.S.R.S.L. | Acme x Hardome | $F_5$ |
| M425 | Minn. A.E.S. & U.S.R.S.L. | Acme x Chippewa | $F_5$ |
| M431 | Minn. A.E.S. & U.S.R.S.L. | Grant x Acme | $F_5$ |
| M433 | Minn. A.E.S. & U.S.R.S.L. | Acme x Chippewa | $F_5$ |
| 060-3396 | Central Exp. Farm, Ottawa, Ont. | Sel. from P.I. 180501 | |
| UM16 | Univ. of Manitoba, Winnipeg, Man. | Acme x Comet | $F_5$ |
| UM17 | Univ. of Manitoba, Winnipeg, Man. | Crest x Flambeau | $F_5$ |

### Identification of Parent Strains

L48-7289 Sel. from Seneca x Richland, in Uniform Test II in 1950-51.

P.I. 180501 Sel. made in Germany from Strain 238 (of Manchurian origin) x P.I. 54616. P.I. 54616 was introduced in 1921 from Kungchuling, Chekiang Province, China, through B. W. Skvortzow, Harbin, Manchuria.

There was a rather small range in mean yield in this test, but a number of the experimental strains seem to be improved over the check in yield potential. All of them averaged higher in oil content than the checks, but are correspondingly reduced in protein percentage. Most of the new strains are late and should be compared to Flambeau. All have better lodging resistance and some have greater height than Flambeau. The data indicate that several strains are too late for this group, and should be in Group 0.

Some interesting observations on shattering at Urbana were made in addition to those reported in Table 10. On November 20, about two months after maturity, the rows in field M10 were again observed and, as expected, most strains were severely shattered. However, M385, M386, and 060-3396 showed almost no shattering; Flambeau and M425 were about 25% shattered; and all other Group 00 (Uniform and Preliminary) strains were from 50% to completely shattered. The extreme shattering resistance of these three lines, if consistent in other environments, would be a valuable trait in a commercial variety.

Table 10. Descriptive data for the strains in Uniform Preliminary Test 00, 1964.

| Strain | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color | Shattering* 1101 | Shattering* M10 |
|---|---|---|---|---|---|---|---|---|
| Acme | P | G | Br | S | Y | Y | 4.5 | 4.5 |
| Flambeau | P | T | Br | S | Y | Bl | 1.5 | 1.5 |
| CM1 | P | G | Br | D | Y | Ib | 3.5 | 2.5 |
| CM2 | P | G | Br | S | Y | G+Y | 3.5 | 2.5 |
| CM3 | P | G | Br | S | Y | Ib+Bf | 2.5 | 3.0 |
| CM4 | P | G | Br | D | Y | Bf | 2.0 | 1.0 |
| CM5 | W | G | Br | D | Y | Y | 4.5 | 2.5 |
| M385 | W | T | Br | S | Y | Y | 1.0 | 1.0 |
| M386 | P | G | Br | S | Y | Ib | 1.0 | 1.5 |
| M399 | P | G | Br | D | Y | Y | 2.5 | 2.0 |
| M424 | P | G | Br | S | Y | Y | 2.5 | 3.0 |
| M425 | P | G | Br | S | Y | G | 2.0 | 2.0 |
| M431 | W | G | Br | S | Y+G | Y+G | 3.0 | 2.0 |
| M433 | P | T | Br | S+D | Y | Y+Br | 2.0 | 2.0 |
| 060-3396 | P | T | Br | S | Y | Br | 1.0 | 1.5 |
| UM16 | P | G | Br | D | Y | Y | 3.5 | 3.0 |
| UM17 | P | G | Br | S | Y | G+Y | 4.0 | 2.5 |

*Average of 2 replications at Urbana, Illinois, in Field 1101 planted May 6 and in Field M10 planted June 3. Notes taken 1 month after maturity.

Table 11. Summary of data for Uniform Preliminary Test 00, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 5 | 5 | 3 | 5 | 4 | 4 | 4 | 4 | 4 |
| Acme | 19.4 | 16 | 0 | 1.2 | 26 | 2.8 | 17.7 | 41.0 | 18.5 |
| Flambeau | 21.1 | 9 | + 5.7 | 2.3 | 26 | 3.5 | 14.6 | 42.5 | 17.8 |
| CM1 | 23.1 | 1 | + 4.7 | 1.3 | 30 | 3.4 | 15.6 | 39.9 | 19.1 |
| CM2 | 20.2 | 14 | + 5.0 | 1.7 | 28 | 3.1 | 15.5 | 42.0 | 18.8 |
| CM3 | 21.1 | 9 | + 5.3 | 2.0 | 28 | 3.3 | 16.5 | 41.7 | 19.8 |
| CM4 | 21.2 | 8 | +10.0 | 1.9 | 30 | 3.4 | 18.4 | 41.2 | 19.7 |
| CM5 | 20.8 | 12 | + 4.7 | 1.4 | 28 | 2.6 | 16.7 | 41.2 | 19.6 |
| M385 | 21.8 | 6 | + 6.3 | 2.0 | 26 | 3.5 | 12.2 | 39.9 | 20.6 |
| M386 | 22.0 | 4 | + 7.3 | 1.6 | 26 | 2.9 | 13.6 | 40.8 | 19.9 |
| M399 | 19.2 | 17 | + 9.7 | 2.0 | 28 | 3.4 | 14.7 | 40.8 | 20.1 |
| M424 | 22.0 | 4 | + 3.7 | 1.5 | 28 | 2.5 | 15.9 | 40.5 | 19.8 |
| M425 | 22.2 | 3 | + 3.3 | 1.5 | 27 | 3.0 | 14.0 | 40.7 | 19.1 |
| M431 | 22.3 | 2 | + 3.0 | 1.3 | 25 | 2.9 | 13.8 | 40.5 | 19.2 |
| M433 | 21.5 | 7 | - 0.3 | 1.5 | 26 | 3.0 | 13.8 | 41.1 | 18.8 |
| 060-3396 | 21.1 | 9 | + 5.0 | 2.0 | 24 | 2.8 | 14.2 | 40.5 | 19.8 |
| UM16 | 20.2 | 14 | + 3.7 | 1.2 | 26 | 2.8 | 19.4 | 41.3 | 19.4 |
| UM17 | 20.7 | 13 | + 8.7 | 1.8 | 27 | 2.8 | 19.1 | 42.1 | 19.0 |

[1]Days earlier (-) or later (+) than Acme which matured September 3, 107 days after planting.

Table 12. Disease data for Uniform Preliminary Test 00, 1964.

| Strain | Bacterial Blight Ill. a[1] | Brown Stem Rot Ill. n[1] | Phytophthora Rot Ind. a | Frogeye Ind. Race 2 a |
|---|---|---|---|---|
| Acme | 3 | 2 | Seg. | 5 |
| Flambeau | 3 | 3 | S | 3 |
| CM1 | 3 | 1 | Seg. | 5 |
| CM2 | 2 | 3 | Seg. | 4 |
| CM3 | 2 | 3 | S | 4 |
| CM4 | 2 | 2 | S | 4 |
| CM5 | 2 | 1 | Seg. | 3 |
| M385 | 3 | 3 | S | 5 |
| M386 | 3 | 2 | S | 4 |
| M399 | 2 | 1 | S | 5 |
| M424 | 3 | 2 | S | 4 |
| M425 | 2 | 1 | S | 3 |
| M431 | 3 | 1 | S | 3 |
| M433 | 3 | 3 | S | 4 |
| 060-3396 | 2 | 3 | S | 5 |
| UM16 | 3 | 3 | S | 4 |
| UM17 | 3 | 3 | S | 3 |

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

Table 13. Yield for Uniform Preliminary Test 00, 1964.

| Strain | Mean of 5 Tests | Rank | Ottawa Ont. | Bath Mich.[1] | East Lansing Mich. | Ash-land Wis. | St. Paul Minn. | Winni-peg Man. | Morden Man. | On-tario Ore.[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | * | | * | | | | * |
| Acme | 19.4 | 16 | 26.5 | 26.4 | 18.7 | 27.3 | 15.0 | 18.8 | 17.8 | 45.5 |
| Flambeau | 21.1 | 9 | 32.4 | 30.0 | 21.7 | 29.4 | 16.2 | 22.0 | 13.2 | -- |
| CM1 | 23.1 | 1 | 32.2 | 29.5 | 22.7 | 28.9 | 16.1 | 24.0 | 20.5 | 50.7 |
| CM2 | 20.2 | 14 | 29.7 | 20.6 | 19.6 | 26.6 | 14.6 | 20.2 | 17.1 | 42.2 |
| CM3 | 21.1 | 9 | 25.5 | 24.3 | 24.1 | 25.5 | 15.4 | 21.3 | 19.1 | 46.8 |
| CM4 | 21.2 | 8 | 36.1 | 26.1 | 23.5 | 30.0 | 15.2 | 16.8 | 14.6 | 45.4 |
| CM5 | 20.8 | 12 | 30.4 | 25.6 | 21.0 | 22.1 | 17.2 | 16.4 | 19.0 | 49.5 |
| M385 | 21.8 | 6 | 34.6 | 35.2 | 24.0 | 25.5 | 15.0 | 14.9 | 20.4 | 50.0 |
| M386 | 22.0 | 4 | 37.3 | 31.4 | 23.0 | 24.9 | 15.6 | 17.3 | 16.8 | 48.8 |
| M399 | 19.2 | 17 | 34.9 | 32.9 | 22.4 | 22.9 | 13.6 | 13.3 | 11.6 | 50.5 |
| M424 | 22.0 | 4 | 32.9 | 22.5 | 23.0 | 23.8 | 15.2 | 20.1 | 18.7 | 52.1 |
| M425 | 22.2 | 3 | 33.2 | 26.2 | 22.0 | 26.7 | 12.6 | 21.1 | 22.3 | 49.8 |
| M431 | 22.3 | 2 | 34.0 | 30.4 | 20.7 | 25.7 | 14.2 | 22.0 | 20.5 | 51.8 |
| M433 | 21.5 | 7 | 33.2 | 31.2 | 19.1 | 24.3 | 14.1 | 21.3 | 19.8 | 47.1 |
| 060-3396 | 21.1 | 9 | 36.8 | 27.2 | 23.5 | 15.6 | 14.7 | 13.9 | 16.6 | 43.1 |
| UM16 | 20.2 | 14 | 29.4 | 28.5 | 21.2 | 27.4 | 16.6 | 17.5 | 16.3 | 51.9 |
| UM17 | 20.7 | 13 | 28.5 | 23.7 | 21.5 | 21.8 | 15.5 | 20.2 | 17.9 | 46.1 |
| Coef. of Var. (%) | | | 14.3 | 11.2 | 5.5 | 21.9 | -- | 5.6 | 13.1 | 4.7 |
| L.S.D. (5%) | | | N.S. | 4.4 | 2.6 | N.S. | -- | 1.6 | 4.7 | 4.7 |
| Row Spacing (In.) | | | 38 | 32 | 24 | 24 | 36 | 24 | 36 | 20 |

*Not included in the mean.
[1]Irrigated. Four replications at Bath, Michigan.

Table 14. Yield rank for Uniform Preliminary Test 00, 1964.

| Strain | Mean of 5 Tests | Ottawa Ont. | Bath Mich.[1] | East Lansing Mich. | Ash-land Wis. | St. Paul Minn. | Winni-peg Man. | Morden Man. | On-tario Ore.[1] |
|---|---|---|---|---|---|---|---|---|---|
| | | | * | | * | | | | * |
| Acme | 16 | 16 | 10 | 17 | 5 | 10 | 10 | 10 | 13 |
| Flambeau | 9 | 10 | 6 | 10 | 2 | 3 | 2 | 16 | -- |
| CM1 | 1 | 11 | 7 | 7 | 3 | 4 | 1 | 2 | 4 |
| CM2 | 14 | 13 | 17 | 15 | 7 | 13 | 7 | 11 | 16 |
| CM3 | 9 | 17 | 14 | 1 | 9 | 7 | 4 | 6 | 11 |
| CM4 | 8 | 3 | 12 | 3 | 1 | 8 | 13 | 15 | 14 |
| CM5 | 12 | 12 | 13 | 13 | 15 | 1 | 14 | 7 | 8 |
| M385 | 6 | 5 | 1 | 2 | 9 | 10 | 15 | 4 | 6 |
| M386 | 4 | 1 | 3 | 5 | 11 | 5 | 12 | 12 | 9 |
| M399 | 17 | 4 | 2 | 8 | 14 | 16 | 17 | 17 | 5 |
| M424 | 4 | 9 | 16 | 5 | 13 | 8 | 9 | 8 | 1 |
| M425 | 3 | 7 | 11 | 9 | 6 | 17 | 6 | 1 | 7 |
| M431 | 2 | 6 | 5 | 14 | 8 | 14 | 2 | 2 | 3 |
| M433 | 7 | 7 | 4 | 16 | 12 | 15 | 4 | 5 | 10 |
| 060-3396 | 9 | 2 | 9 | 3 | 17 | 12 | 16 | 13 | 15 |
| UM16 | 14 | 14 | 8 | 12 | 4 | 2 | 11 | 14 | 2 |
| UM17 | 13 | 15 | 15 | 11 | 16 | 6 | 7 | 9 | 12 |

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

Table 15. Maturity, days earlier (-) or later (+) than Acme, for Uniform Preliminary Test 00, 1964.

| Strain | Mean of 3 Tests | Ottawa Ont. | Bath Mich.[1] | East Lansing Mich. | Ashland Wis. | St. Paul Minn. | Winnipeg Man.[2] | Morden Man.[2] | Ontario Ore.[1] |
|---|---|---|---|---|---|---|---|---|---|
| | | | * | | * | | * | * | * |
| Acme | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Flambeau | + 5.7 | +12 | +8 | +3 | +8 | +2 | +6 | -- | -- |
| CM1 | + 4.7 | +11 | +1 | 0 | +3 | +3 | +3 | +1 | + 2 |
| CM2 | + 5.0 | +11 | 0 | +1 | +7 | +3 | +3 | +1 | + 3 |
| CM3 | + 5.3 | +12 | +1 | +1 | +7 | +3 | +3 | +1 | + 3 |
| CM4 | +10.0 | +14 | +2 | +9 | +7 | +7 | +5 | +1 | + 6 |
| CM5 | + 4.7 | +10 | 0 | +3 | +6 | +1 | +2 | +1 | + 3 |
| M385 | + 6.3 | + 8 | 0 | +5 | +6 | +6 | -- | -- | + 2 |
| M386 | + 7.3 | + 9 | +1 | +7 | +7 | +6 | -- | -- | + 2 |
| M399 | + 9.7 | +19 | +8 | +6 | +7 | +4 | -- | -- | +17 |
| M424 | + 3.7 | + 5 | 0 | +2 | +4 | +4 | +2 | +1 | + 4 |
| M425 | + 3.3 | + 7 | 0 | +2 | -3 | +1 | +1 | 0 | + 2 |
| M431 | + 3.0 | + 6 | +1 | +2 | -2 | +1 | +2 | -1 | - 2 |
| M433 | - 0.3 | + 2 | 0 | +1 | -4 | -4 | +1 | 0 | - 1 |
| 060-3396 | + 5.0 | + 8 | 0 | +3 | +5 | +4 | -- | -- | + 3 |
| UM16 | + 3.7 | + 8 | 0 | +1 | +2 | +2 | +2 | +2 | + 3 |
| UM17 | + 8.7 | +12 | +1 | +7 | +5 | +7 | +3 | +2 | + 5 |
| Date planted | 5-19 | 5-15 | 5-22 | 5-28 | 5-29 | 5-14 | 5-21 | 5-13 | 5-13 |
| Acme matured | 9-3 | 9-7 | 9-10 | 9-9 | 9-21 | 8-25 | 9-17 | 9-17 | 9-3 |
| Days to mature | 107 | 115 | 111 | 104 | 115 | 103 | 119 | 127 | 113 |

*Not included in the mean.
[1]Irrigated.
[2]Missing dates due to frost before maturity.

## UNIFORM TEST 0 - 1964

| 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 | $F_4$ |
| M387 | Minn. A.E.S. & U.S.R.S.L. | Renville x Capital | $F_5$ |
| 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 | $F_5$ |
| M406 | Minn. A.E.S. & U.S.R.S.L. | Harosoy x Norchief | $F_5$ |
| M417 | Minn. A.E.S. & U.S.R.S.L. | Lincoln x Mandarin (Ottawa) | $F_5$ |
| M422 | Minn. A.E.S. & U.S.R.S.L. | Renville x Capital | $F_5$ |
| 0-4323 | Research Station, Harrow, Ont. | Capital x Hardome | $F_7$ |
| 056-2678 | Central Exp. Farm, Ottawa, Ont. | Blackhawk x Capital | $F_7$ |
| 057-2826 | Central Exp. Farm, Ottawa, Ont. | Adams x A3K-884 | $F_{12}$ |
| W1S-191 | Wis. A.E.S. & U.S.R.S.L. | Norchief x Clark | $F_7$ |
| W1S-294 | Wis. A.E.S. & U.S.R.S.L. | Norchief x Harosoy | $F_7$ |

### Identification of Parent Strains

| | |
|---|---|
| A3K-884 | Sel. from Mukden x Richland, progenitor of Blackhawk, in Uniform Test I in 1945-48. |
| M10 | Sel. from Lincoln (2) x Richland, in Uniform Test I in 1949-51. |

The three-year summary in Table 23 includes three check varieties with average yield increasing with later maturity, and three experimental strains. 0-4323, the earliest of the three, has outyielded Norchief and has done as well or better than Merit, was taller than all three check varieties, resisted lodging, but averaged poorer in seed quality. The other two strains had increased plant height but did not outyield the check variety of comparable maturity.

M417 was tested in Uniform Test I last year, and is being increased for possible release. In 1964, it did not yield as well as might be expected of a strain of its maturity, averaging less than Grant, but it did show improved lodging resistance over Grant.

The remaining strains yielded about as expected for their maturity, but some had greater height than the checks and improved lodging resistance. Most of them tended to have poorer seed quality but about the same composition. The extreme strain x location interaction for yield this year makes selection rather hazardous.

Table 16. Regional testing history and descriptive data for the strains in Uniform Test 0, 1964.

| Strain | Years in Uniform Test 0 | Previous Regional Test | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color | Shattering* 1101 | Shattering* M10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Grant | 15 | P.T. 0 | W | Lt | Br | S | Y | Bl | 3.0 | 3.0 |
| Merit | 7 | P.T. 0 | W | G | Br | D | Y | Bf | 1.0 | 1.0 |
| Norchief | 15 | None | P | T | Br | D | Y | Bl | 1.5 | 2.5 |
| M387 | 1 | 63 U.T. 00 | P | G | Br | D | Y | Y | 1.5 | 4.5 |
| M389 | 2 | P.T. 0 | P | G | Br | D | Y | Y | 1.0 | 1.0 |
| M391 | 2 | P.T. 0 | P | T | Br | S | Y | Y | 1.0 | 2.5 |
| M406 | 1 | P.T. 0 & I | P | G | Br | D | Y | Y | 1.5 | 2.5 |
| M417 | 1 | 63 U.T. I | W | G | Br | S | Y | Y | 2.0 | 4.0 |
| M422 | 1 | P.T. 00 | W | G | Br | S | Y | Y | 1.5 | 5.0 |
| 0-4323 | 4 | P.T. 0 | P | T | Br | S | Y | Y | 1.0 | 2.5 |
| 056-2678 | 3 | P.T. 0 | W | T | Br | S | Y | Y | 1.5 | 3.0 |
| 057-2826 | 3 | P.T. 0 | W | G | Br | S | Y | Bf | 3.5 | 5.0 |
| W1S-191 | 1 | P.T. 0 | P | T | Br | D | G | Bl | 1.0 | 2.0 |
| W1S-294 | 1 | P.T. 0 | P | G | Br | D | Y | Y | 2.0 | 2.0 |

*Average of 2 replications at Urbana, Illinois, in Field 1101 planted May 6 and in Field M10 planted June 3. Notes taken 1 month after maturity in 1101 and about 2 months after maturity on November 20 in M10.

Table 17. Summary of data for Uniform Test 0, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 11 | 11 | 9 | 8 | 11 | 11 | 8 | 7 | 7 |
| Grant | 29.4 | 1 | +4.0 | 2.2 | 29 | 2.0 | 16.7 | 40.4 | 19.3 |
| Merit | 26.2 | 9 | 0 | 1.6 | 30 | 2.0 | 14.5 | 39.2 | 20.3 |
| Norchief | 25.4 | 12 | -1.2 | 1.8 | 27 | 2.2 | 16.6 | 40.4 | 19.6 |
| M387 | 25.2 | 13 | -3.0 | 1.6 | 29 | 2.4 | 13.9 | 38.5 | 20.2 |
| M389 | 26.2 | 9 | +0.1 | 1.8 | 27 | 2.2 | 15.7 | 40.3 | 20.0 |
| M391 | 27.1 | 6 | +2.3 | 1.9 | 32 | 2.3 | 16.6 | 39.7 | 20.4 |
| M406 | 28.7 | 2 | +2.0 | 2.1 | 31 | 2.3 | 19.5 | 39.9 | 19.5 |
| M417 | 28.0 | 3 | +6.2 | 1.9 | 30 | 2.3 | 17.7 | 40.6 | 19.8 |
| M422 | 26.3 | 8 | -1.0 | 1.3 | 28 | 2.5 | 15.2 | 40.4 | 19.9 |
| 0-4323 | 24.4 | 14 | -5.0 | 2.0 | 34 | 2.6 | 14.3 | 40.8 | 19.7 |
| 056-2678 | 25.5 | 11 | +1.4 | 2.0 | 35 | 2.4 | 14.4 | 40.9 | 19.5 |
| 057-2826 | 27.5 | 5 | +3.1 | 2.0 | 32 | 2.3 | 16.2 | 39.8 | 19.5 |
| W1S-191 | 27.8 | 4 | +2.1 | 1.8 | 30 | 2.3 | 16.6 | 41.3 | 19.7 |
| W1S-294 | 26.7 | 7 | +0.1 | 1.5 | 31 | 2.3 | 15.6 | 40.1 | 19.6 |

[1]Days earlier (-) or later (+) than Merit which matured September 17, 117 days after planting.

Table 18. Disease data for Uniform Test 0, 1964.

| Strain | Bacterial Blight Ill. a[1] | Bacterial Pustule Ia. a | Phytophthora Rot Ind. a | Frogeye Ind. Race 2 a | Chocolate Spot[2] Ia. a |
|---|---|---|---|---|---|
| Grant | 3 | 4 | S | 5 | 2 |
| Merit | 3 | 5 | R | 5 | 3 |
| Norchief | 3 | 4 | S | 5 | 3 |
| M387 | 4 | 5 | S | 5 | 3 |
| M389 | 3 | 5 | S | 5 | 4 |
| M391 | 2 | 5 | S | 5 | 4 |
| M406 | 2 | 5 | S | 5 | 5 |
| M417 | 3 | 5 | S | 4 | 3 |
| M422 | 3 | 5 | S | 5 | 3 |
| 0-4323 | 2 | 5 | S | 4 | 4 |
| 056-2678 | 1 | 5 | S | 5 | 3 |
| 057-2826 | 2 | 4 | S | 5 | 4 |
| W1S-191 | 2 | 5 | S | 5 | 5 |
| W1S-294 | 3 | 5 | S | 5 | 4 |

[1]a = artificial inoculation; n = natural infection.
[2]A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 19. Yield and yield rank for Uniform Test 0, 1964.

| Strain | Mean of 11 Tests | Ottawa Ont. | Guelph Ont. | Ridge-town Ont. | Harrow Ont. | Colum-bus Ohio |
|---|---|---|---|---|---|---|
| Grant | 29.4 | 39.5 | 31.7 | 46.9 | 35.8 | 36.4 |
| Merit | 26.2 | 35.7 | 27.8 | 40.6 | 24.2 | 29.8 |
| Norchief | 25.4 | 34.8 | 27.7 | 40.7 | 25.9 | 27.5 |
| M387 | 25.2 | 30.9 | 31.7 | 36.1 | 25.0 | 32.1 |
| M389 | 26.2 | 35.0 | 33.0 | 38.8 | 28.7 | 31.0 |
| M391 | 27.1 | 37.3 | 30.0 | 38.4 | 29.8 | 35.9 |
| M406 | 28.7 | 36.9 | 29.1 | 45.6 | 31.0 | 35.9 |
| M417 | 28.0 | 37.8 | 28.2 | 42.0 | 37.3 | 34.9 |
| M422 | 26.3 | 33.1 | 34.1 | 37.1 | 23.9 | 34.0 |
| 0-4323 | 24.4 | 32.7 | 26.9 | 36.8 | 27.2 | 32.9 |
| 056-2678 | 25.5 | 35.7 | 27.7 | 39.5 | 28.8 | 32.0 |
| 057-2826 | 27.5 | 35.0 | 30.2 | 44.0 | 29.6 | 41.1 |
| W1S-191 | 27.8 | 32.6 | 34.4 | 43.5 | 34.7 | 36.7 |
| W1S-294 | 26.7 | 37.7 | 28.8 | 36.9 | 29.2 | 35.6 |
| Coef. of Var. (%) | | 7.7 | 10.3 | 5.1 | 12.6 | 9.9 |
| L.S.D. (5%) | | 3.9 | 9.8 | 2.8 | 5.3 | 4.8 |
| Row Spacing (In.) | | 38 | 27 | 24 | 40 | 28 |
| | Yield Rank | | | | | |
| Grant | 1 | 1 | 4 | 1 | 2 | 3 |
| Merit | 9 | 6 | 11 | 7 | 13 | 13 |
| Norchief | 12 | 10 | 12 | 6 | 11 | 14 |
| M387 | 13 | 14 | 4 | 14 | 12 | 10 |
| M389 | 9 | 8 | 3 | 9 | 9 | 12 |
| M391 | 6 | 4 | 7 | 10 | 5 | 4 |
| M406 | 2 | 5 | 8 | 2 | 4 | 4 |
| M417 | 3 | 2 | 10 | 5 | 1 | 7 |
| M422 | 8 | 11 | 2 | 11 | 14 | 8 |
| 0-4323 | 14 | 12 | 14 | 13 | 10 | 9 |
| 056-2678 | 11 | 6 | 12 | 8 | 8 | 11 |
| 057-2826 | 5 | 8 | 6 | 3 | 6 | 1 |
| W1S-191 | 4 | 13 | 1 | 4 | 3 | 2 |
| W1S-294 | 7 | 3 | 9 | 12 | 7 | 6 |

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

Table 19. (Continued)

| Strain | East Lansing Mich. | Spooner Wis.[1] | Morris Minn. | Fargo N.D. | Eureka S.D. | Water-town S.D. | On-tario Ore.[1] * |
|---|---|---|---|---|---|---|---|
| Grant | 40.0 | 28.9 | 18.1 | 21.6 | 12.3 | 12.2 | 45.9 |
| Merit | 32.6 | 32.0 | 18.7 | 23.2 | 13.2 | 10.9 | 49.8 |
| Norchief | 29.9 | 29.3 | 18.6 | 20.7 | 13.9 | 10.5 | 42.0 |
| M387 | 32.3 | 30.5 | 16.8 | 19.0 | 13.7 | 9.3 | -- |
| M389 | 32.1 | 32.3 | 17.3 | 18.4 | 12.9 | 9.1 | 48.4 |
| M391 | 37.7 | 26.8 | 18.2 | 20.1 | 12.2 | 11.9 | 44.8 |
| M406 | 37.3 | 31.7 | 20.2 | 21.5 | 14.9 | 11.9 | 54.7 |
| M417 | 38.7 | 28.2 | 16.8 | 22.3 | 13.0 | 8.9 | 48.9 |
| M422 | 32.5 | 30.1 | 19.0 | 21.2 | 13.6 | 10.6 | 48.9 |
| 0-4323 | 33.2 | 31.5 | 13.8 | 17.2 | 9.6 | 6.7 | 50.1 |
| 056-2678 | 33.3 | 27.2 | 18.0 | 17.8 | 11.8 | 8.4 | -- |
| 057-2826 | 33.2 | 26.4 | 18.6 | 20.8 | 12.6 | 11.3 | 46.3 |
| W1S-191 | 35.0 | 28.5 | 18.6 | 20.3 | 11.6 | 10.2 | 42.1 |
| W1S-294 | 32.8 | 32.2 | 18.5 | 19.9 | 12.6 | 9.0 | 51.2 |
| Coef. of Var. (%) | 6.0 | 11.1 | -- | 8.9 | 12.0 | 6.9 | 5.0 |
| L.S.D. (5%) | 2.9 | N.S. | -- | 2.5 | 3.3 | 1.5 | 4.1 |
| Row Spacing (In.) | 24 | 36 | 40 | 40 | 42 | 42 | 20 |
| | Yield Rank | | | | | | |
| Grant | 1 | 9 | 9 | 3 | 10 | 1 | 9 |
| Merit | 10 | 3 | 3 | 1 | 5 | 5 | 4 |
| Norchief | 14 | 8 | 4 | 7 | 2 | 7 | 12 |
| M387 | 12 | 6 | 12 | 11 | 3 | 9 | -- |
| M389 | 13 | 1 | 11 | 12 | 7 | 10 | 7 |
| M391 | 3 | 13 | 8 | 9 | 11 | 2 | 10 |
| M406 | 4 | 4 | 1 | 4 | 1 | 2 | 1 |
| M417 | 2 | 11 | 12 | 2 | 6 | 12 | 5 |
| M422 | 11 | 7 | 2 | 5 | 4 | 6 | 5 |
| 0-4323 | 7 | 5 | 14 | 14 | 14 | 14 | 3 |
| 056-2678 | 6 | 12 | 10 | 13 | 12 | 13 | -- |
| 057-2826 | 7 | 14 | 4 | 6 | 8 | 4 | 8 |
| W1S-191 | 5 | 10 | 4 | 8 | 13 | 8 | 11 |
| W1S-294 | 9 | 2 | 7 | 10 | 8 | 11 | 2 |

Table 20. Maturity, days earlier (-) or later (+) than Merit, and lodging for Uniform Test 0, 1964.

| Strain | Mean of 9 Tests | Ottawa Ont. | Guelph Ont. | Ridge-town Ont. | Harrow Ont. | Colum-bus Ohio |
|---|---|---|---|---|---|---|
| Grant | +4.0 | + 9 | +4 | 0 | +4 | +4 |
| Merit | 0 | 0 | 0 | 0 | 0 | 0 |
| Norchief | -1.2 | - 1 | -3 | 0 | -5 | -1 |
| M387 | -3.0 | - 9 | -5 | 0 | -7 | -4 |
| M389 | +0.1 | - 1 | -1 | +3 | 0 | -2 |
| M391 | +2.3 | + 2 | +4 | +2 | +3 | +2 |
| M406 | +2.0 | + 6 | +3 | +1 | +1 | +1 |
| M417 | +6.2 | +11 | +3 | +9 | +7 | +3 |
| M422 | -1.0 | - 7 | -5 | +3 | -5 | -2 |
| 0-4323 | -5.0 | - 7 | -3 | 0 | -6 | -4 |
| 056-2678 | +1.4 | 0 | +3 | +6 | +3 | +1 |
| 057-2826 | +3.1 | + 2 | +3 | +3 | +4 | +4 |
| W1S-191 | +2.1 | + 3 | -1 | +2 | +2 | +3 |
| W1S-294 | +0.1 | 0 | +1 | +2 | -3 | +2 |
| Date planted | 5-23 | 5-15 | 5-29 | 5-25 | 5-26 | 5-18 |
| Merit matured | 9-17 | 9-25 | 9-25 | 9-21 | 9-5 | 8-29 |
| Days to mature | 117 | 133 | 119 | 119 | 102 | 103 |
| | Mean of 8 Tests | Lodging | | | | |
| Grant | 2.2 | 1.9 | 3.8 | 3.0 | 2.2 | 1.0 |
| Merit | 1.6 | 1.5 | 1.8 | 2.0 | 1.2 | 1.2 |
| Norchief | 1.8 | 1.6 | 2.5 | 3.0 | 1.0 | 1.0 |
| M387 | 1.6 | 1.0 | 1.5 | 2.0 | 1.2 | 1.5 |
| M389 | 1.8 | 1.5 | 1.3 | 2.0 | 2.0 | 1.0 |
| M391 | 1.9 | 2.5 | 3.0 | 2.0 | 1.0 | 1.2 |
| M406 | 2.1 | 2.3 | 3.5 | 3.0 | 1.5 | 1.2 |
| M417 | 1.9 | 1.5 | 1.5 | 3.0 | 2.2 | 1.2 |
| M422 | 1.3 | 1.0 | 1.5 | 2.0 | 1.0 | 1.0 |
| 0-4323 | 2.0 | 1.8 | 2.3 | 3.0 | 2.0 | 1.0 |
| 056-2678 | 2.0 | 2.3 | 3.5 | 2.0 | 1.2 | 1.0 |
| 057-2826 | 2.0 | 1.4 | 3.0 | 4.0 | 1.2 | 1.2 |
| W1S-191 | 1.8 | 1.5 | 1.5 | 2.0 | 2.0 | 1.0 |
| W1S-294 | 1.5 | 1.9 | 2.5 | 2.0 | 1.0 | 1.0 |

*Not included in the mean.
[1]Missing dates due to frost before maturity.
[2]Irrigated.

Table 20. (Continued)

| Strain | East Lansing Mich. | Spooner Wis.[1,2] | Morris Minn. | Fargo N.D.[1] | Eureka S.D. | Water-town S.D. | On-tario Ore.[2] |
|---|---|---|---|---|---|---|---|
| | | * | | * | | | * |
| Grant | + 6 | | + 2 | | +1 | +6 | + 3 |
| Merit | 0 | | 0 | | 0 | 0 | 0 |
| Norchief | + 3 | | - 6 | | +1 | +1 | - 3 |
| M387 | - 1 | | - 3 | | +2 | 0 | -- |
| M389 | + 1 | | - 2 | | +2 | +1 | - 2 |
| M391 | + 3 | | + 2 | | +2 | +1 | + 2 |
| M406 | + 2 | | + 1 | | +1 | +2 | + 5 |
| M417 | + 9 | | + 7 | | +3 | +4 | + 2 |
| M422 | + 4 | | 0 | | +4 | -1 | -12 |
| 0-4323 | -10 | | -13 | | -2 | 0 | - 8 |
| 056-2678 | + 4 | | - 3 | | -1 | 0 | -- |
| 057-2826 | + 5 | | + 3 | | +1 | +3 | + 7 |
| W1S-191 | + 8 | | 0 | | +1 | +1 | + 3 |
| W1S-294 | + 2 | | - 4 | | 0 | +1 | - 5 |
| Date planted | 5-28 | 5-26 | 5-28 | 5-14 | 5-21 | 5-20 | 5-9 |
| Merit matured | 9-21 | -- | 9-26 | -- | 9-18 | 9-20 | 9-15 |
| Days to mature | 116 | -- | 121 | -- | 120 | 123 | 129 |

| | Lodging | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | * | * | * | * |
| Grant | 2.0 | 1.5 | 2.5 | 1.0 | 1.0 | 1.0 | 3.5 |
| Merit | 2.0 | 1.5 | 1.8 | 1.0 | 1.0 | 1.0 | 3.2 |
| Norchief | 2.0 | 1.3 | 1.8 | 1.0 | 1.0 | 1.0 | 3.8 |
| M387 | 2.0 | 1.0 | 2.6 | 1.0 | 1.0 | 1.0 | -- |
| M389 | 2.0 | 1.5 | 3.0 | 1.0 | 1.0 | 1.0 | 3.2 |
| M391 | 2.0 | 1.3 | 2.3 | 1.0 | 1.0 | 1.0 | 2.5 |
| M406 | 2.0 | 1.5 | 1.6 | 1.0 | 1.0 | 1.0 | 4.2 |
| M417 | 2.0 | 1.0 | 2.6 | 1.0 | 1.0 | 1.0 | 2.7 |
| M422 | 1.0 | 1.0 | 2.1 | 1.0 | 1.0 | 1.0 | 1.7 |
| 0-4323 | 2.0 | 2.2 | 1.8 | 1.0 | 1.0 | 1.0 | 3.2 |
| 056-2678 | 2.0 | 2.2 | 2.1 | 1.0 | 1.0 | 1.0 | -- |
| 057-2826 | 2.0 | 2.0 | 1.5 | 1.0 | 1.0 | 1.0 | 3.8 |
| W1S-191 | 2.0 | 1.5 | 2.6 | 1.0 | 1.0 | 1.0 | 3.5 |
| W1S-294 | 1.0 | 1.3 | 1.6 | 1.0 | 1.0 | 1.0 | 3.2 |

Table 21. Plant height and seed quality for Uniform Test 0, 1964.

| Strain | Mean of 11 Tests | Ottawa Ont. | Guelph Ont. | Ridge-town Ont. | Harrow Ont. | Colum-bus Ohio |
|---|---|---|---|---|---|---|
| Grant | 29 | 30 | 36 | 31 | 26 | 33 |
| Merit | 30 | 34 | 38 | 33 | 23 | 33 |
| Norchief | 27 | 29 | 33 | 29 | 23 | 31 |
| M387 | 29 | 30 | 36 | 32 | 24 | 32 |
| M389 | 27 | 30 | 32 | 29 | 24 | 30 |
| M391 | 32 | 36 | 38 | 35 | 27 | 37 |
| M406 | 31 | 34 | 39 | 35 | 25 | 33 |
| M417 | 30 | 34 | 35 | 32 | 28 | 32 |
| M422 | 28 | 29 | 34 | 31 | 24 | 31 |
| 0-4323 | 34 | 37 | 40 | 40 | 30 | 37 |
| 056-2678 | 35 | 38 | 44 | 40 | 32 | 38 |
| 057-2826 | 32 | 33 | 38 | 37 | 26 | 36 |
| W1S-191 | 30 | 33 | 35 | 32 | 26 | 32 |
| W1S-294 | 31 | 36 | 39 | 34 | 26 | 33 |

| | Mean of 11 Tests | Seed Quality | | | | |
|---|---|---|---|---|---|---|
| Grant | 2.0 | 2.0 | 2.0 | 2.0 | 1.5 | 1.0 |
| Merit | 2.0 | 1.0 | 2.0 | 3.0 | 2.0 | 1.0 |
| Norchief | 2.2 | 2.5 | 3.0 | 2.0 | 1.5 | 1.0 |
| M387 | 2.4 | 2.5 | 3.0 | 3.0 | 2.0 | 2.5 |
| M389 | 2.2 | 2.0 | 2.0 | 3.0 | 2.0 | 1.0 |
| M391 | 2.3 | 2.5 | 2.0 | 2.0 | 2.8 | 1.5 |
| M406 | 2.3 | 2.5 | 3.0 | 2.0 | 1.0 | 1.0 |
| M417 | 2.3 | 2.5 | 3.0 | 2.0 | 1.5 | 1.0 |
| M422 | 2.5 | 2.5 | 2.0 | 3.0 | 2.5 | 1.0 |
| 0-4323 | 2.6 | 2.5 | 3.0 | 2.0 | 2.5 | 1.5 |
| 056-2678 | 2.4 | 2.0 | 3.0 | 2.0 | 2.8 | 1.0 |
| 057-2826 | 2.3 | 2.0 | 2.0 | 2.0 | 2.0 | 1.0 |
| W1S-191 | 2.3 | 2.0 | 5.0 | 2.0 | 1.0 | 1.0 |
| W1S-294 | 2.3 | 2.5 | 2.0 | 2.0 | 2.0 | 1.0 |

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

Table 21. (Continued)

| Strain | East Lansing Mich. | Spooner Wis.[1] | Morris Minn. | Fargo N.D. | Eureka S.D. | Water-town S.D. | On-tario Ore.[1] |
|---|---|---|---|---|---|---|---|
| Grant | 26 | 34 | 26 | 30 | 24 | 20 | |
| Merit | 25 | 38 | 30 | 33 | 26 | 22 | |
| Norchief | 23 | 34 | 25 | 28 | 23 | 20 | |
| M387 | 26 | 35 | 28 | 32 | 25 | 22 | |
| M389 | 24 | 33 | 26 | 30 | 24 | 20 | |
| M391 | 29 | 37 | 32 | 34 | 25 | 23 | |
| M406 | 25 | 35 | 31 | 32 | 27 | 22 | |
| M417 | 25 | 34 | 29 | 32 | 25 | 23 | |
| M422 | 26 | 34 | 27 | 28 | 24 | 21 | |
| 0-4323 | 31 | 40 | 33 | 35 | 27 | 26 | |
| 056-2678 | 29 | 42 | 34 | 37 | 28 | 27 | |
| 057-2826 | 26 | 38 | 30 | 35 | 27 | 24 | |
| W1S-191 | 26 | 36 | 28 | 30 | 23 | 26 | |
| W1S-294 | 24 | 39 | 29 | 33 | 24 | 24 | |

| | Seed Quality | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | * |
| Grant | 2.0 | 1.0 | 2.5 | 2.0 | 3.0 | 3.0 | 2.0 |
| Merit | 2.0 | 2.5 | 2.5 | 1.5 | 2.0 | 3.0 | 1.5 |
| Norchief | 2.0 | 1.0 | 3.5 | 2.0 | 3.0 | 3.0 | 2.5 |
| M387 | 2.0 | 1.5 | 3.8 | 1.5 | 3.0 | 2.0 | -- |
| M389 | 2.0 | 2.0 | 3.0 | 1.5 | 3.0 | 3.0 | 2.0 |
| M391 | 2.0 | 2.3 | 3.5 | 1.5 | 3.0 | 2.0 | 2.5 |
| M406 | 3.0 | 2.3 | 3.5 | 1.0 | 3.0 | 3.0 | 2.0 |
| M417 | 3.0 | 1.8 | 2.5 | 1.5 | 3.0 | 3.0 | 2.0 |
| M422 | 3.0 | 1.5 | 3.5 | 1.5 | 4.0 | 3.0 | 2.0 |
| 0-4323 | 3.0 | 2.2 | 3.5 | 2.0 | 3.0 | 3.0 | 2.0 |
| 056-2678 | 3.0 | 2.2 | 3.5 | 1.5 | 2.0 | 3.0 | -- |
| 057-2826 | 3.0 | 1.8 | 3.8 | 1.5 | 3.0 | 3.0 | 2.0 |
| W1S-191 | 2.0 | 1.3 | 3.5 | 2.0 | 3.0 | 3.0 | 2.5 |
| W1S-294 | 3.0 | 1.3 | 4.0 | 1.5 | 3.0 | 3.0 | 2.0 |

Table 22. Percentages of protein and oil for Uniform Test 0, 1964.

| Strain | Mean of 7 Tests | Ottawa Ont. | Guelph Ont. | Columbus Ohio | East Lansing Mich. | Spooner Wis.[1] | Morris Minn. | Fargo N.D. | Ontario Ore.[1] |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | * |
| Grant | 40.4 | 40.5 | 41.4 | 39.4 | 42.0 | 40.8 | 41.0 | 37.7 | 34.5 |
| Merit | 39.2 | 37.9 | 39.4 | 38.7 | 41.1 | 39.4 | 41.4 | 36.4 | 33.5 |
| Norchief | 40.4 | 40.6 | 41.3 | 39.6 | 41.5 | 39.0 | 42.9 | 37.7 | 35.7 |
| M387 | 38.5 | 38.3 | 39.5 | 37.8 | 39.6 | 38.2 | 39.5 | 36.7 | -- |
| M389 | 40.3 | 39.8 | 40.0 | 40.2 | 42.5 | 39.3 | 42.0 | 38.1 | 35.6 |
| M391 | 39.7 | 40.6 | 40.0 | 38.7 | 41.1 | 39.0 | 42.5 | 36.2 | 35.3 |
| M406 | 39.9 | 39.3 | 41.1 | 40.1 | 40.2 | 40.0 | 42.0 | 36.9 | 36.7 |
| M417 | 40.6 | 40.5 | 42.0 | 40.5 | 41.8 | 40.4 | 41.3 | 37.5 | 36.9 |
| M422 | 40.4 | 40.6 | 40.4 | 38.9 | 42.4 | 40.8 | 42.2 | 37.6 | 35.4 |
| 0-4323 | 40.8 | 41.1 | 41.8 | 41.1 | 41.5 | 40.5 | 42.3 | 37.1 | 36.7 |
| 056-2678 | 40.9 | 40.2 | 41.6 | 40.7 | 42.3 | 40.6 | 42.9 | 38.1 | -- |
| 057-2826 | 39.8 | 38.7 | 39.4 | 39.4 | 41.7 | 40.2 | 42.7 | 36.8 | 35.4 |
| W1S-191 | 41.3 | 41.4 | 40.9 | 40.5 | 43.0 | 41.1 | 43.9 | 38.3 | 36.2 |
| W1S-294 | 40.1 | 40.3 | 41.4 | 39.6 | 40.5 | 39.4 | 42.3 | 36.9 | 35.6 |

| | Mean of 7 Tests | Percentage of Oil | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | * |
| Grant | 19.3 | 19.5 | 17.6 | 21.1 | 20.1 | 17.7 | 18.4 | 20.9 | 21.3 |
| Merit | 20.3 | 20.6 | 18.4 | 22.3 | 20.2 | 19.6 | 19.0 | 21.7 | 20.4 |
| Norchief | 19.6 | 19.4 | 17.7 | 21.4 | 20.4 | 19.3 | 18.2 | 21.0 | 21.6 |
| M387 | 20.2 | 19.9 | 17.7 | 23.3 | 20.0 | 19.2 | 19.2 | 22.1 | -- |
| M389 | 20.0 | 20.0 | 18.2 | 22.4 | 19.8 | 19.8 | 18.7 | 21.0 | 22.1 |
| M391 | 20.4 | 19.2 | 18.5 | 22.3 | 21.1 | 19.8 | 19.1 | 22.6 | 23.0 |
| M406 | 19.5 | 20.8 | 16.5 | 21.8 | 20.6 | 18.2 | 17.3 | 21.2 | 20.3 |
| M417 | 19.8 | 19.7 | 18.3 | 21.5 | 20.3 | 19.4 | 17.9 | 21.4 | 22.1 |
| M422 | 19.9 | 19.4 | 18.1 | 22.9 | 20.1 | 19.4 | 18.5 | 21.2 | 23.1 |
| 0-4323 | 19.7 | 19.2 | 18.5 | 21.9 | 20.1 | 19.4 | 17.9 | 20.8 | 21.4 |
| 056-2678 | 19.5 | 20.1 | 17.9 | 21.3 | 19.6 | 18.8 | 18.0 | 20.5 | -- |
| 057-2826 | 19.5 | 19.1 | 17.9 | 21.7 | 20.6 | 18.6 | 17.8 | 20.7 | 20.8 |
| W1S-191 | 19.7 | 19.5 | 18.4 | 21.9 | 20.2 | 19.3 | 17.5 | 21.3 | 21.9 |
| W1S-294 | 19.6 | 18.9 | 17.5 | 21.4 | 20.1 | 19.2 | 18.3 | 21.5 | 21.4 |

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

Table 23. Three-year summary of data for Uniform Test 0, 1962-1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 31 | 31 | 24 | 24 | 31 | 27 | 23 | 18 | 18 |
| Grant | 30.4 | 1 | +3.4 | 2.7 | 31 | 1.9 | 16.0 | 39.8 | 19.6 |
| Merit | 28.0 | 5 | 0 | 2.2 | 32 | 1.9 | 14.6 | 39.1 | 20.4 |
| Norchief | 26.7 | 6 | -1.0 | 2.2 | 29 | 2.3 | 16.2 | 40.2 | 19.8 |
| 0-4323 | 28.4 | 4 | -3.0 | 2.3 | 35 | 2.5 | 14.8 | 40.8 | 19.7 |
| 056-2678 | 28.6 | 3 | +1.6 | 2.4 | 37 | 2.3 | 14.4 | 40.5 | 19.5 |
| 057-2826 | 30.0 | 2 | +3.1 | 2.5 | 35 | 2.3 | 15.8 | 39.8 | 19.8 |

[1]Days earlier (-) or later (+) than Merit which matured September 20, 118 days after planting.

Table 24. Three-year summary of yield and yield rank for Uniform Test 0, 1962-1964.

| Strain | Mean of 31 Tests | Ottawa Ont. | Guelph Ont. | Ridgetown Ont. | Columbus Ohio | East Lansing Mich. | Spooner Wis. |
|---|---|---|---|---|---|---|---|
| Years Tested | | 1962-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1962-1964 |
| Grant | 30.4 | 36.7 | 25.2 | 45.7 | 26.1 | 37.6 | 32.6 |
| Merit | 28.0 | 34.2 | 25.1 | 41.3 | 21.4 | 31.3 | 32.1 |
| Norchief | 26.7 | 34.9 | 23.7 | 39.0 | 19.1 | 27.1 | 30.3 |
| 0-4323 | 28.4 | 37.6 | 27.5 | 41.8 | 25.1 | 34.5 | 32.7 |
| 056-2678 | 28.6 | 36.1 | 25.1 | 44.2 | 26.6 | 31.6 | 30.8 |
| 057-2826 | 30.0 | 36.2 | 25.7 | 45.6 | 31.3 | 33.6 | 31.4 |
| | | Yield Rank | | | | | |
| Grant | | 1 | 2 | 3 | 1 | 3 | 1 | 2 |
| Merit | | 5 | 6 | 4 | 5 | 5 | 5 | 3 |
| Norchief | | 6 | 5 | 6 | 6 | 6 | 6 | 6 |
| 0-4323 | | 4 | 1 | 1 | 4 | 4 | 2 | 1 |
| 056-2678 | | 3 | 4 | 4 | 3 | 2 | 4 | 5 |
| 057-2826 | | 2 | 3 | 2 | 2 | 1 | 3 | 4 |

Table 24. (Continued)

| Strain | Durand Wis. | Crookston Minn. | Morris Minn. | Fargo N.D. | Eureka S.D. | Watertown S.D. | Ontario Ore. |
|---|---|---|---|---|---|---|---|
| Years Tested | 1962-1963 | 1962-1963 | 1962-1964 | 1963-1964 | 1962, 1964 | 1962-1964 | 1962-1964 |
| Grant | 18.3 | 23.9 | 25.9 | 30.3 | 13.1 | 19.4 | 51.9 |
| Merit | 16.7 | 23.1 | 25.5 | 29.3 | 15.7 | 17.4 | 58.4 |
| Norchief | 17.1 | 21.1 | 26.0 | 26.7 | 15.8 | 18.9 | 48.0 |
| 0-4323 | 15.2 | 20.9 | 22.3 | 24.9 | 11.2 | 15.8 | 52.3 |
| 056-2678 | 17.2 | 19.2 | 25.6 | 25.4 | 13.9 | 20.4 | -- |
| 057-2826 | 17.9 | 20.4 | 28.2 | 29.3 | 14.2 | 18.4 | 50.6 |
| | Yield Rank | | | | | | |
| Grant | 1 | 1 | 3 | 1 | 5 | 2 | 3 |
| Merit | 5 | 2 | 5 | 2 | 2 | 5 | 1 |
| Norchief | 4 | 3 | 2 | 4 | 1 | 3 | 5 |
| 0-4323 | 6 | 4 | 6 | 6 | 6 | 6 | 2 |
| 056-2678 | 3 | 6 | 4 | 5 | 4 | 1 | - |
| 057-2826 | 2 | 5 | 1 | 2 | 3 | 4 | 4 |

## UNIFORM PRELIMINARY TEST 0 - 1964

| 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, Ontario | Blackhawk x Capital | $F_8$ |
| M393 | Minn. A.E.S. & U.S.R.S.L. | Capital x Renville | $F_5$ |
| M421 | Minn. A.E.S. & U.S.R.S.L. | Capital x Renville | $F_5$ |
| M423 | Minn. A.E.S. & U.S.R.S.L. | Capital x M10 | $F_5$ |
| M427 | Minn. A.E.S. & U.S.R.S.L. | Grant x Acme | $F_5$ |
| M428 | Minn. A.E.S. & U.S.R.S.L. | Pagoda 25 x Chippewa | $F_5$ |
| M443 | Minn. A.E.S. & U.S.R.S.L. | Acme x Chippewa | $F_5$ |
| 0-4456 | Research Station, Harrow, Ontario | Hardome x Adams | $F_5$ |

### Identification of Parent Strain

M10 Sel. from Lincoln (2) x Richland, in Uniform Test I in 1949-51.

The checks, Grant and Merit, had higher mean yield than any of the seven experimental strains. Some strains had improved lodging resistance, but were rather short. M427 had notable seed composition, being high in protein and average in oil content, but its yield was well below that of Grant.

Table 25. Descriptive data for the strains in Uniform Preliminary Test 0, 1964.

| Strain | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color | Shattering* 1101 | Shattering* M10 |
|---|---|---|---|---|---|---|---|---|
| Grant | W | Lt | Br | S | Y | Bl | 3.0 | 3.5 |
| Merit | W | G | Br | D | Y | Bf | 1.0 | 1.0 |
| M393 | P | G | Br | S | Y | Y | 1.0 | 4.5 |
| M421 | W | G | Br | S | Y | Y | 1.5 | 5.0 |
| M423 | P | G | Br | D | Y | Y | 1.0 | 3.0 |
| M427 | P | G | Br | S | Y | Y | 3.0 | 5.0 |
| M428 | P | T | Br | S | Y | Y | 2.0 | 5.0 |
| M443 | P | T | Br | S | Y | Br | 4.0 | 5.0 |
| 0-4456 | P | G | Br | S | Y | G | 2.5 | 3.0 |

*Average of 2 replications at Urbana, Illinois, in Field 1101 planted May 6 and in Field M10 planted June 3. Notes taken 1 month after maturity in 1101 and about 2 months after maturity on November 20 in M10.

Table 26. Summary of data for Uniform Preliminary Test 0, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 8 | 8 | 6 | 5 | 8 | 8 | 5 | 5 | 5 |
| Grant | 27.4 | 1 | +3.3 | 2.2 | 28 | 2.4 | 15.7 | 40.7 | 18.8 |
| Merit | 26.1 | 2 | 0 | 1.5 | 29 | 2.1 | 13.4 | 39.8 | 20.0 |
| M393 | 24.9 | 4 | -1.0 | 1.3 | 24 | 2.4 | 15.1 | 39.9 | 20.9 |
| M421 | 24.6 | 5 | -0.5 | 1.4 | 23 | 2.8 | 13.1 | 38.6 | 21.0 |
| M423 | 25.5 | 3 | +1.7 | 2.2 | 28 | 2.5 | 15.5 | 39.4 | 20.3 |
| M427 | 24.2 | 6 | +2.8 | 1.4 | 25 | 2.3 | 16.1 | 42.2 | 19.2 |
| M428 | 23.5 | 8 | -3.8 | 2.0 | 26 | 2.4 | 15.8 | 39.9 | 20.4 |
| M443 | 23.0 | 9 | -2.7 | 1.2 | 24 | 2.4 | 15.7 | 38.9 | 19.7 |
| 0-4456 | 24.1 | 7 | 0 | 2.0 | 32 | 2.7 | 15.7 | 40.1 | 19.6 |

[1]Days earlier (-) or later (+) than Merit which matured September 19, 121 days after planting.

Table 27. Disease data for Uniform Preliminary Test 0, 1964.

| Strain | Bacterial Blight | | Brown Stem Rot | | Phytophthora Rot | Frogeye Ind. |
|---|---|---|---|---|---|---|
| | Ill. | | Ill. | | Ind. | Race 2 |
| | a[1] | | n[1] | | a | a |
| Grant | 3 | | 2 | | S | 5 |
| Merit | 3 | | 2 | | R | 5 |
| M393 | 4 | | 1 | | S | 5 |
| M421 | 3 | | 2 | | S | 5 |
| M423 | 2 | | 3 | | S | 4 |
| M427 | 3 | | 3 | | S | 5 |
| M428 | 4 | | 1 | | S | 3 |
| M443 | 3 | | 1 | | S | 3 |
| 0-4456 | 3 | | 1 | | S | 5 |

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

Table 28. Yield and yield rank for Uniform Preliminary Test 0, 1964.

| Strain | Mean of 8 Tests | Ottawa Ont. | Ridge-town Ont. | East Lan-sing Mich. | Spoon-er Wis.[1] | St. Paul Minn. | Fargo N.D. | Eureka S.D. | Water-town S.D. | On-tario Ore.[1] * |
|---|---|---|---|---|---|---|---|---|---|---|
| Grant | 27.4 | 40.2 | 50.7 | 38.1 | 30.7 | 16.8 | 20.6 | 10.8 | 11.1 | 45.9 |
| Merit | 26.1 | 35.0 | 47.6 | 30.7 | 32.6 | 18.1 | 21.2 | 12.0 | 11.5 | 49.8 |
| M393 | 24.9 | 34.8 | 45.3 | 32.8 | 28.4 | 17.4 | 18.6 | 11.6 | 10.5 | 42.6 |
| M421 | 24.6 | 32.6 | 42.0 | 28.3 | 34.5 | 15.4 | 20.2 | 9.9 | 14.0 | 49.2 |
| M423 | 25.5 | 40.1 | 42.2 | 30.7 | 30.9 | 16.4 | 20.0 | 12.8 | 10.8 | 50.8 |
| M427 | 24.2 | 35.4 | 44.7 | 29.9 | 28.5 | 14.5 | 18.1 | 9.8 | 12.9 | 47.6 |
| M428 | 23.5 | 36.9 | 44.0 | 27.3 | 27.9 | 14.5 | 19.0 | 9.5 | 9.2 | 48.8 |
| M443 | 23.0 | 35.6 | 37.5 | 23.9 | 33.5 | 17.2 | 17.1 | 7.7 | 11.6 | 51.6 |
| 0-4456 | 24.1 | 35.7 | 45.2 | 31.9 | 28.1 | 16.6 | 16.6 | 10.1 | 8.8 | 52.2 |
| Coef. of Var. (%) | | 4.6 | 5.4 | 6.6 | 7.9 | -- | 5.8 | 13.5 | 11.1 | 10.7 |
| L.S.D. (5%) | | 2.7 | 5.5 | 4.6 | N.S. | -- | 2.5 | 3.2 | 2.9 | N.S. |
| Row Spacing (In.) | | 38 | 24 | 24 | 36 | 36 | 40 | 42 | 42 | 20 |
| | Yield Rank | | | | | | | | | |
| Grant | 1 | 1 | 1 | 1 | 5 | 4 | 2 | 4 | 5 | 8 |
| Merit | 2 | 7 | 2 | 4 | 3 | 1 | 1 | 2 | 4 | 4 |
| M393 | 4 | 8 | 3 | 2 | 7 | 2 | 6 | 3 | 7 | 9 |
| M421 | 5 | 9 | 8 | 7 | 1 | 7 | 3 | 6 | 1 | 5 |
| M423 | 3 | 2 | 7 | 4 | 4 | 6 | 4 | 1 | 6 | 3 |
| M427 | 6 | 6 | 5 | 6 | 6 | 8 | 7 | 7 | 2 | 7 |
| M428 | 8 | 3 | 6 | 8 | 9 | 8 | 5 | 8 | 8 | 6 |
| M443 | 9 | 5 | 9 | 9 | 2 | 3 | 8 | 9 | 3 | 2 |
| 0-4456 | 7 | 4 | 4 | 3 | 8 | 5 | 9 | 5 | 9 | 1 |

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

Table 29. Maturity, days earlier (-) or later (+) than Merit, for Uniform Preliminary Test 0, 1964.

| Strain | Mean of 6 Tests | Ottawa Ont. | Ridge-town Ont. | East Lansing Mich. | St. Paul Minn. | Fargo N.D. | Eureka S.D. | Water-town S.D. | On-tario Ore.[1] |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | * | | | * |
| Grant | +3.3 | +11 | 0 | + 2 | +4 | | +2 | +1 | + 3 |
| Merit | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 |
| M393 | -1.0 | - 7 | +2 | 0 | -5 | | +4 | 0 | -12 |
| M421 | -0.5 | - 8 | +8 | - 4 | -3 | | +3 | +1 | -11 |
| M423 | +1.7 | + 1 | +7 | 0 | -2 | | +1 | +3 | - 2 |
| M427 | +2.8 | + 5 | +4 | 0 | +8 | | -1 | +1 | + 1 |
| M428 | -3.8 | - 7 | -2 | -10 | -5 | | +1 | 0 | - 7 |
| M443 | -2.7 | - 8 | +1 | - 4 | -4 | | -1 | 0 | -10 |
| 0-4456 | 0 | + 5 | +7 | - 8 | -2 | | -2 | 0 | + 2 |
| Date planted | 5-21 | 5-15 | 5-25 | 5-28 | 5-14 | 5-14 | 5-21 | 5-20 | 5-9 |
| Merit matured | 9-19 | 9-23 | 9-21 | 9-26 | 9-5 | -- | 9-18 | 9-20 | 9-15 |
| Days to mature | 121 | 131 | 119 | 121 | 114 | -- | 120 | 123 | 129 |

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

## UNIFORM TEST I - 1964

| Strain | Originating Agency | Origin | Generation Composited |
|---|---|---|---|
| A-100 | Freedolph and Hubert Anderson, St. Peter, Minn. | Unknown | |
| Chippewa | Ill. A.E.S. & U.S.R.S.L. | Lincoln (2) x Richland | $F_5$ |
| Chippewa 64 | Ill. A.E.S. & U.S.R.S.L. | Chippewa (8) x Blackhawk | 29 $F_3$ lines |
| A1-540 | Iowa A.E.S. & U.S.R.S.L. | Hawkeye x Harosoy | $F_9$ |
| A9-619 | Iowa A.E.S. & U.S.R.S.L. | Clark x Chippewa | $F_4$ |
| A9K-2558 | Iowa A.E.S. & U.S.R.S.L. | Hawkeye x Chippewa | $F_4$ |
| C1255 | Purdue A.E.S. & U.S.R.S.L. | Harosoy x Clark | $F_6$ |
| 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) | $F_6$ |

The three-year summary in Table 37 shows no difference in the mean performance of Chippewa and Chippewa 64. C1255 had a 1 bushel yield advantage over A-100 and averaged two days earlier. However, it was somewhat deficient in lodging and seed quality and has a tendency to gray seed coat under some environments.

The three A strains in this test appear to have a yield advantage over A-100. A1-540 had the best seed quality but the poorest shattering resistance.

The three C selections from Mukden x Mandarin (Ottawa) yielded poorly in 1964 and were quite tall and lodging susceptible.

### A-100

A-100 is a farmer selection developed by Freedolph and Hubert Anderson, St. Peter, Minnesota. It is Group I maturity and has white flower color, gray pubescence, brown pods, and shiny yellow seed with buff hilum. It is similar to Blackhawk in maturity and appearance but stands better and has larger seeds.

A history of its development is given below:

1954 A single plant selected from an unknown variety.

1955-60 Increased to 400 bushels in the fall of 1958 and sold to neighboring farmers in 1959.

1961 Tested by the University of Minnesota.

1962 Tested in Uniform Tests I and II. A considerable commercial acreage was grown in the St. Peter area. The Minnesota Crop Improvement Association received a request from the Peterson Seed Company of Waterloo, Iowa, for certification of A-100, and the Minnesota Experiment Station proposed to make A-100 eligible for certification if arrangements were made for providing and maintaining a pure source of breeder and foundation seed.

1963 Tested in Uniform Test I. About 2,000 acres grown commercially in Minnesota. Also marketed in Iowa since 1961 or 1962 by the Peterson Seed Company, which sold 12,000 bushels for seed in Iowa in 1963.

A "Memorandum of Understanding" was drawn up between the University of Minnesota and the Anderson Brothers for the increase and maintenance of breeder and foundation seed of A-100. The University, in cooperation with the Anderson Brothers, increased 21 pounds of purified seed from the Experiment Station breeding program and about 25 pounds of pure seed provided by the Anderson's, and produced 75 bushels of foundation seed.

1964 Tested in Uniform Test II. Cooperating states were informed by Minnesota of the purification of A-100, and given an opportunity to participate in the 1964 increase of foundation seed. Minnesota, Illinois, and Iowa participated in the increase as indicated below:

| | Allotment of 1963 Seed | Foundation Seed Production | |
|---|---|---|---|
| | (bushels) | (acres) | (bushels) |
| Minnesota | 65 | 98 | 2,800 |
| Iowa | 5 | 5 | 130 |
| Illinois | 5 | 10 | 282 |
| Total | 75 | 113 | 3,212 |

Table 30. Regional testing history and descriptive data for the strains in Uniform Test I, 1964.

| Strain | Years in Uniform Test I | Previous Regional Test | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color | Shattering* |
|---|---|---|---|---|---|---|---|---|---|
| A-100 | 3 | None | W | G | Br | S | Y | Bf | 2.0 |
| Chippewa | 16 | P.T. I | P | T | Br | S | Y | Bl | 1.0 |
| Chippewa 64 | 3 | None | P | T | Br | S | Y | Bl | 1.0 |
| A1-540 | 1 | P.T. I | P | G | Br | D | Y | Y | 4.0 |
| A9-619 | 2 | P.T. I | P | T | Br | S | Y | Bl | 1.5 |
| A9K-2558 | 1 | P.T. I | P | T | Br | S | Y | Bl | 2.0 |
| C1255 | 3 | P.T. I | P | T | Br | D | Lg | G | 2.0 |
| C1296 | 1 | P.T. I | W | G | Br | S | Y | Y | 2.5 |
| C1299 | 1 | P.T. I | W | G | Br | S | Y | Bf | 3.0 |
| C1301 | 1 | P.T. I | W | G | Br | S | Y | Y | 3.5 |

*Average of 2 replications at Urbana, Illinois, planted May 6.

Table 31. Summary of data for Uniform Test I, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 18 | 18 | 15 | 14 | 17 | 14 | 15 | 9 | 9 |
| A-100 | 35.3 | 5 | +8.9 | 1.8 | 34 | 1.9 | 18.4 | 39.9 | 21.3 |
| Chippewa | 34.9 | 6 | 0 | 1.8 | 33 | 2.2 | 14.4 | 40.4 | 20.6 |
| Chippewa 64 | 34.1 | 7 | +0.5 | 1.6 | 34 | 2.2 | 15.6 | 40.4 | 20.2 |
| A1-540 | 36.9 | 1 | +6.3 | 1.5 | 36 | 1.8 | 16.4 | 41.8 | 20.2 |
| A9-619 | 36.9 | 1 | +5.3 | 1.8 | 34 | 2.2 | 16.8 | 40.7 | 20.9 |
| A9K-2558 | 36.2 | 3 | +4.3 | 1.7 | 34 | 2.4 | 17.4 | 41.4 | 20.0 |
| C1255 | 36.1 | 4 | +5.5 | 2.1 | 36 | 2.1 | 17.8 | 40.8 | 20.6 |
| C1296 | 30.4 | 10 | +8.7 | 2.7 | 40 | 1.9 | 16.6 | 42.0 | 19.5 |
| C1299 | 31.9 | 8 | +9.0 | 3.0 | 40 | 2.2 | 16.8 | 43.5 | 19.2 |
| C1301 | 30.9 | 9 | +4.0 | 2.5 | 38 | 1.8 | 15.4 | 42.4 | 19.2 |

[1]Days earlier (-) or later (+) than Chippewa which matured September 12, 112 days after planting.

Table 32. Disease data for Uniform Test I, 1964.

| Strain | Bacterial Blight | Bacterial Pustule | Phytophthora Rot | Frogeye | | Downy Mildew | Chocolate Spot[2] |
|---|---|---|---|---|---|---|---|
| | Ill. | Ia. | Ind. | Ind. | | Ind. | Ia. |
| | a[1] | a | a | Race 1 a | Race 2 a | n[1] | a |
| A-100 | 2 | 5 | S | R | 5 | 4 | 5 |
| Chippewa | 1 | 5 | S | S | 5 | 4 | 3 |
| Chippewa 64 | 2 | 5 | R | S | 5 | 4 | 5 |
| A1-540 | 2 | 3 | S | S | 5 | 3 | 4 |
| A9-619 | 2 | 4 | S | Seg. | 5 | 4 | 4 |
| A9K-2558 | 2 | 4 | S | Seg. | 4 | 3 | 5 |
| C1255 | 3 | 4 | S | R | 4 | 3 | 4 |
| C1296 | 3 | 4 | R | S | 5 | 3 | 4 |
| C1299 | 3 | 4 | R | S | 5 | 1 | 4 |
| C1301 | 2 | 4 | R | S | 4 | 1 | 5 |

[1]a = artificial inoculation; n = natural infection.
[2]A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 33. Yield and yield rank for Uniform Test I, 1964.

| Strain | Mean of 18 Tests | Ridge-town Ont. | Harrow Ont. | Hoyt-ville Ohio | Woos-ter Ohio | Colum-bus Ohio | East Lan-sing Mich. | Dun-dee Mich. | Walk-erton Ind. | Lafa-yette Ind. |
|---|---|---|---|---|---|---|---|---|---|---|
| A-100 | 35.3 | 50.9 | 44.9 | 30.0 | 32.2 | 40.0 | 41.2 | 37.8 | 40.6 | 38.0 |
| Chippewa | 34.9 | 49.3 | 40.3 | 26.2 | 33.7 | 36.7 | 38.6 | 36.3 | 38.1 | 42.0 |
| Chippewa 64 | 34.1 | 49.1 | 43.4 | 25.4 | 30.5 | 37.5 | 36.2 | 32.3 | 37.7 | 39.3 |
| A1-540 | 36.9 | 51.8 | 38.5 | 26.2 | 32.6 | 36.3 | 39.1 | 40.0 | 43.6 | 49.5 |
| A9-619 | 36.9 | 52.4 | 45.8 | 28.5 | 32.8 | 43.5 | 38.3 | 34.4 | 40.5 | 43.1 |
| A9K-2558 | 36.2 | 51.0 | 46.2 | 25.9 | 33.1 | 38.3 | 34.7 | 34.0 | 42.4 | 45.3 |
| C1255 | 36.1 | 50.2 | 46.2 | 30.0 | 32.2 | 36.3 | 40.9 | 37.2 | 42.7 | 36.7 |
| C1296 | 30.4 | 39.7 | 39.0 | 24.2 | 29.9 | 27.8 | 31.9 | 31.7 | 38.5 | 40.6 |
| C1299 | 31.9 | 42.5 | 37.1 | 29.5 | 34.5 | 30.7 | 32.3 | 35.2 | 42.8 | 33.7 |
| C1301 | 30.9 | 48.4 | 36.0 | 25.1 | 29.3 | 30.1 | 30.9 | 35.8 | 35.5 | 29.8 |
| Coef. of Var. (%) | | 5.4 | 9.0 | 10.1 | 7.3 | 14.6 | 6.0 | 5.3 | 10.7 | 6.7 |
| L.S.D. (5%) | | 3.8 | 5.4 | 3.9 | N.S. | 14.8 | 3.1 | 2.7 | N.S. | 3.9 |
| Row Spacing (In.) | | 24 | 40 | 28 | 32 | 28 | 24 | 28 | 40 | 38 |
| | Yield Rank | | | | | | | | | |
| A-100 | 5 | 4 | 4 | 1 | 6 | 2 | 1 | 2 | 5 | 7 |
| Chippewa | 6 | 6 | 6 | 5 | 2 | 5 | 4 | 4 | 8 | 4 |
| Chippewa 64 | 7 | 7 | 5 | 8 | 8 | 4 | 6 | 9 | 9 | 6 |
| A1-540 | 1 | 2 | 8 | 5 | 5 | 6 | 3 | 1 | 1 | 1 |
| A9-619 | 1 | 1 | 3 | 4 | 4 | 1 | 5 | 7 | 6 | 3 |
| A9K-2558 | 3 | 3 | 1 | 7 | 3 | 3 | 7 | 8 | 4 | 2 |
| C1255 | 4 | 5 | 1 | 1 | 6 | 6 | 2 | 3 | 3 | 8 |
| C1296 | 10 | 10 | 7 | 10 | 9 | 10 | 9 | 10 | 7 | 5 |
| C1299 | 8 | 9 | 9 | 3 | 1 | 8 | 8 | 6 | 2 | 9 |
| C1301 | 9 | 8 | 10 | 9 | 10 | 9 | 10 | 5 | 10 | 10 |

*Not included in the mean.

Table 33. (Continued)

| Strain | Madison Wis. | Shabbona Ill. | Dwight Ill. | St. Paul Minn. | Lamberton Minn. | Waseca Minn. | Cresco Iowa | Kanawha Iowa | Eureka S.D. * | Watertown S.D. * | Brookings S.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A-100 | 27.9 | 46.6 | 43.3 | 21.7 | 23.6 | 33.8 | 20.8 | 37.5 | 9.3 | 11.1 | 24.2 |
| Chippewa | 27.7 | 44.0 | 43.4 | 20.8 | 26.0 | 35.4 | 23.1 | 37.0 | 11.6 | 14.2 | 29.0 |
| Chippewa 64 | 24.3 | 45.0 | 41.1 | 24.3 | 24.0 | 34.7 | 22.4 | 39.0 | 11.9 | 13.6 | 28.1 |
| A1-540 | 20.7 | 53.1 | 41.4 | 23.1 | 30.4 | 36.5 | 27.5 | 44.1 | 10.3 | 15.3 | 30.1 |
| A9-619 | 28.6 | 50.3 | 41.8 | 23.1 | 26.2 | 37.0 | 25.3 | 40.6 | 9.5 | 13.2 | 31.6 |
| A9K-2558 | 28.0 | 48.6 | 43.7 | 24.0 | 27.3 | 35.6 | 22.6 | 41.8 | 10.9 | 14.1 | 28.4 |
| C1255 | 29.0 | 47.5 | 40.3 | 20.4 | 27.0 | 37.2 | 23.0 | 42.2 | 10.5 | 13.7 | 31.1 |
| C1296 | 23.7 | 38.3 | 32.9 | 18.1 | 22.6 | 32.1 | 20.1 | 32.3 | 5.3 | 8.3 | 24.2 |
| C1299 | 22.4 | 44.5 | 34.2 | 20.9 | 22.6 | 30.0 | 22.4 | 35.0 | 5.3 | 8.8 | 23.3 |
| C1301 | 21.5 | 42.1 | 36.1 | 18.7 | 23.2 | 29.7 | 20.2 | 38.2 | 6.4 | 7.7 | 26.3 |
| C. V. (%) | 9.0 | 5.3 | 7.8 | -- | -- | -- | 11.3 | 5.8 | 14.2 | 10.8 | 8.7 |
| L.S.D. (5%) | 3.3 | 3.6 | 4.5 | -- | -- | -- | 3.6 | 3.2 | 2.9 | 2.9 | 3.5 |
| Row Sp. (In.) | 36 | 40 | 38 | 36 | 40 | 40 | 42 | 40 | 42 | 42 | 42 |
| | Yield Rank | | | | | | | | | | |
| A-100 | 4 | 5 | 3 | 5 | 7 | 7 | 8 | 7 | 7 | 7 | 8 |
| Chippewa | 5 | 8 | 2 | 7 | 5 | 5 | 3 | 8 | 2 | 2 | 4 |
| Chippewa 64 | 6 | 6 | 6 | 1 | 6 | 6 | 6 | 5 | 1 | 5 | 6 |
| A1-540 | 10 | 1 | 5 | 3 | 1 | 3 | 1 | 1 | 5 | 1 | 3 |
| A9-619 | 2 | 2 | 4 | 3 | 4 | 2 | 2 | 4 | 6 | 6 | 1 |
| A9K-2558 | 3 | 3 | 1 | 2 | 2 | 4 | 5 | 3 | 3 | 3 | 5 |
| C1255 | 1 | 4 | 7 | 8 | 3 | 1 | 4 | 2 | 4 | 4 | 2 |
| C1296 | 7 | 10 | 10 | 10 | 9 | 8 | 10 | 10 | 9 | 9 | 8 |
| C1299 | 8 | 7 | 9 | 6 | 9 | 9 | 6 | 9 | 9 | 8 | 10 |
| C1301 | 9 | 9 | 8 | 9 | 8 | 10 | 9 | 6 | 8 | 10 | 7 |

Table 34. Maturity, days earlier (-) or later (+) than Chippewa, and lodging for Uniform Test I, 1964.

| Strain | Mean of 15 Tests | Ridge-town Ont. | Harrow Ont. | Hoyt-ville Ohio | Woos-ter Ohio | Colum-bus Ohio | East Lan-sing Mich.[1] | Dundee Mich.[1] | Walk-erton Ind. | Lafa-yette Ind. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | * | * | | |
| A-100 | +8.9 | +11 | +7 | +23 | +11 | +2 | | -- | +13 | +5 |
| Chippewa | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 |
| Chippewa 64 | +0.5 | + 1 | +1 | 0 | + 3 | 0 | | +2 | + 1 | -1 |
| A1-540 | +6.3 | +13 | +6 | + 7 | + 5 | +1 | | -- | +10 | +3 |
| A9-619 | +5.3 | + 8 | +3 | + 6 | + 9 | +2 | | +4 | + 9 | +4 |
| A9K-2558 | +4.3 | + 6 | +1 | + 6 | + 6 | 0 | | +3 | + 6 | +3 |
| C1255 | +5.5 | +12 | +3 | + 6 | + 8 | 0 | | -- | +12 | +3 |
| C1296 | +8.7 | +12 | +6 | +14 | + 6 | +1 | | -- | +14 | +6 |
| C1299 | +9.0 | +14 | +5 | +19 | + 8 | +4 | | -- | +13 | +6 |
| C1301 | +4.0 | +13 | +1 | +10 | + 2 | +1 | | +4 | + 3 | +2 |
| Date planted | 5-23 | 5-25 | 5-26 | 5-22 | 5-21 | 5-18 | 5-28 | 5-25 | 5-22 | 5-19 |
| Chippewa matured | 9-12 | 9-23 | 9-13 | 9-5 | 9-3 | 9-8 | -- | 9-24 | 9-5 | 9-5 |
| Days to mature | 112 | 121 | 110 | 106 | 105 | 113 | -- | 122 | 106 | 109 |
| | Mean of 14 Tests | Lodging | | | | | | | | |
| | | | | | * | | | | | |
| A-100 | 1.8 | 2.0 | 2.8 | 1.0 | 1.0 | 1.2 | 2.0 | 1.0 | 2.0 | 1.8 |
| Chippewa | 1.8 | 2.0 | 2.5 | 1.0 | 1.0 | 1.0 | 2.0 | 1.0 | 2.5 | 2.0 |
| Chippewa 64 | 1.6 | 2.0 | 2.8 | 1.0 | 1.0 | 1.0 | 2.0 | 1.0 | 1.8 | 2.0 |
| A1-540 | 1.5 | 2.0 | 1.8 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| A9-619 | 1.8 | 2.0 | 2.8 | 1.5 | 1.0 | 1.0 | 1.0 | 2.0 | 1.8 | 1.0 |
| A9K-2558 | 1.7 | 2.0 | 2.5 | 1.0 | 1.0 | 1.0 | 1.0 | 2.0 | 1.3 | 1.3 |
| C1255 | 2.1 | 3.0 | 2.8 | 2.2 | 1.0 | 1.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| C1296 | 2.7 | 3.0 | 3.2 | 2.2 | 1.0 | 1.5 | 2.0 | 3.0 | 2.8 | 2.3 |
| C1299 | 3.0 | 3.0 | 4.0 | 2.2 | 1.0 | 1.5 | 3.0 | 4.0 | 2.5 | 3.0 |
| C1301 | 2.5 | 3.0 | 3.8 | 2.2 | 1.0 | 1.0 | 2.0 | 3.0 | 2.8 | 2.3 |

*Not included in the mean.
[1]Missing dates due to frost before maturity.

Table 34. (Continued)

| Strain | Madison Wis. | Shabbona Ill. | Dwight Ill. | St. Paul Minn. | Lamberton Minn. | Waseca Minn. | Cresco Iowa | Kanawha Iowa | Eureka S.D. | Watertown S.D. | Brookings S.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | * | | | | | * | * | |
| A-100 | +9 | + 7 | + 7 | -- | +8 | +11 | +5 | + 7 | +2 | +5 | + 8 |
| Chippewa | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chippewa 64 | 0 | 0 | + 1 | +2 | 0 | 0 | 0 | + 1 | -1 | 0 | 0 |
| A1-540 | +6 | + 6 | + 5 | -- | +6 | + 8 | +4 | + 7 | +5 | +5 | + 8 |
| A9-619 | +5 | + 6 | + 5 | +7 | +6 | + 5 | +2 | + 4 | +1 | +3 | + 6 |
| A9K-2558 | +2 | + 4 | + 4 | +5 | +6 | + 5 | +3 | + 6 | +3 | +3 | + 7 |
| C1255 | +4 | + 5 | + 7 | -- | +5 | + 4 | +4 | + 3 | +5 | +6 | + 7 |
| C1296 | +2 | +14 | +10 | -- | +7 | +12 | +9 | +10 | +7 | +6 | + 8 |
| C1299 | +4 | +12 | + 8 | -- | +7 | +12 | +7 | + 6 | +6 | +6 | +10 |
| C1301 | -1 | + 5 | + 4 | -- | +7 | + 4 | +2 | + 1 | 0 | 0 | + 6 |
| Date pltd. | 5-19 | 5-18 | 6-16 | 5-14 | 5-18 | 5-21 | 5-22 | 5-18 | 5-21 | 5-20 | 5-29 |
| Chippewa mat. | 9-8 | 9-10 | 9-21 | 9-22 | 9-10 | 9-18 | 9-12 | 9-8 | 9-22 | 9-24 | 9-29 |
| Da. to mat. | 112 | 115 | 97 | 131 | 115 | 120 | 113 | 113 | 124 | 127 | 123 |

| | Lodging | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | | | * | | | | | * | * | * |
| A-100 | 1.0 | 2.0 | 1.9 | -- | 2.8 | 2.2 | 1.4 | 1.5 | 1.0 | 1.0 | 1.0 |
| Chippewa | 1.0 | 2.3 | 1.7 | 2.2 | 1.8 | 2.0 | 1.4 | 1.4 | 1.0 | 1.0 | 1.0 |
| Chippewa 64 | 1.0 | 2.0 | 1.7 | 2.8 | 1.0 | 2.0 | 1.3 | 1.3 | 1.0 | 1.0 | 1.0 |
| A1-540 | 1.0 | 2.1 | 1.2 | -- | 2.0 | 2.8 | 1.6 | 1.5 | 1.0 | 1.0 | 1.0 |
| A9-619 | 1.0 | 2.1 | 1.8 | 2.5 | 2.2 | 2.0 | 1.7 | 1.6 | 1.0 | 1.0 | 1.0 |
| A9K-2558 | 1.0 | 2.0 | 2.1 | 2.5 | 1.8 | 2.8 | 1.6 | 1.6 | 1.0 | 1.0 | 1.0 |
| C1255 | 1.0 | 2.3 | 2.3 | -- | 2.0 | 2.8 | 1.8 | 1.8 | 1.0 | 1.0 | 1.0 |
| C1296 | 1.0 | 3.4 | 3.4 | -- | 3.2 | 3.0 | 2.2 | 2.2 | 1.0 | 1.0 | 1.0 |
| C1299 | 1.0 | 3.1 | 3.5 | -- | 3.8 | 3.0 | 2.6 | 2.4 | 1.0 | 1.0 | 1.0 |
| C1301 | 1.0 | 2.5 | 2.9 | -- | 3.2 | 2.5 | 1.9 | 1.8 | 1.0 | 1.0 | 1.0 |

Table 35. Plant height and seed quality for Uniform Test I, 1964.

| Strain | Mean of 17 Tests | Ridge-town Ont. | Harrow Ont. | Hoyt-ville Ohio | Woos-ter Ohio | Colum-bus Ohio | East Lan-sing Mich. | Dun-dee Mich. | Walk-erton Ind. | Lafa-yette Ind. |
|---|---|---|---|---|---|---|---|---|---|---|
| A-100 | 34 | 40 | 34 | 29 | 27 | 35 | 26 | 31 | 35 | 35 |
| Chippewa | 33 | 37 | 32 | 26 | 26 | 35 | 26 | 32 | 35 | 38 |
| Chippewa 64 | 34 | 39 | 34 | 27 | 27 | 36 | 26 | 32 | 38 | 39 |
| A1-540 | 36 | 43 | 36 | 28 | 27 | 37 | 26 | 33 | 40 | 42 |
| A9-619 | 34 | 40 | 33 | 28 | 26 | 36 | 24 | 33 | 37 | 39 |
| A9K-2558 | 34 | 39 | 34 | 26 | 26 | 36 | 24 | 32 | 39 | 40 |
| C1255 | 36 | 43 | 36 | 31 | 27 | 36 | 27 | 34 | 38 | 37 |
| C1296 | 40 | 48 | 40 | 31 | 29 | 39 | 31 | 38 | 43 | 45 |
| C1299 | 40 | 50 | 40 | 34 | 28 | 39 | 27 | 37 | 44 | 40 |
| C1301 | 38 | 46 | 38 | 32 | 27 | 39 | 29 | 36 | 40 | 35 |
| | Mean of 14 Tests | Seed Quality | | | | | | | | |
| | | | | | | * | | | | |
| A-100 | 1.9 | 2.0 | 1.0 | 1.5 | 1.0 | 1.0 | 2.0 | 2.0 | 1.5 | 1.5 |
| Chippewa | 2.2 | 2.0 | 1.8 | 2.0 | 1.0 | 1.0 | 3.0 | 2.0 | 1.5 | 1.5 |
| Chippewa 64 | 2.2 | 2.0 | 1.5 | 2.0 | 1.5 | 1.0 | 3.0 | 2.0 | 1.5 | 1.5 |
| A1-540 | 1.8 | 2.0 | 1.2 | 1.0 | 1.0 | 1.0 | 2.0 | 2.0 | 1.0 | 1.0 |
| A9-619 | 2.2 | 2.0 | 1.8 | 2.0 | 1.0 | 1.0 | 3.0 | 2.0 | 1.5 | 2.0 |
| A9K-2558 | 2.4 | 2.0 | 1.0 | 2.7 | 1.2 | 1.0 | 3.0 | 3.0 | 2.0 | 1.5 |
| C1255 | 2.1 | 3.0 | 1.0 | 2.0 | 1.0 | 1.0 | 2.0 | 2.0 | 1.0 | 1.5 |
| C1296 | 1.9 | 2.0 | 1.0 | 1.5 | 1.0 | 1.0 | 3.0 | 1.0 | 1.0 | 1.0 |
| C1299 | 2.2 | 3.0 | 1.0 | 2.0 | 1.0 | 1.0 | 2.0 | 2.0 | 1.0 | 1.5 |
| C1301 | 1.8 | 2.0 | 1.0 | 1.7 | 1.0 | 1.0 | 2.0 | 1.0 | 1.0 | 1.0 |

*Not included in the mean.

Table 35. (Continued)

| Strain | Madison Wis. | Shabbona Ill. | Dwight Ill. | St. Paul Minn. | Lamberton Minn. | Waseca Minn. | Cresco Iowa | Kanawha Iowa | Eureka S.D. | Watertown S.D. | Brookings S.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | * | | | | | * | * | |
| A-100 | 25 | 39 | 34 | -- | 37 | 34 | 32 | 40 | 24 | 22 | 38 |
| Chippewa | 23 | 38 | 35 | 31 | 35 | 34 | 33 | 39 | 24 | 21 | 35 |
| Chippewa 64 | 22 | 39 | 37 | 32 | 35 | 35 | 33 | 41 | 25 | 24 | 38 |
| A1-540 | 22 | 43 | 36 | -- | 42 | 35 | 36 | 47 | 25 | 24 | 40 |
| A9-619 | 22 | 40 | 35 | 30 | 33 | 35 | 34 | 41 | 23 | 22 | 36 |
| A9K-2558 | 22 | 40 | 35 | 31 | 37 | 35 | 34 | 42 | 26 | 23 | 36 |
| C1255 | 25 | 43 | 37 | -- | 38 | 36 | 35 | 43 | 28 | 25 | 39 |
| C1296 | 25 | 52 | 43 | -- | 42 | 40 | 40 | 52 | 29 | 27 | 39 |
| C1299 | 25 | 50 | 43 | -- | 40 | 41 | 41 | 51 | 30 | 29 | 44 |
| C1301 | 24 | 49 | 42 | -- | 38 | 37 | 40 | 49 | 27 | 28 | 40 |

| | Seed Quality | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | * | | | | | | * | * | * | * | |
| A-100 | 1.0 | 1.3 | 1.4 | 4.0 | 3.5 | 3.2 | 1.0 | 1.0 | 4.0 | 2.0 | 1.0 |
| Chippewa | 1.0 | 1.4 | 1.4 | 4.0 | 3.5 | 3.2 | 1.0 | 1.0 | 4.0 | 1.0 | 2.0 |
| Chippewa 64 | 1.0 | 1.5 | 1.6 | 4.0 | 3.5 | 3.2 | 1.0 | 1.0 | 4.0 | 2.0 | 2.0 |
| A1-540 | 1.0 | 1.0 | 1.5 | 3.8 | 3.3 | 3.5 | 1.0 | 1.0 | 4.0 | 3.0 | 1.0 |
| A9-619 | 1.0 | 1.5 | 1.5 | 3.8 | 3.7 | 3.5 | 1.0 | 1.0 | 5.0 | 2.0 | 2.0 |
| A9K-2558 | 1.0 | 1.8 | 1.5 | 4.0 | 3.8 | 3.5 | 1.0 | 1.0 | 5.0 | 2.0 | 2.0 |
| C1255 | 1.0 | 1.1 | 1.4 | 4.2 | 3.2 | 3.8 | 1.0 | 1.0 | 4.0 | 2.0 | 2.0 |
| C1296 | 1.0 | 1.3 | 1.5 | 3.8 | 3.5 | 3.2 | 1.0 | 1.0 | 5.0 | 3.0 | 2.0 |
| C1299 | 1.0 | 1.4 | 1.4 | 4.2 | 3.8 | 3.5 | 1.0 | 1.0 | 5.0 | 3.0 | 3.0 |
| C1301 | 1.0 | 1.5 | 1.3 | 4.2 | 3.5 | 3.2 | 1.0 | 1.0 | 4.0 | 3.0 | 1.0 |

Table 36. Percentages of protein and oil for Uniform Test I, 1964.

| Strain | Mean of 9 Tests | Ridge-town Ont. | Colum-bus Ohio | Dun-dee Mich. | Walk-erton Ind. | Madi-son Wis. | Shab-bona Ill. | Wa-seca Minn. | Kana-wha Iowa | Brook-ings S.D. |
|---|---|---|---|---|---|---|---|---|---|---|
| A-100 | 39.9 | 41.7 | 37.9 | 42.9 | 39.2 | 39.3 | 39.2 | 39.4 | 39.7 | 39.4 |
| Chippewa | 40.4 | 42.9 | 39.1 | 44.1 | 39.2 | 39.1 | 40.4 | 39.1 | 40.1 | 39.7 |
| Chippewa 64 | 40.4 | 42.6 | 39.4 | 43.6 | 40.0 | 39.5 | 40.1 | 39.0 | 39.8 | 39.9 |
| A1-540 | 41.8 | 45.5 | 39.7 | 45.1 | 40.8 | 41.8 | 40.6 | 40.5 | 41.3 | 40.6 |
| A9-619 | 40.7 | 42.2 | 39.5 | 44.7 | 39.6 | 40.1 | 39.9 | 39.5 | 40.5 | 40.1 |
| A9K-2558 | 41.4 | 43.6 | 40.8 | 44.9 | 40.7 | 40.1 | 40.2 | 40.0 | 41.1 | 41.4 |
| C1255 | 40.8 | 44.0 | 39.4 | 44.7 | 40.4 | 39.7 | 40.1 | 39.0 | 40.0 | 40.0 |
| C1296 | 42.0 | 44.8 | 40.3 | 46.3 | 40.7 | 40.2 | 42.2 | 40.6 | 42.1 | 40.7 |
| C1299 | 43.5 | 47.2 | 42.1 | 48.0 | 42.1 | 42.1 | 42.6 | 40.3 | 43.0 | 43.7 |
| C1301 | 42.4 | 46.0 | 41.9 | 45.2 | 41.4 | 40.5 | 42.6 | 39.5 | 42.6 | 41.5 |

| | Mean of 9 Tests | Percentage of Oil | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| A-100 | 21.3 | 19.5 | 22.6 | 20.1 | 23.0 | 21.1 | 21.9 | 20.7 | 21.9 | 20.9 |
| Chippewa | 20.6 | 19.7 | 21.4 | 18.8 | 22.1 | 20.9 | 20.6 | 20.4 | 21.0 | 20.3 |
| Chippewa 64 | 20.2 | 19.4 | 21.2 | 18.6 | 21.7 | 20.5 | 21.1 | 18.8 | 20.7 | 19.9 |
| A1-540 | 20.2 | 18.7 | 21.6 | 18.4 | 22.2 | 20.1 | 21.2 | 18.2 | 21.6 | 20.0 |
| A9-619 | 20.9 | 20.0 | 21.9 | 19.0 | 22.5 | 21.0 | 21.8 | 20.5 | 21.4 | 20.3 |
| A9K-2558 | 20.0 | 19.5 | 21.7 | 19.2 | 21.7 | 21.1 | 20.2 | 17.7 | 19.4 | 19.6 |
| C1255 | 20.6 | 19.2 | 22.0 | 18.9 | 21.8 | 21.0 | 21.0 | 20.0 | 21.6 | 20.2 |
| C1296 | 19.5 | 18.3 | 21.3 | 17.7 | 21.3 | 20.2 | 19.5 | 18.8 | 19.7 | 19.0 |
| C1299 | 19.2 | 17.5 | 20.3 | 17.5 | 21.4 | 19.8 | 20.0 | 19.1 | 19.0 | 18.4 |
| C1301 | 19.2 | 18.2 | 19.9 | 17.9 | 20.3 | 19.4 | 19.9 | 18.8 | 19.4 | 18.6 |

Table 37. Three-year summary of data for Uniform Test I, 1962-1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 53 | 53 | 43 | 43 | 52 | 38 | 44 | 26 | 26 |
| A-100 | 36.5 | 2 | +7.5 | 1.9 | 35 | 1.8 | 18.0 | 39.7 | 21.2 |
| Chippewa | 34.3 | 4 | 0 | 1.9 | 34 | 1.9 | 14.6 | 40.4 | 20.3 |
| Chippewa 64 | 34.5 | 3 | +0.3 | 1.7 | 36 | 1.9 | 15.4 | 40.4 | 20.2 |
| C1255 | 37.6 | 1 | +5.0 | 2.2 | 37 | 2.3 | 17.7 | 40.6 | 20.6 |

[1]Days earlier (-) or later (+) than Chippewa which matured September 16, 116 days after planting.

Table 38. Three-year summary of yield and yield rank for Uniform Test I, 1962-1964.

| Strain | Mean of 53 Tests | Ridgetown Ont. | Harrow Ont. | Hoytville Ohio | Wooster Ohio | Columbus Ohio | East Lansing Mich. | Dundee Mich.[1] | Walkerton Ind. | Lafayette Ind. | Durand Wis. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Years Tested | | 1962-1964 | 1963-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1962-1963 |
| A-100 | 36.5 | 43.2 | 37.4 | 35.6 | 29.4 | 36.3 | 36.0 | 35.9 | 34.7 | 44.6 | 20.0 |
| Chippewa | 34.3 | 42.5 | 35.2 | 29.4 | 28.2 | 32.9 | 33.0 | 31.0 | 31.6 | 41.6 | 16.1 |
| Chippewa 64 | 34.5 | 44.0 | 36.7 | 30.0 | 26.9 | 32.8 | 32.3 | 31.3 | 33.9 | 41.3 | 16.7 |
| C1255 | 37.6 | 46.4 | 37.9 | 34.8 | 29.7 | 35.3 | 37.7 | 36.9 | 37.4 | 43.8 | 18.6 |
| | Yield Rank | | | | | | | | | | |
| A-100 | 2 | 3 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 |
| Chippewa | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3 | 4 |
| Chippewa 64 | 3 | 2 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 3 |
| C1255 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |

[1]Ida, Michigan, 1962.

Table 38. (Continued)

| Strain | Madison Wis. | Shabbona Ill. | Dwight Ill. | St. Paul Minn. | Lamberton Minn. | Waseca Minn. | Cresco Iowa | Kanawha Iowa | Eureka S.D. | Watertown S.D. | Brookings S.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Years Tested | 1962-1964 | 1962-1964 | 1962-1964 | 1963-1964 | 1963-1964 | 1962-1964 | 1963-1964 | 1962-1964 | 1962, 1964 | 1962-1964 | 1962-1964 |
| A-100 | 32.9 | 42.9 | 41.3 | 29.5 | 30.4 | 36.1 | 29.0 | 39.7 | 14.4 | 22.2 | 35.9 |
| Chippewa | 32.0 | 40.8 | 38.0 | 25.6 | 29.4 | 34.0 | 29.4 | 38.7 | 15.1 | 25.1 | 38.9 |
| Chippewa 64 | 30.8 | 40.9 | 37.7 | 28.1 | 28.4 | 35.5 | 30.2 | 40.3 | 15.7 | 24.8 | 38.5 |
| C1255 | 33.7 | 45.2 | 39.8 | 29.5 | 33.1 | 36.5 | 31.0 | 43.6 | 15.8 | 26.4 | 39.1 |
| | Yield Rank | | | | | | | | | | |
| A-100 | 2 | 2 | 1 | 1 | 2 | 2 | 4 | 3 | 4 | 4 | 4 |
| Chippewa | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 2 | 2 |
| Chippewa 64 | 4 | 3 | 4 | 3 | 4 | 3 | 2 | 2 | 2 | 3 | 3 |
| C1255 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

UNIFORM PRELIMINARY TEST I - 1964

| Strain | Originating Agency | Origin | Generation Composited |
|---|---|---|---|
| A-100 | Freedolph and Hubert Anderson, St. Peter, Minn. | Unknown | |
| Chippewa | Ill. A.E.S. & U.S.R.S.L. | Lincoln (2) x Richland | $F_5$ |
| A2-5330 | Iowa A.E.S. & U.S.R.S.L. | Adams x Chippewa | $F_7$ |
| A9-619 | Iowa A.E.S. & U.S.R.S.L. | Clark x Chippewa | $F_4$ |
| A2-5405 | Iowa A.E.S. & U.S.R.S.L. | Sel. from A9-619 | $F_7$ |
| A2-5407 | Iowa A.E.S. & U.S.R.S.L. | Clark x Chippewa | $F_7$ |
| A9K-2558 | Iowa A.E.S. & U.S.R.S.L. | Hawkeye x Chippewa | $F_4$ |
| A2-5504 | Iowa A.E.S. & U.S.R.S.L. | Sel. from A9K-2558 | $F_7$ |
| M235 | Minn. A.E.S. & U.S.R.S.L. | Lincoln (2) x Richland | $F_5$ |
| M413 | Minn. A.E.S. & U.S.R.S.L. | Lincoln (2) x Richland | $F_5$ |
| M414 | Minn. A.E.S. & U.S.R.S.L. | Lincoln (2) x Richland | $F_5$ |
| O-201855 | Research Station, Harrow, Ontario | Hardome x Monroe | $F_5$ |
| W1-4120 | Wis. A.E.S. & U.S.R.S.L. | Norchief x Clark | $F_6$ |
| W1-4221 | Wis. A.E.S. & U.S.R.S.L. | Grant x Chippewa | $F_6$ |
| W1-4224 | Wis. A.E.S. & U.S.R.S.L. | Grant x Chippewa | $F_6$ |

A9-619 and A9K-2558 and their respective reselections had average yields close to that of A-100. The reselections were two days later than the parent strain in each case without any appreciable gain in yield. A9-619 had the best performance in the test but was quite susceptible to downy mildew. A2-5407 yielded well considering its earlier maturity.

Most of the remaining strains approximated Chippewa in maturity but yielded less and the M strains had very short plant height. W1-4221 was quite short but yielded slightly better than Chippewa. W1-4224 yielded well but was several days later than Chippewa.

Table 39. Descriptive data for the strains in Uniform Preliminary Test I, 1964.

| Strain | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color | Shattering* |
|---|---|---|---|---|---|---|---|
| A-100 | W | G | Br | S | Y | Bf | 1.0 |
| Chippewa | P | T | Br | S | Y | Bl | 1.0 |
| A2-5330 | P | T | Tan | S | Y | Bl | 1.5 |
| A9-619 | P | T | Br | S | Y | Bl | 1.0 |
| A2-5405 | P | T | Br | S | Y | Bl | 1.0 |
| A2-5407 | P | T | Br | S | Y | Bl | 1.0 |
| A9K-2558 | P | T | Br | S | Y | Bl | 2.0 |
| A2-5504 | P | T | Br | S | Y | Bl | 2.0 |
| M235 | W | G | Br | D | Y | Y | 1.7 |
| M413 | W | G | Br | D | Y | Y | 2.0 |
| M414 | W | G | Br | D | Y | Y | 2.0 |
| 0-201855 | W | G | Br | S | Y | Y | 3.2 |
| W1-4120 | P | T | Br | S | Y | Bl | 2.0 |
| W1-4221 | P | Lt | Br | S | Y | Bl | 4.0 |
| W1-4224 | P | Lt | Br | S | Y | Bl | 3.5 |

*Average of 2 replications at Urbana, Illinois, planted May 6.

Table 40. Summary of data for Uniform Preliminary Test I, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 9 | 9 | 6 | 6 | 8 | 9 | 9 | 7 | 7 |
| A-100 | 36.5 | 5 | +7.2 | 1.9 | 34 | 1.7 | 18.8 | 40.7 | 20.8 |
| Chippewa | 35.4 | 9 | 0 | 1.8 | 34 | 1.9 | 14.6 | 41.0 | 20.0 |
| A2-5330 | 33.3 | 11 | +3.8 | 1.6 | 37 | 1.8 | 14.5 | 40.7 | 20.3 |
| A9-619 | 37.1 | 1 | +5.0 | 1.5 | 35 | 1.9 | 16.9 | 41.4 | 20.2 |
| A2-5405 | 37.1 | 1 | +7.0 | 1.9 | 34 | 1.9 | 16.5 | 41.3 | 20.1 |
| A2-5407 | 36.6 | 4 | +1.5 | 1.7 | 35 | 1.7 | 15.5 | 41.4 | 20.2 |
| A9K-2558 | 36.2 | 6 | +3.3 | 1.7 | 34 | 2.0 | 17.5 | 41.9 | 20.1 |
| A2-5504 | 36.8 | 3 | +5.2 | 1.7 | 34 | 1.8 | 16.5 | 42.2 | 19.8 |
| M235 | 33.3 | 11 | -0.5 | 1.4 | 31 | 2.0 | 17.4 | 39.9 | 20.9 |
| M413 | 33.0 | 13 | 0 | 1.4 | 31 | 2.2 | 17.8 | 39.7 | 21.0 |
| M414 | 33.7 | 10 | -0.5 | 1.6 | 31 | 2.1 | 17.1 | 39.7 | 21.0 |
| 0-201855 | 29.7 | 15 | -0.8 | 2.4 | 37 | 2.0 | 16.2 | 41.3 | 19.8 |
| W1-4120 | 32.8 | 14 | +0.8 | 1.9 | 34 | 1.9 | 15.3 | 40.7 | 20.3 |
| W1-4221 | 36.1 | 7 | -0.8 | 2.1 | 32 | 1.9 | 16.6 | 41.3 | 20.3 |
| W1-4224 | 35.5 | 8 | +3.8 | 2.2 | 34 | 3.0 | 18.2 | 41.5 | 19.7 |

[1]Days earlier (-) or later (+) than Chippewa which matured September 16, 117 days after planting.

Table 41. Disease data for Uniform Preliminary Test I, 1964.

| Strain | Bacterial Blight Ill. a[1] | Brown Stem Rot Ill. n[1] | Phytophthora Rot Ind. a | Frogeye Ind. Race 2 a | Downy Mildew Ind. n |
|---|---|---|---|---|---|
| A-100 | 2 | 2 | S | 5 | 4 |
| Chippewa | 1 | 2 | S | 5 | 4 |
| A2-5330 | 3 | 2 | S | 4 | 3 |
| A9-619 | 2 | 2 | S | 4 | 5 |
| A2-5405 | 3 | 3 | S | 4 | 4 |
| A2-5407 | 2 | 3 | S | 4 | 3 |
| A9K-2558 | 2 | 3 | S | 4 | 2 |
| A2-5504 | 2 | 3 | S | 5 | 2 |
| M235 | 3 | 2 | S | 4 | 5 |
| M413 | 3 | 2 | S | 4 | 4 |
| M414 | 3 | 3 | S | 5 | 5 |
| 0-201855 | 3 | 4 | R | 5 | 4 |
| W1-4120 | 1 | 4 | S | 5 | 3 |
| W1-4221 | 2 | 4 | S | 5 | 3 |
| W1-4224 | 2 | 4 | S | 5 | 3 |

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

Table 42. Yield and yield rank for Uniform Preliminary Test I, 1964.

| Strain | Mean of 9 Tests | Ridge-town Ont. | Harrow Ont. | Hoyt-ville Ohio | Wooster Ohio | Colum-bus Ohio | East Lansing Mich. |
|---|---|---|---|---|---|---|---|
| | | | | | * | | |
| A-100 | 36.5 | 45.6 | 44.1 | 31.0 | 29.7 | 32.6 | 37.0 |
| Chippewa | 35.4 | 46.1 | 42.7 | 30.2 | 28.4 | 28.0 | 36.3 |
| A2-5330 | 33.3 | 49.4 | 35.7 | 26.8 | 26.7 | 25.9 | 31.3 |
| A9-619 | 37.1 | 55.3 | 40.4 | 29.0 | 26.4 | 27.6 | 38.7 |
| A2-5405 | 37.1 | 50.8 | 43.7 | 33.2 | 28.6 | 25.8 | 39.1 |
| A2-5407 | 36.6 | 48.5 | 45.0 | 31.1 | 26.7 | 29.1 | 38.5 |
| A9K-2558 | 36.2 | 50.4 | 43.2 | 31.1 | 26.8 | 26.0 | 32.7 |
| A2-5504 | 36.8 | 48.7 | 45.4 | 30.5 | 27.3 | 30.5 | 35.0 |
| M235 | 33.3 | 45.8 | 35.4 | 26.4 | 20.6 | 27.3 | 33.8 |
| M413 | 33.0 | 43.5 | 36.3 | 25.0 | 25.5 | 22.0 | 31.5 |
| M414 | 33.7 | 46.0 | 41.4 | 20.9 | 25.5 | 27.4 | 31.1 |
| 0-201855 | 29.7 | 38.7 | 30.0 | 22.9 | 26.8 | 26.2 | 27.6 |
| W1-4120 | 32.8 | 46.8 | 36.4 | 23.7 | 30.7 | 25.3 | 33.8 |
| W1-4221 | 36.1 | 50.5 | 42.5 | 25.2 | 31.2 | 32.9 | 31.3 |
| W1-4224 | 35.5 | 46.0 | 41.0 | 28.9 | 29.4 | 29.0 | 31.9 |
| Coef. of Var. (%) | | 4.4 | 9.0 | 9.0 | 20.2 | 15.2 | 8.6 |
| L.S.D. (5%) | | 4.4 | 7.8 | 5.3 | N.S. | N.S. | 6.2 |
| Row Spacing (In.) | | 24 | 40 | 28 | 32 | 28 | 24 |
| | | | | Yield Rank | | | |
| A-100 | 5 | 13 | 3 | 4 | 3 | 2 | 4 |
| Chippewa | 9 | 9 | 6 | 6 | 6 | 6 | 5 |
| A2-5330 | 11 | 5 | 13 | 9 | 10 | 12 | 12 |
| A9-619 | 1 | 1 | 10 | 7 | 12 | 7 | 2 |
| A2-5405 | 1 | 2 | 4 | 1 | 5 | 13 | 1 |
| A2-5407 | 4 | 7 | 2 | 2 | 10 | 4 | 3 |
| A9K-2558 | 6 | 4 | 5 | 2 | 8 | 11 | 9 |
| A2-5504 | 3 | 6 | 1 | 5 | 7 | 3 | 6 |
| M235 | 11 | 12 | 14 | 10 | 15 | 9 | 7 |
| M413 | 13 | 14 | 12 | 12 | 13 | 15 | 11 |
| M414 | 10 | 10 | 8 | 15 | 13 | 8 | 14 |
| 0-201855 | 15 | 15 | 15 | 14 | 8 | 10 | 15 |
| W1-4120 | 14 | 8 | 11 | 13 | 2 | 14 | 7 |
| W1-4221 | 7 | 3 | 7 | 11 | 1 | 1 | 12 |
| W1-4224 | 8 | 10 | 9 | 8 | 4 | 5 | 10 |

*Not included in the mean.

Table 42. (Continued)

| Strain | Madison Wis. | Shabbona Ill. | St. Paul Minn. | Kanawha Iowa | Eureka S.D. | Watertown S.D. | Brookings S.D. |
|---|---|---|---|---|---|---|---|
| | * | | | | * | * | |
| A-100 | 26.2 | 48.4 | 21.7 | 41.8 | 6.4 | 12.9 | 26.3 |
| Chippewa | 24.2 | 44.4 | 20.8 | 37.0 | 9.4 | 13.3 | 33.5 |
| A2-5330 | 27.8 | 45.0 | 20.6 | 36.9 | 6.5 | 10.2 | 27.7 |
| A9-619 | 27.6 | 51.6 | 23.4 | 40.9 | 8.1 | 12.8 | 27.2 |
| A2-5405 | 26.3 | 50.2 | 21.4 | 41.1 | 7.9 | 13.5 | 29.0 |
| A2-5407 | 23.6 | 46.0 | 20.7 | 40.6 | 9.2 | 12.8 | 29.5 |
| A9K-2558 | 26.0 | 48.1 | 22.8 | 40.0 | 9.7 | 14.5 | 31.8 |
| A2-5504 | 25.6 | 50.7 | 20.1 | 40.8 | 9.2 | 14.5 | 29.9 |
| M235 | 19.9 | 43.6 | 22.8 | 38.2 | 9.0 | 11.0 | 26.5 |
| M413 | 26.1 | 43.8 | 25.0 | 37.8 | 9.7 | 11.2 | 32.2 |
| M414 | -- | 44.7 | 25.4 | 39.2 | 9.5 | 11.8 | 26.9 |
| 0-201855 | 18.6 | 43.7 | 19.7 | 34.4 | 6.7 | 9.7 | 24.4 |
| W1-4120 | 24.1 | 45.5 | 22.1 | 36.4 | 8.9 | 15.1 | 25.0 |
| W1-4221 | 20.7 | 47.9 | 24.7 | 40.7 | 9.5 | 14.5 | 29.5 |
| W1-4224 | 25.7 | 49.2 | 23.6 | 40.1 | 8.6 | 14.8 | 30.0 |
| Coef. of Var. (%) | 8.8 | 4.5 | -- | 5.8 | 11.9 | 13.1 | 7.6 |
| L.S.D. (5%) | 4.2 | 4.5 | -- | 4.8 | 2.2 | 2.5 | 4.6 |
| Row Spacing (In.) | 36 | 40 | 36 | 40 | 42 | 42 | 42 |

| | Yield Rank | | | | | | |
|---|---|---|---|---|---|---|---|
| A-100 | 4 | 5 | 9 | 1 | 15 | 8 | 13 |
| Chippewa | 9 | 12 | 11 | 12 | 5 | 7 | 1 |
| A2-5330 | 1 | 10 | 13 | 13 | 14 | 14 | 9 |
| A9-619 | 2 | 1 | 5 | 3 | 11 | 9 | 10 |
| A2-5405 | 3 | 3 | 10 | 2 | 12 | 6 | 8 |
| A2-5407 | 11 | 8 | 12 | 6 | 6 | 9 | 6 |
| A9K-2558 | 6 | 6 | 6 | 8 | 1 | 3 | 3 |
| A2-5504 | 8 | 2 | 14 | 4 | 6 | 3 | 5 |
| M235 | 13 | 15 | 6 | 10 | 8 | 13 | 12 |
| M413 | 5 | 13 | 2 | 11 | 1 | 12 | 2 |
| M414 | -- | 11 | 1 | 9 | 3 | 11 | 11 |
| 0-201855 | 14 | 14 | 15 | 15 | 13 | 15 | 15 |
| W1-4120 | 10 | 9 | 8 | 14 | 9 | 1 | 14 |
| W1-4221 | 12 | 7 | 3 | 5 | 3 | 3 | 6 |
| W1-4224 | 7 | 4 | 4 | 7 | 10 | 2 | 4 |

Table 43. Maturity, days earlier (-) or later (+) than Chippewa for Uniform Preliminary Test I, 1964.

| Strain | Mean of 6 Tests | Ridgetown Ont. | Harrow Ont. | Hoytville Ohio * | Wooster Ohio * | Columbus Ohio | East Lansing Mich.[1] * |
|---|---|---|---|---|---|---|---|
| A-100 | +7.2 | +14 | +8 | +23 | +8 | 0 | -- |
| Chippewa | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A2-5330 | +3.8 | +10 | +2 | + 3 | +6 | -3 | 0 |
| A9-619 | +5.0 | + 9 | +5 | + 3 | +7 | -1 | 0 |
| A2-5405 | +7.0 | +12 | +5 | + 3 | +6 | -1 | - 1 |
| A2-5407 | +1.5 | + 5 | 0 | + 2 | +4 | -2 | - 1 |
| A9K-2558 | +3.3 | + 5 | +2 | + 3 | +5 | -2 | 0 |
| A2-5504 | +5.2 | +12 | +2 | + 3 | +4 | -1 | 0 |
| M235 | -0.5 | + 3 | +2 | +23 | +2 | -5 | -- |
| M413 | 0 | + 4 | +3 | +24 | +1 | -5 | -- |
| M414 | -0.5 | + 2 | +2 | +18 | +2 | -5 | -- |
| 0-201855 | -0.8 | + 2 | 0 | + 3 | 0 | -6 | -16 |
| W1-4120 | +0.8 | + 4 | 0 | 0 | +1 | -5 | -- |
| W1-4221 | -0.8 | + 1 | -2 | 0 | -1 | -5 | + 1 |
| W1-4224 | +3.8 | +11 | +2 | + 2 | +4 | -4 | + 1 |
| Date planted | 5-22 | 5-25 | 5-26 | 5-22 | 5-21 | 5-18 | 5-28 |
| Chippewa matured | 9-16 | 9-25 | 9-12 | 9-5 | 9-8 | 9-13 | 10-6 |
| Days to mature | 117 | 123 | 109 | 106 | 110 | 118 | 131 |

*Not included in the mean.
[1]Missing dates due to frost before maturity.

Table 43. (Continued)

| Strain | Madison Wis. | Shabbona Ill. | St. Paul Minn. | Kanawha Iowa | Eureka S.D. | Watertown S.D. | Brookings S.D. |
|---|---|---|---|---|---|---|---|
| | * | | * | | * | * | |
| A-100 | +10 | +7 | -- | +7 | +3 | +6 | +7 |
| Chippewa | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A2-5330 | + 4 | +5 | -- | +2 | +2 | +1 | +7 |
| A9-619 | + 5 | +4 | -- | +6 | +2 | +3 | +7 |
| A2-5405 | + 6 | +9 | -- | +8 | +2 | +4 | +9 |
| A2-5407 | + 2 | +1 | - 4 | +2 | +2 | +1 | +3 |
| A9K-2558 | + 2 | +5 | + 2 | +4 | +2 | +2 | +6 |
| A2-5504 | + 2 | +7 | + 2 | +4 | +2 | +3 | +7 |
| M235 | + 2 | -4 | + 4 | 0 | -1 | 0 | +1 |
| M413 | + 1 | -3 | -- | 0 | -2 | +1 | +1 |
| M414 | -- | -2 | - 2 | -1 | -1 | 0 | +1 |
| 0-201855 | - 7 | 0 | -10 | -2 | -2 | -1 | +1 |
| W1-4120 | + 2 | +2 | + 1 | +2 | +2 | +2 | +2 |
| W1-4221 | - 2 | -2 | - 9 | 0 | 0 | +1 | +3 |
| W1-4224 | 0 | +4 | + 5 | +3 | +1 | +6 | +7 |
| Date planted | 5-19 | 5-18 | 5-14 | 5-18 | 5-21 | 5-20 | 5-29 |
| Chippewa matured | 9-9 | 9-11 | 9-22 | 9-8 | 9-22 | 9-24 | 9-29 |
| Days to mature | 113 | 116 | 131 | 113 | 124 | 127 | 123 |

UNIFORM TEST II - 1964

| 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 | 3 $F_3$ lines |
| 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 | 11 $F_3$ lines |
| Lindarin | Purdue A.E.S. & U.S.R.S.L. | Mandarin (Ottawa) x Lincoln | $F_7$ |
| Lindarin 63 (C1315) | Purdue A.E.S. & U.S.R.S.L. | Lindarin (8) x Mukden | 53 $F_3$ lines |
| A1-439 | Iowa A.E.S. & U.S.R.S.L. | Harosoy x Capital | $F_9$ |
| A1-939 | Iowa A.E.S. & U.S.R.S.L. | Adams x Harosoy | $F_8$ |
| A1-1051 | Iowa A.E.S. & U.S.R.S.L. | Harosoy x Clark | $F_8$ |
| M402 | Minn. A.E.S. & U.S.R.S.L. | Renville x Capital | $F_5$ |

The four-year summary in Table 51 shows a .7 to 1.0 bushel lower yield for each of the three Phytophthora-resistant varieties, compared to their backcross parent. Harosoy 63 was slightly earlier, but in all other traits the backcross lines resembled their parents. The table also shows the yield advantage of A1-939.

M402 showed no advantage over Harosoy, except in lodging and shattering resistance. The two new entries in this test, A1-439 and A1-1051, performed very well relative to A1-939. Both were slightly earlier and shorter, but perhaps poorer in lodging resistance. A1-1051 had outstanding shattering resistance and A1-439 had less shattering than A1-939, which was nearly as poor as Harosoy.

Table 44. Regional testing history and descriptive data for the strains in Uniform Test II, 1964.

| Strain | Years in Uniform Test II | Previous Regional Test | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color | Shattering* Urbana | Shattering* Girard |
|---|---|---|---|---|---|---|---|---|---|---|
| Harosoy | 14 | None | P | G | Br | D | Y | Y | 3.7 | 4.8 |
| Harosoy 63 | 4 | None | P | G | Br | D | Y | Y | 3.7 | 4.5 |
| Hawkeye | 18 | -- | P | G | Br | D | Y | Ib | 2.2 | 2.8 |
| Hawkeye 63 | 5 | None | P | G | Br | D | Y | Ib | 2.2 | 2.8 |
| Lindarin | 9 | P.T. II | P | G | Br | D | Y | Bf | 1.5 | 2.2 |
| Lindarin 63 | 2 | None | P | G | Br | D | Y | Bf | 1.5 | 2.2 |
| A1-439 | 1 | P.T. II | P | G | Br | D | Y | Y | 1.5 | 1.8 |
| A1-939 | 2 | None | P | G | Tan | S | Y | Y | 3.2 | 3.2 |
| A1-1051 | 1 | P.T. II | P | T | Br | D | Y | Br | 1.0 | 1.0 |
| M402 | 2 | P.T. I | W | T | Br | D | Y | Y | 2.0 | 2.0 |

*Average of 2 replications at Urbana, Illinois, planted May 6, and of 4 replications at Girard, Illinois.

Table 45. Summary of data for Uniform Test II, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 29 | 29 | 23 | 24 | 29 | 24 | 22 | 15 | 15 |
| Harosoy | 35.6 | 5 | +0.3 | 2.7 | 40 | 2.1 | 16.5 | 40.1 | 21.0 |
| Harosoy 63 | 33.5 | 8 | 0 | 2.7 | 41 | 2.1 | 16.6 | 40.2 | 20.9 |
| Hawkeye | 33.4 | 9 | +5.5 | 2.4 | 40 | 2.0 | 17.4 | 40.5 | 20.9 |
| Hawkeye 63 | 32.5 | 10 | +5.3 | 2.4 | 41 | 2.0 | 17.5 | 40.4 | 21.1 |
| Lindarin | 35.1 | 6 | +1.2 | 1.9 | 36 | 1.9 | 15.1 | 40.3 | 21.0 |
| Lindarin 63 | 34.4 | 7 | +1.4 | 1.9 | 36 | 1.9 | 15.2 | 40.4 | 21.0 |
| A1-439 | 38.5 | 1 | +1.1 | 2.5 | 39 | 1.9 | 14.6 | 39.4 | 21.5 |
| A1-939 | 37.8 | 2 | +3.0 | 2.2 | 41 | 2.1 | 16.1 | 38.5 | 22.2 |
| A1-1051 | 36.8 | 3 | +1.7 | 2.4 | 36 | 1.8 | 19.1 | 42.6 | 20.7 |
| M402 | 35.8 | 4 | +0.8 | 1.5 | 36 | 2.2 | 15.9 | 38.7 | 22.2 |

[1]Days earlier (-) or later (+) than Harosoy 63 which matured September 14, 115 days after planting.

Table 46. Disease data for Uniform Test II, 1964.

| Strain | Bacterial Blight | Bacterial Pustule | | Brown Stem Rot | Phytophthora Rot | Frogeye Ind. | | Downy Mildew | | Chocolate Spot[2] |
|---|---|---|---|---|---|---|---|---|---|---|
| | Ill. | Ill. | Ia. | Ill. | Ind. | Race 1 | Race 2 | Ill. | Ind. | Ia. |
| | a[1] | n[1] | a | n | a | a | a | n | n | a |
| Harosoy | 2 | 3 | 4 | 4 | S | R | 5 | 1 | 1.3 | 4 |
| Harosoy 63 | 3 | 3 | 4 | 4 | R | R | 5 | 1 | 1.5 | 3 |
| Hawkeye | 1 | 3 | 3 | 4 | S | S | 5 | 4 | 4.3 | 3 |
| Hawkeye 63 | 2 | 3 | 3 | 4 | R | S | 5 | 4 | 4.8 | 4 |
| Lindarin | 3 | 4 | 4 | 4 | S | R | 4 | 1 | 2.5 | 3 |
| Lindarin 63 | 1 | 4 | 4 | 3 | R | R | 5 | 2 | 2.0 | 5 |
| A1-439 | 1 | 3 | 4 | 4 | S | - | 4 | 3 | 1.5 | 5 |
| A1-939 | 1 | 4 | 3 | 4 | S | R | 4 | 2 | 1.3 | 3 |
| A1-1051 | 1 | 4 | 4 | 4 | S | - | 5 | 3 | 3.8 | 3 |
| M402 | 1 | 4 | 4 | 4 | S | - | 5 | 5 | 4.3 | 3 |

[1]a = artificial inoculation; n = natural infection.
[2]A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 47. Yield and yield rank for Uniform Test II, 1964.

| Strain | Mean of 29 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.[1] | Walk-er-ton Ind. | Bluff-ton Ind. | Lafa-yette Ind. | Green-field Ind. * | Wor-thing-ton Ind. | Madi-son Wis. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Harosoy | 35.6 | 45.8 | 38.2 | 28.7 | 31.6 | 32.5 | 43.8 | 39.4 | 33.2 | 43.1 | 42.9 | 44.3 | 32.1 | 48.5 | 30.0 |
| Har. 63 | 33.5 | 49.6 | 36.2 | 25.9 | 27.2 | 31.9 | 34.3 | 38.8 | 38.2 | 39.9 | 43.2 | 38.6 | 40.5 | 45.0 | 28.4 |
| Hawkeye | 33.4 | 43.6 | 37.3 | 22.6 | 26.7 | 30.4 | 39.1 | 37.3 | 31.5 | 36.7 | 38.4 | 45.6 | 27.9 | 42.1 | 30.6 |
| Hawk. 63 | 32.5 | 43.5 | 38.0 | 20.9 | 25.2 | 31.7 | 34.1 | 39.5 | 32.3 | 36.4 | 39.6 | 47.3 | 40.4 | 39.5 | 28.9 |
| Lindarin | 35.1 | 50.0 | 40.6 | 26.1 | 29.2 | 26.8 | 41.5 | 41.9 | 34.7 | 37.7 | 41.8 | 39.5 | 29.4 | 49.4 | 30.8 |
| Lind. 63 | 34.4 | 45.5 | 37.8 | 28.7 | 30.1 | 28.2 | 33.1 | 38.6 | 35.0 | 39.9 | 41.7 | 41.6 | 41.0 | 51.2 | 32.0 |
| A1-439 | 38.5 | 52.7 | 36.3 | 27.8 | 28.0 | 32.4 | 36.5 | 41.6 | 40.0 | 43.0 | 49.8 | 49.9 | 38.3 | 50.0 | 33.0 |
| A1-939 | 37.8 | 49.2 | 41.5 | 29.7 | 34.0 | 32.5 | 33.8 | 40.3 | 39.3 | 43.9 | 46.7 | 45.6 | 38.6 | 57.6 | 31.7 |
| A1-1051 | 36.8 | 48.3 | 47.6 | 25.8 | 34.8 | 30.6 | 38.8 | 42.7 | 33.4 | 39.5 | 43.3 | 45.4 | 30.1 | 45.0 | 33.4 |
| M402 | 35.8 | 54.7 | 40.9 | 29.0 | 32.3 | 32.4 | 40.2 | 42.1 | 36.6 | 37.0 | 40.5 | 44.6 | 21.9 | 43.3 | 33.5 |
| C.V.(%) | | 8.2 | 6.4 | -- | 8.4 | 15.5 | 15.0 | 6.7 | 7.8 | 8.8 | 4.8 | 7.3 | 13.6 | 6.0 | 10.4 |
| L.S.D.(5%) | | 5.8 | 3.7 | N.S. | 3.6 | N.S. | N.S. | N.S. | 4.8 | 5.0 | 3.0 | 4.6 | 6.8 | 4.1 | N.S. |
| R.Sp.(In.) | | 24 | 40 | 24 | 28 | 32 | 28 | 24 | 28 | 40 | 38 | 38 | 38 | 38 | 36 |
| | | | | | | | | Yield Rank | | | | | | | |
| Harosoy | 5 | 7 | 5 | 3 | 4 | 1 | 1 | 7 | 8 | 2 | 5 | 7 | 6 | 5 | 8 |
| Har. 63 | 8 | 4 | 10 | 7 | 8 | 5 | 7 | 8 | 3 | 4 | 4 | 10 | 2 | 6 | 10 |
| Hawkeye | 9 | 9 | 8 | 9 | 9 | 8 | 4 | 10 | 10 | 9 | 10 | 3 | 9 | 9 | 7 |
| Hawk. 63 | 10 | 10 | 6 | 10 | 10 | 6 | 8 | 6 | 9 | 10 | 9 | 2 | 3 | 10 | 9 |
| Lindarin | 6 | 3 | 4 | 6 | 6 | 10 | 2 | 3 | 6 | 7 | 6 | 9 | 8 | 4 | 6 |
| Lind. 63 | 7 | 8 | 7 | 3 | 5 | 9 | 10 | 9 | 5 | 4 | 7 | 8 | 1 | 2 | 4 |
| A1-439 | 1 | 2 | 9 | 5 | 7 | 3 | 6 | 4 | 1 | 3 | 1 | 1 | 5 | 3 | 3 |
| A1-939 | 2 | 5 | 2 | 1 | 2 | 1 | 9 | 5 | 2 | 1 | 2 | 3 | 4 | 1 | 5 |
| A1-1051 | 3 | 6 | 1 | 8 | 1 | 7 | 5 | 1 | 7 | 6 | 3 | 5 | 7 | 7 | 2 |
| M402 | 4 | 1 | 3 | 2 | 3 | 3 | 3 | 2 | 4 | 8 | 8 | 6 | 10 | 8 | 1 |

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

Table 47. (Continued)

| Strain | Shab-bona Ill. | Dwight Ill. | Ur-bana Ill. | Gi-rard Ill. | Edge-wood Ill. | Eldo-rado Ill. | Car-bon-dale 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. | Con-cord Nebr. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Har. | 50.9 | 40.7 | 31.2 | 22.1 | 28.1 | 39.8 | 19.7 | 25.6 | 34.0 | 30.4 | 36.8 | 24.6 | 36.0 | 36.3 | 29.9 | 45.5 |
| Hr.63 | 44.4 | 41.2 | 32.3 | 17.6 | 22.9 | 31.1 | 20.0 | 22.6 | 33.4 | 31.6 | 36.6 | 25.9 | 35.7 | 31.7 | 26.9 | 41.1 |
| Hawk. | 38.2 | 40.0 | 30.1 | 23.2 | 26.7 | 36.1 | 19.8 | 25.8 | 34.0 | 30.8 | 34.8 | 30.6 | 33.8 | 31.8 | 30.4 | 40.9 |
| Hk.63 | 41.0 | 39.4 | 29.5 | 24.1 | 23.8 | 30.7 | 17.8 | 20.9 | 30.9 | 30.5 | 32.9 | 26.4 | 32.2 | 34.3 | 32.2 | 39.5 |
| Lind. | 46.8 | 41.9 | 30.8 | 28.8 | 29.4 | 41.0 | 17.0 | 24.5 | 36.2 | 31.2 | 33.4 | 27.6 | 35.9 | 33.6 | 29.2 | 39.7 |
| Ln.63 | 45.3 | 39.5 | 28.6 | 31.2 | 26.5 | 38.5 | 18.3 | 23.5 | 33.3 | 31.4 | 35.1 | 27.4 | 33.0 | 33.3 | 29.4 | 39.8 |
| -439 | 49.6 | 44.5 | 37.6 | 35.4 | 32.2 | 37.8 | 20.1 | 29.8 | 39.6 | 37.0 | 40.4 | 30.7 | 41.0 | 37.3 | 30.9 | 52.7 |
| -939 | 51.5 | 43.5 | 33.8 | 31.0 | 32.1 | 49.0 | 20.0 | 25.4 | 36.8 | 34.4 | 36.4 | 27.6 | 37.0 | 37.1 | 32.6 | 41.6 |
| -1051 | 45.3 | 42.9 | 33.4 | 35.5 | 30.3 | 43.4 | 20.4 | 26.7 | 36.3 | 35.4 | 37.4 | 27.4 | 36.4 | 34.7 | 32.4 | 40.9 |
| M402 | 48.8 | 39.8 | 30.7 | 29.6 | 28.7 | 39.2 | 19.7 | 29.8 | 35.4 | 32.0 | 34.0 | 31.2 | 31.4 | 33.1 | 30.0 | 38.7 |
| CV(%) | 7.7 | 9.5 | 3.6 | 7.6 | 9.6 | 6.3 | -- | -- | -- | 6.2 | 9.3 | 8.9 | 6.0 | -- | 13.9 | 7.2 |
| LSD(5%) | 5.2 | N.S. | 1.7 | 3.1 | 3.9 | 3.5 | -- | -- | -- | 2.8 | 4.5 | 3.4 | 2.8 | -- | 6.1 | 4.4 |
| RS(In.) | 40 | 38 | 40 | 38 | 36 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 38 | 42 | 40 |

Yield Rank

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Har. | 2 | 6 | 5 | 9 | 6 | 4 | 6 | 5 | 6 | 10 | 3 | 10 | 4 | 3 | 7 | 2 |
| Hr.63 | 8 | 5 | 4 | 10 | 10 | 9 | 3 | 9 | 8 | 5 | 4 | 9 | 6 | 10 | 10 | 4 |
| Hawk. | 10 | 7 | 8 | 8 | 7 | 8 | 5 | 4 | 6 | 8 | 7 | 3 | 7 | 9 | 5 | 5 |
| Hk.63 | 9 | 10 | 9 | 7 | 9 | 10 | 9 | 10 | 10 | 9 | 10 | 8 | 9 | 5 | 3 | 9 |
| Lind. | 5 | 4 | 6 | 6 | 4 | 3 | 10 | 7 | 4 | 7 | 9 | 4 | 5 | 6 | 9 | 8 |
| Ln.63 | 6 | 9 | 10 | 3 | 8 | 6 | 8 | 8 | 9 | 6 | 6 | 6 | 8 | 7 | 8 | 7 |
| -439 | 3 | 1 | 1 | 2 | 1 | 7 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 4 | 1 |
| -939 | 1 | 2 | 2 | 4 | 2 | 1 | 3 | 6 | 2 | 3 | 5 | 4 | 2 | 2 | 1 | 3 |
| -1051 | 6 | 3 | 3 | 1 | 3 | 2 | 1 | 3 | 3 | 2 | 2 | 6 | 3 | 4 | 2 | 5 |
| M402 | 4 | 8 | 7 | 5 | 5 | 5 | 6 | 1 | 5 | 4 | 8 | 1 | 10 | 8 | 6 | 10 |

Table 48. Maturity days earlier (-) or later (+) than Harosoy 63, and lodging for Uniform Test II, 1964.

| Strain | Mean of 23 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.[1] * | Dun-dee Mich.[1] * | Walk-er-ton Ind. | Bluff-ton Ind. | La fa-yette Ind. | Green-field Ind. * | Wor-thing-ton Ind. * | Madi-son Wis. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Harosoy | +0.3 | 0 | 0 | | - 3 | 0 | -1 | | | +1 | +1 | 0 | 0 | | +2 |
| Har. 63 | 0 | 0 | 0 | | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | | 0 |
| Hawkeye | +5.5 | +1 | +2 | | +14 | +3 | +3 | | | +8 | +6 | +4 | +1 | | +6 |
| Hawk. 63 | +5.3 | +1 | +2 | | +11 | +2 | +2 | | | +9 | +6 | +4 | +2 | | +5 |
| Lindarin | +1.2 | +1 | 0 | | + 4 | 0 | +1 | | | +4 | +1 | +3 | -2 | | +4 |
| Lind. 63 | +1.4 | +1 | 0 | | + 7 | +1 | +1 | | | +2 | 0 | +3 | -1 | | +4 |
| A1-439 | +1.1 | 0 | +1 | | +14 | 0 | +1 | | | +5 | +3 | -1 | 0 | | +1 |
| A1-939 | +3.0 | +1 | +1 | | + 1 | +2 | +1 | | | +4 | +5 | -2 | -2 | | +4 |
| A1-1051 | +1.7 | 0 | +2 | | +10 | -1 | -1 | | | +3 | +3 | 0 | -2 | | +3 |
| M402 | +0.8 | 0 | +1 | | +15 | 0 | 0 | | | +2 | 0 | +6 | -1 | | +4 |
| Date pltd. | 5-22 | 5-25 | 5-26 | 5-25 | 5-22 | 5-21 | 5-18 | 5-29 | 5-25 | 5-22 | 5-21 | 5-19 | 5-18 | 5-26 | 5-19 |
| Har.63 mat. | 9-14 | 10-4 | 9-20 | -- | 9-13 | 9-20 | 9-14 | -- | -- | 9-16 | 9-10 | 9-12 | 9-14 | -- | 9-18 |
| Da. to mat. | 115 | 132 | 117 | -- | 114 | 122 | 119 | -- | -- | 117 | 112 | 116 | 119 | -- | 122 |

| | Mean of 24 Tests | Lodging | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | * | | | | | | | * | | * |
| Harosoy | 2.7 | 3.0 | 2.5 | 5.0 | 3.0 | 1.0 | 1.2 | 3.0 | 4.0 | 2.5 | 2.0 | 2.0 | 1.8 | 3.8 | 1.0 |
| Har. 63 | 2.7 | 3.0 | 3.0 | 5.0 | 3.0 | 1.0 | 1.2 | 2.0 | 4.0 | 2.0 | 2.3 | 2.0 | 2.5 | 4.0 | 1.0 |
| Hawkeye | 2.4 | 2.0 | 3.5 | 4.0 | 2.5 | 1.0 | 1.2 | 2.0 | 3.0 | 1.5 | 2.0 | 2.0 | 1.3 | 3.5 | 1.0 |
| Hawk. 63 | 2.4 | 3.0 | 3.5 | 4.0 | 2.0 | 1.0 | 1.2 | 2.0 | 3.0 | 2.3 | 1.8 | 2.0 | 2.0 | 3.5 | 1.0 |
| Lindarin | 1.9 | 2.0 | 2.0 | 4.0 | 2.0 | 1.0 | 1.0 | 2.0 | 2.0 | 1.8 | 1.5 | 2.0 | 1.0 | 2.3 | 1.0 |
| Lind. 63 | 1.9 | 2.0 | 2.0 | 3.0 | 2.2 | 1.0 | 1.0 | 2.0 | 2.0 | 1.8 | 1.5 | 2.0 | 2.0 | 2.3 | 1.0 |
| A1-439 | 2.5 | 3.0 | 2.0 | 5.0 | 2.2 | 1.0 | 1.5 | 2.0 | 3.0 | 2.3 | 2.0 | 2.0 | 2.3 | 3.3 | 1.0 |
| A1-939 | 2.2 | 2.0 | 1.5 | 4.0 | 2.2 | 1.0 | 1.0 | 2.0 | 3.0 | 2.3 | 2.5 | 2.0 | 2.5 | 2.8 | 1.0 |
| A1-1051 | 2.4 | 3.0 | 3.0 | 4.0 | 3.0 | 1.0 | 1.0 | 2.0 | 3.0 | 1.8 | 2.5 | 1.0 | 1.5 | 2.8 | 1.0 |
| M402 | 1.5 | 2.0 | 2.0 | 3.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.3 | 2.0 | 1.0 | 1.3 | 2.0 | 1.0 |

*Not included in the mean.
[1]Missing dates due to frost before maturity.

Table 48. (Continued)

| Strain | Shab-bona Ill. | Dwight Ill. | Ur-bana Ill. | Gi-rard Ill. | Edge-wood Ill. | Eldo-rado Ill. | Car-bon-dale 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. | Con-cord Nebr.[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | * |
| Har. | 0 | +1 | 0 | +1 | 0 | 0 | 0 | 0 | 0 | +1 | + 2 | 0 | 0 | 0 | 0 | +1 |
| Hr.63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hawk. | +3 | +4 | +8 | +8 | +3 | +3 | +6 | +10 | +10 | +7 | +10 | +5 | +7 | +5 | +4 | -- |
| Hk.63 | +4 | +3 | +7 | +7 | +3 | +3 | +5 | +10 | +10 | +8 | +10 | +5 | +7 | +4 | +4 | -- |
| Lind. | 0 | -2 | +1 | +1 | 0 | 0 | +3 | + 5 | 0 | +1 | + 3 | +2 | +1 | -1 | 0 | +2 |
| Ln.63 | +1 | 0 | +2 | +1 | 0 | 0 | +4 | + 5 | 0 | +1 | + 3 | +2 | +1 | -1 | +1 | +2 |
| -439 | +2 | +2 | -1 | +1 | 0 | +3 | -2 | + 4 | 0 | +1 | + 5 | +2 | 0 | 0 | -2 | +2 |
| -939 | +2 | +2 | +4 | +7 | 0 | -1 | +7 | + 2 | + 6 | +4 | + 6 | +2 | +3 | +6 | +3 | +3 |
| -1051 | +1 | +2 | +2 | +4 | +2 | +2 | +3 | + 4 | + 2 | +1 | + 2 | 0 | +1 | +2 | +1 | +2 |
| M402 | -1 | -3 | 0 | +3 | -2 | -5 | +2 | + 6 | + 1 | +3 | + 1 | 0 | 0 | 0 | +1 | +2 |
| D.P. | 5-18 | 6-16 | 5-11 | 5-21 | 6-2 | 6-4 | 5-25 | 5-18 | 5-21 | 5-20 | 5-18 | 5-22 | 5-15 | 5-4 | 5-25 | 5-29 |
| Mat. | 9-22 | 10-1 | 8-29 | 8-27 | 9-4 | 9-8 | 8-28 | 9-19 | 10-2 | 9-13 | 9-14 | 9-16 | 9-10 | 8-20 | 9-24 | 9-24 |
| D.to m. | 127 | 107 | 110 | 98 | 94 | 96 | 95 | 124 | 134 | 116 | 119 | 117 | 118 | 108 | 122 | 118 |
| | | | | | | | | Lodging | | | | | | | | |
| | | | | | | | * | | | | | | | | * | |
| Har. | 3.4 | 3.7 | 1.5 | 1.4 | 3.4 | 4.6 | 1.0 | 2.5 | 3.0 | 1.5 | 2.0 | 1.4 | 1.8 | | 1.0 | 1.8 |
| Hr.63 | 3.3 | 3.6 | 1.5 | 1.3 | 4.2 | 4.6 | 1.0 | 2.5 | 3.0 | 1.6 | 1.9 | 1.4 | 1.8 | | 1.0 | 1.8 |
| Hawk. | 3.3 | 3.0 | 1.4 | 1.4 | 2.3 | 4.1 | 1.0 | 3.0 | 3.0 | 1.3 | 1.8 | 1.5 | 1.6 | | 1.0 | 1.8 |
| Hk.63 | 3.1 | 2.8 | 1.4 | 1.5 | 2.6 | 4.5 | 1.0 | 3.0 | 3.0 | 1.3 | 1.6 | 1.5 | 1.5 | | 1.0 | 2.0 |
| Lind. | 3.2 | 2.3 | 1.3 | 1.3 | 1.6 | 1.6 | 1.0 | 2.0 | 2.3 | 1.2 | 1.6 | 1.2 | 1.6 | | 1.0 | 1.0 |
| Ln.63 | 3.2 | 2.3 | 1.3 | 1.3 | 1.9 | 2.1 | 1.0 | 2.2 | 2.2 | 1.2 | 1.6 | 1.3 | 1.7 | | 1.0 | 1.0 |
| -439 | 3.3 | 3.3 | 1.6 | 1.4 | 2.3 | 4.5 | 1.0 | 3.5 | 2.8 | 1.5 | 1.9 | 1.4 | 1.8 | | 1.0 | 2.0 |
| -939 | 3.0 | 3.2 | 1.4 | 1.6 | 2.6 | 3.0 | 1.0 | 2.8 | 3.0 | 1.5 | 1.6 | 1.5 | 1.6 | | 1.0 | 1.5 |
| -1051 | 3.5 | 3.8 | 1.4 | 1.6 | 3.1 | 3.4 | 1.0 | 2.5 | 2.5 | 1.4 | 2.0 | 1.3 | 1.5 | | 1.0 | 2.0 |
| M402 | 2.3 | 1.4 | 1.2 | 1.1 | 1.1 | 1.4 | 1.0 | 2.3 | 2.3 | 1.2 | 1.6 | 1.2 | 1.4 | | 1.0 | 1.0 |

Table 49. Plant height and seed quality for Uniform Test II, 1964.

| Strain | Mean of 29 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. | Madi-son Wis. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Harosoy | 40 | 48 | 34 | 40 | 34 | 27 | 42 | 28 | 38 | 42 | 50 | 44 | 42 | 48 | 25 |
| Har. 63 | 41 | 47 | 35 | 40 | 33 | 27 | 41 | 29 | 38 | 44 | 49 | 45 | 43 | 51 | 24 |
| Hawkeye | 40 | 46 | 36 | 37 | 34 | 26 | 40 | 27 | 37 | 43 | 46 | 46 | 41 | 46 | 24 |
| Hawk. 63 | 41 | 46 | 38 | 36 | 35 | 27 | 43 | 27 | 39 | 43 | 49 | 46 | 43 | 44 | 24 |
| Lindarin | 36 | 44 | 32 | 36 | 29 | 26 | 36 | 26 | 36 | 36 | 43 | 40 | 38 | 41 | 24 |
| Lind. 63 | 36 | 44 | 34 | 37 | 31 | 27 | 40 | 27 | 36 | 38 | 43 | 39 | 40 | 46 | 24 |
| A1-439 | 39 | 47 | 31 | 37 | 32 | 28 | 39 | 28 | 37 | 42 | 47 | 45 | 41 | 46 | 24 |
| A1-939 | 41 | 47 | 36 | 40 | 31 | 27 | 41 | 29 | 37 | 44 | 50 | 47 | 44 | 50 | 24 |
| A1-1051 | 36 | 43 | 36 | 36 | 31 | 27 | 38 | 26 | 35 | 37 | 42 | 42 | 39 | 45 | 24 |
| M402 | 36 | 43 | 33 | 35 | 31 | 27 | 39 | 28 | 35 | 37 | 42 | 40 | 36 | 42 | 24 |

| | Mean of 24 Tests | Seed Quality | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | * | | | * | | |
| Harosoy | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 1.0 | 2.0 | 3.0 | 2.0 | 1.0 | 1.0 | 1.5 | 1.5 | 1.5 | 2.0 |
| Har. 63 | 2.1 | 2.0 | 2.0 | 2.0 | 1.7 | 1.0 | 2.0 | 3.0 | 2.0 | 1.0 | 1.0 | 1.5 | 1.5 | 1.5 | 2.0 |
| Hawkeye | 2.0 | 3.0 | 1.0 | 2.0 | 1.7 | 1.5 | 1.7 | 2.0 | 2.0 | 1.0 | 1.0 | 1.5 | 1.5 | 1.5 | 1.0 |
| Hawk. 63 | 2.0 | 3.0 | 1.0 | 2.0 | 1.5 | 1.0 | 2.0 | 2.0 | 2.0 | 1.0 | 1.0 | 1.5 | 1.5 | 1.5 | 1.0 |
| Lindarin | 1.9 | 2.0 | 1.2 | 1.0 | 2.0 | 1.0 | 2.0 | 3.0 | 2.0 | 1.0 | 1.0 | 1.5 | 1.0 | 1.5 | 2.0 |
| Lind. 63 | 1.9 | 2.0 | 1.0 | 1.0 | 2.0 | 1.2 | 2.2 | 2.0 | 2.0 | 1.0 | 1.0 | 1.5 | 1.0 | 1.5 | 2.0 |
| A1-439 | 1.9 | 2.0 | 2.0 | 2.0 | 1.7 | 1.0 | 2.7 | 2.0 | 2.0 | 1.0 | 1.0 | 1.5 | 1.5 | 1.5 | 1.0 |
| A1-939 | 2.1 | 2.0 | 2.8 | 2.0 | 2.0 | 1.0 | 1.2 | 3.0 | 2.0 | 1.0 | 1.0 | 1.5 | 2.0 | 1.5 | 2.0 |
| A1-1051 | 1.8 | 2.0 | 1.0 | 1.0 | 1.5 | 1.0 | 2.0 | 2.0 | 2.0 | 1.0 | 1.5 | 1.0 | 1.0 | 2.0 | 1.0 |
| M402 | 2.2 | 2.0 | 1.0 | 1.0 | 2.0 | 1.0 | 2.0 | 3.0 | 3.0 | 1.0 | 1.0 | 1.5 | 1.5 | 2.0 | 2.0 |

*Not included in the mean.

Table 49. (Continued)

| Strain | Shab-bona Ill. | Dwight Ill. | Ur-bana Ill. | Gi-rard Ill. | Edge-wood Ill. | Eldo-rado Ill. | Car-bon-dale 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. | Con-cord Nebr. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Har. | 48 | 43 | 43 | 40 | 39 | 47 | 34 | 39 | 44 | 41 | 47 | 46 | 44 | 37 | 34 | 44 |
| Hr. 63 | 50 | 43 | 42 | 41 | 40 | 47 | 35 | 42 | 43 | 44 | 46 | 47 | 44 | 39 | 36 | 44 |
| Hawk. | 47 | 42 | 42 | 41 | 40 | 43 | 33 | 43 | 44 | 44 | 48 | 46 | 45 | 40 | 33 | 43 |
| Hk. 63 | 48 | 43 | 42 | 41 | 41 | 44 | 34 | 43 | 43 | 45 | 47 | 45 | 46 | 40 | 36 | 44 |
| Lind. | 42 | 36 | 38 | 35 | 35 | 38 | 28 | 35 | 36 | 36 | 42 | 38 | 37 | 33 | 36 | 41 |
| Ln. 63 | 42 | 38 | 38 | 36 | 34 | 39 | 29 | 37 | 37 | 38 | 44 | 37 | 38 | 34 | 29 | 42 |
| -439 | 47 | 41 | 42 | 38 | 38 | 41 | 33 | 40 | 41 | 40 | 45 | 44 | 42 | 34 | 32 | 43 |
| -939 | 50 | 44 | 44 | 42 | 41 | 45 | 32 | 41 | 42 | 44 | 48 | 44 | 46 | 39 | 36 | 45 |
| -1051 | 42 | 37 | 38 | 36 | 36 | 40 | 29 | 36 | 38 | 39 | 42 | 36 | 38 | 34 | 32 | 39 |
| M402 | 43 | 36 | 39 | 34 | 35 | 40 | 29 | 38 | 36 | 37 | 40 | 38 | 36 | 33 | 28 | 36 |

| | Seed Quality | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | * | * | * | * | | | |
| Har. | 1.5 | 2.0 | 2.1 | 2.8 | 2.9 | 3.5 | 2.0 | 3.5 | 3.3 | 1.0 | 1.0 | 1.0 | 1.0 | 2.5 | 2.0 | 1.3 |
| Hr. 63 | 1.5 | 1.8 | 2.0 | 2.5 | 2.9 | 3.3 | 2.0 | 3.5 | 3.5 | 1.0 | 1.0 | 1.0 | 1.0 | 2.5 | 2.0 | 1.3 |
| Hawk. | 1.5 | 1.8 | 2.1 | 3.0 | 2.8 | 3.8 | 2.0 | 3.8 | 3.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.5 | 2.0 | 1.4 |
| Hk. 63 | 1.5 | 1.6 | 2.3 | 3.0 | 2.6 | 4.0 | 2.0 | 3.8 | 3.2 | 1.0 | 1.0 | 1.0 | 1.0 | 1.5 | 1.0 | 1.1 |
| Lind. | 1.5 | 1.1 | 1.5 | 2.8 | 2.0 | 3.8 | 2.0 | 3.8 | 3.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 2.0 | 1.1 |
| Ln. 63 | 1.5 | 1.3 | 1.4 | 2.6 | 2.0 | 3.9 | 2.0 | 3.8 | 3.2 | 1.0 | 1.0 | 1.0 | 1.0 | 1.5 | 2.0 | 1.1 |
| -439 | 1.5 | 1.3 | 1.4 | 2.3 | 2.0 | 3.3 | 2.0 | 3.5 | 3.2 | 1.0 | 1.0 | 1.0 | 1.0 | 2.0 | 1.0 | 1.5 |
| -939 | 1.8 | 1.5 | 1.8 | 3.4 | 2.9 | 3.6 | 2.0 | 3.5 | 3.5 | 1.0 | 1.0 | 1.0 | 1.0 | 2.0 | 1.0 | 1.3 |
| -1051 | 1.3 | 1.3 | 2.0 | 2.3 | 1.5 | 3.3 | 2.0 | 3.5 | 3.5 | 1.0 | 1.0 | 1.0 | 1.0 | 2.0 | 2.0 | 1.4 |
| M402 | 2.0 | 1.5 | 2.5 | 3.9 | 2.6 | 3.1 | 3.0 | 3.5 | 3.8 | 1.0 | 1.0 | 1.0 | 1.0 | 3.0 | 2.0 | 1.3 |

Table 50. Percentages of protein and oil for Uniform Test II, 1964.

| Strain | Mean of 15 Tests | Harrow Ont. | Free-hold N.J. | Colum-bus Ohio | Dundee Mich. | Walk-erton Ind. | Lafa-yette Ind. | Madi-son Wis. |
|---|---|---|---|---|---|---|---|---|
| Harosoy | 40.1 | 41.5 | 42.9 | 38.9 | 44.4 | 39.8 | 39.1 | 40.3 |
| Harosoy 63 | 40.2 | 41.2 | 42.9 | 39.6 | 44.1 | 39.9 | 39.3 | 39.5 |
| Hawkeye | 40.5 | 40.7 | 43.4 | 40.1 | 44.2 | 40.3 | 39.5 | 40.6 |
| Hawkeye 63 | 40.4 | 40.9 | 43.6 | 40.1 | 43.8 | 40.8 | 39.8 | 40.0 |
| Lindarin | 40.3 | 40.9 | 44.3 | 39.7 | 44.8 | 40.3 | 39.8 | 41.3 |
| Lindarin 63 | 40.4 | 40.9 | 44.7 | 39.9 | 44.3 | 39.8 | 39.7 | 40.6 |
| A1-439 | 39.4 | 40.3 | 42.9 | 39.1 | 42.6 | 39.7 | 38.6 | 39.0 |
| A1-939 | 38.5 | 38.9 | 41.8 | 38.1 | 41.5 | 38.7 | 38.2 | 38.9 |
| A1-1051 | 42.6 | 43.7 | 45.4 | 40.8 | 46.2 | 43.2 | 41.7 | 42.4 |
| M402 | 38.7 | 39.8 | 42.8 | 38.2 | 41.4 | 39.0 | 38.2 | 38.4 |
| | Mean of 15 Tests | Percentage of Oil | | | | | | |
| Harosoy | 21.0 | 20.6 | 20.3 | 21.4 | 18.3 | 21.8 | 22.5 | 20.9 |
| Harosoy 63 | 20.9 | 20.8 | 20.2 | 21.2 | 18.3 | 22.0 | 22.1 | 21.0 |
| Hawkeye | 20.9 | 21.0 | 20.2 | 21.4 | 18.3 | 21.3 | 22.8 | 20.8 |
| Hawkeye 63 | 21.1 | 21.5 | 20.4 | 21.6 | 18.0 | 21.9 | 22.4 | 21.0 |
| Lindarin | 21.0 | 21.2 | 19.6 | 21.6 | 17.7 | 21.7 | 22.5 | 20.7 |
| Lindarin 63 | 21.0 | 20.3 | 20.2 | 21.5 | 17.8 | 21.0 | 22.5 | 21.0 |
| A1-439 | 21.5 | 21.2 | 21.5 | 21.6 | 19.0 | 22.2 | 22.4 | 21.6 |
| A1-939 | 22.2 | 21.9 | 21.6 | 22.4 | 19.8 | 22.9 | 22.8 | 22.7 |
| A1-1051 | 20.7 | 20.3 | 20.1 | 21.4 | 18.1 | 21.1 | 21.7 | 20.5 |
| M402 | 22.2 | 21.3 | 21.4 | 22.6 | 18.2 | 23.3 | 23.6 | 22.1 |

Table 50. (Continued)

| Strain | Shab-bona Ill. | Ur-bana Ill. | Eldo-rado Ill. | Lamber-ton Minn. | Kana-wha Iowa | Ames Iowa | Center-ville S.D. | Con-cord Nebr. |
|---|---|---|---|---|---|---|---|---|
| Harosoy | 39.5 | 39.4 | 41.1 | 38.1 | 38.6 | 39.3 | 39.3 | 40.0 |
| Harosoy 63 | 40.2 | 39.6 | 41.7 | 37.6 | 38.7 | 38.9 | 39.8 | 39.9 |
| Hawkeye | 40.7 | 39.5 | 40.6 | 38.4 | 39.0 | 38.9 | 40.0 | 41.1 |
| Hawkeye 63 | 39.9 | 39.3 | 41.6 | 38.0 | 39.3 | 38.0 | 40.1 | 41.0 |
| Lindarin | 39.8 | 40.0 | 41.0 | 37.5 | 38.7 | 37.9 | 39.7 | 39.5 |
| Lindarin 63 | 39.5 | 40.4 | 41.9 | 38.7 | 38.7 | 38.5 | 39.3 | 39.4 |
| A1-439 | 38.6 | 39.4 | 41.6 | 37.1 | 38.0 | 38.9 | 37.3 | 38.6 |
| A1-939 | 37.7 | 38.5 | 38.7 | 36.3 | 37.7 | 36.9 | 36.9 | 38.4 |
| A1-1051 | 42.8 | 41.5 | 44.4 | 39.8 | 42.7 | 41.0 | 41.3 | 42.0 |
| M402 | 38.1 | 39.3 | 39.1 | 35.7 | 36.8 | 37.3 | 38.0 | 37.9 |
| | Percentage of Oil | | | | | | | |
| Harosoy | 21.0 | 20.7 | 21.7 | 20.9 | 21.4 | 22.1 | 22.2 | 18.8 |
| Harosoy 63 | 21.2 | 21.1 | 20.9 | 20.8 | 21.7 | 21.5 | 21.9 | 19.5 |
| Hawkeye | 20.6 | 21.9 | 21.5 | 20.5 | 20.2 | 21.5 | 21.8 | 19.0 |
| Hawkeye 63 | 21.2 | 21.9 | 21.7 | 20.6 | 21.0 | 21.9 | 21.6 | 19.5 |
| Lindarin | 21.5 | 20.4 | 21.5 | 20.4 | 21.6 | 22.5 | 21.9 | 19.7 |
| Lindarin 63 | 21.3 | 20.6 | 21.8 | 21.3 | 21.5 | 22.1 | 21.8 | 20.0 |
| A1-439 | 21.5 | 21.2 | 21.2 | 21.9 | 21.9 | 22.1 | 22.6 | 20.0 |
| A1-939 | 22.5 | 21.2 | 23.3 | 22.9 | 22.9 | 23.0 | 23.2 | 20.5 |
| A1-1051 | 20.7 | 21.4 | 21.2 | 21.5 | 21.0 | 21.3 | 21.4 | 19.3 |
| M402 | 23.0 | 21.9 | 21.9 | 22.7 | 23.1 | 23.3 | 23.4 | 21.4 |

Table 51. Four-year summary of data for Uniform Test II, 1961-1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 110 | 110 | 86 | 99 | 109 | 89 | 88 | 70 | 70 |
| Harosoy | 37.7 | 2 | +0.7 | 2.7 | 41 | 2.0 | 17.5 | 40.6 | 20.7 |
| Harosoy 63 | 36.9 | 4 | 0 | 2.7 | 42 | 2.0 | 17.4 | 40.7 | 20.8 |
| Hawkeye | 35.2 | 6 | +4.6 | 2.4 | 41 | 1.9 | 17.6 | 41.0 | 20.8 |
| Hawkeye 63 | 34.2 | 7 | +4.8 | 2.4 | 41 | 2.0 | 17.4 | 40.9 | 20.9 |
| Lindarin | 37.2 | 3 | +0.6 | 2.0 | 37 | 1.9 | 15.7 | 40.8 | 20.9 |
| Lindarin 63 | 36.3 | 5 | +0.3 | 2.2 | 38 | 2.0 | 15.9 | 40.6 | 21.0 |
| A1-939 | 40.2 | 1 | +3.0 | 2.3 | 42 | 2.1 | 17.0 | 39.2 | 21.8 |

[1]Days earlier (-) or later (+) than Harosoy 63 which matured September 18, 119 days after planting.

Table 52. Four-year summary of yield and yield rank for Uniform Test II, 1961-1964.

| Strain | Mean of 110 Tests | Ridgetown Ont. | Harrow Ont. | Freehold N.J. | Hoytville Ohio | Wooster Ohio | Columbus Ohio | East Lansing Mich. | Dundee Mich.[3] | Walkerton Ind. | Bluffton Ind. | Lafayette Ind. | Greenfield Ind. | Worthington Ind. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Years Tested | | 1961-1964 | 1962-1964 | 1962-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 |
| Harosoy | 37.7 | 45.4 | 32.4 | 34.0 | 33.9 | 33.2 | 38.9 | 35.6 | 34.6 | 41.1 | 42.4 | 44.4 | 33.8 | 45.9 |
| Har. 63 | 36.9 | 44.9 | 33.1 | 31.0 | 32.9 | 33.3 | 36.9 | 35.5 | 34.5 | 38.6 | 43.0 | 43.0 | 40.0 | 46.7 |
| Hawkeye | 35.2 | 38.1 | 33.7 | 30.0 | 30.5 | 32.5 | 35.7 | 32.3 | 31.3 | 33.9 | 39.8 | 41.8 | 29.7 | 44.2 |
| Hawk. 63 | 34.2 | 37.7 | 32.8 | 29.5 | 28.4 | 31.8 | 34.5 | 31.7 | 32.1 | 36.5 | 39.6 | 41.1 | 38.1 | 41.8 |
| Lindarin | 37.2 | 43.4 | 34.6 | 31.1 | 31.8 | 31.4 | 38.2 | 35.2 | 33.8 | 35.6 | 41.9 | 41.9 | 34.1 | 48.0 |
| Lind. 63[1] | 36.3 | 41.0 | 33.5 | 31.8 | 32.0 | 31.1 | 35.3 | 34.6 | 34.6 | 37.9 | 42.5 | 41.4 | 41.7 | 46.7 |
| A1-939[2] | 40.2 | 49.3 | 36.2 | 34.9 | 35.1 | 32.7 | 35.1 | 37.0 | 36.0 | 43.9 | 47.0 | 46.5 | 36.7 | 52.9 |
| | | Yield Rank | | | | | | | | | | | | |
| Harosoy | 2 | 2 | 7 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 4 | 2 | 6 | 5 |
| Har. 63 | 4 | 3 | 5 | 5 | 3 | 1 | 3 | 3 | 4 | 3 | 2 | 3 | 2 | 3 |
| Hawkeye | 6 | 6 | 3 | 6 | 6 | 4 | 4 | 6 | 7 | 7 | 6 | 5 | 7 | 6 |
| Hawk. 63 | 7 | 7 | 6 | 7 | 7 | 5 | 7 | 7 | 6 | 5 | 7 | 7 | 3 | 7 |
| Lindarin | 3 | 4 | 2 | 4 | 5 | 6 | 2 | 4 | 5 | 6 | 5 | 4 | 5 | 2 |
| Lind. 63 | 5 | 5 | 4 | 3 | 4 | 7 | 5 | 5 | 2 | 4 | 3 | 6 | 1 | 3 |
| A1-939 | 1 | 1 | 1 | 1 | 1 | 3 | 6 | 1 | 1 | 1 | 1 | 1 | 4 | 1 |

[1]C1315 in 1963, C1294 in 1961.
[2]AX56P64-1 in 1961 and 1962.
[3]Ida, Michigan, 1961-1962.

Table 52. (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. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Years Tested | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-62 1964 | 1962-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1962-1964 | 1961-1964 |
| Harosoy | 31.8 | 45.4 | 38.2 | 45.0 | 40.2 | 35.4 | 32.7 | 34.3 | 39.8 | 38.4 | 33.0 | 38.1 | 32.9 | 36.1 |
| Har. 63 | 30.4 | 44.4 | 36.8 | 45.3 | 38.8 | 34.0 | 32.1 | 33.2 | 39.0 | 36.8 | 32.7 | 37.2 | 30.4 | 35.1 |
| Hawkeye | 32.7 | 36.3 | 35.2 | 42.2 | 38.5 | 33.4 | 30.9 | 30.3 | 38.6 | 36.3 | 34.2 | 36.1 | 30.3 | 37.2 |
| Hawk. 63 | 30.5 | 37.0 | 35.1 | 39.5 | 38.2 | 32.1 | 27.9 | 28.9 | 37.2 | 34.2 | 31.5 | 35.0 | 30.0 | 36.8 |
| Lindarin | 31.2 | 43.5 | 38.7 | 43.9 | 40.3 | 35.2 | 31.8 | 34.9 | 38.2 | 38.8 | 32.9 | 37.8 | 30.7 | 37.1 |
| Lind. 63 | 31.2 | 40.4 | 36.4 | 42.6 | 40.6 | 33.0 | 31.3 | 34.2 | 37.8 | 36.9 | 32.7 | 36.0 | 29.8 | 37.6 |
| A1-939 | 33.7 | 48.1 | 40.5 | 47.2 | 44.2 | 37.6 | 33.1 | 36.5 | 42.4 | 43.0 | 36.1 | 41.9 | 34.7 | 40.6 |
| | Yield Rank | | | | | | | | | | | | | |
| Harosoy | 3 | 2 | 3 | 3 | 4 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 6 |
| Har. 63 | 7 | 3 | 4 | 2 | 5 | 4 | 3 | 5 | 3 | 5 | 5 | 4 | 4 | 7 |
| Hawkeye | 2 | 7 | 6 | 6 | 6 | 5 | 6 | 6 | 4 | 6 | 2 | 5 | 5 | 3 |
| Hawk. 63 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 5 |
| Lindarin | 4 | 4 | 2 | 4 | 3 | 3 | 4 | 2 | 5 | 2 | 4 | 3 | 3 | 4 |
| Lind. 63 | 4 | 5 | 5 | 5 | 2 | 6 | 5 | 4 | 6 | 4 | 5 | 6 | 7 | 2 |
| A1-939 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

## UNIFORM PRELIMINARY TEST II - 1964

| Strain | Originating Agency | Origin | Generation Composited |
|---|---|---|---|
| Harosoy 63 | Ill. A.E.S. & U.S.R.S.L. | Harosoy (8) x Blackhawk | 3 $F_3$ lines |
| A1-939 | Iowa A.E.S. & U.S.R.S.L. | Adams x Harosoy | $F_8$ |
| C1253 | Purdue A.E.S. & U.S.R.S.L. | Blackhawk x Harosoy | $F_6$ |
| C1328 | Purdue A.E.S. & U.S.R.S.L. | Harosoy x C1069 | $F_6$ |
| C1329 | Purdue A.E.S. & U.S.R.S.L. | Harosoy x C1069 | $F_6$ |
| C1335 | Purdue A.E.S. & U.S.R.S.L. | Harosoy x C1069 | $F_6$ |
| C1342 | Purdue A.E.S. & U.S.R.S.L. | Harosoy x C1069 | $F_6$ |
| C1344 | Purdue A.E.S. & U.S.R.S.L. | Harosoy x C1069 | $F_6$ |
| L62-361 | Ill. A.E.S. & U.S.R.S.L. | Harosoy (6) x T117 | $F_3$ |
| L62-1932 | Ill. A.E.S. & U.S.R.S.L. | Clark (6) x P.I. 86024 | $F_3$ |
| M401 | Minn. A.E.S. & U.S.R.S.L. | Capital x M10 | $F_5$ |
| M405 | Minn. A.E.S. & U.S.R.S.L. | Grant x Harosoy | $F_5$ |
| W1-4243 | Wis. A.E.S. & U.S.R.S.L. | Blackhawk x Seneca | $F_6$ |

### Identification of Parent Strains

| | |
|---|---|
| C1069 | $F_7$ line from Lincoln x Ogden, from same $F_4$ line as Kent, in Uniform Test IV in 1954-58. |
| M10 | Sel. from Lincoln (2) x Richland, in Uniform Test I in 1949-51. |
| P.I. 86024 | Introduced from the Tokachi Branch Experiment Station, Obihiro, Japan, in 1930. |

C1253, selected from Blackhawk x Harosoy, performed similarly to Harosoy 63 except for lower average yield and slightly higher protein content. The remaining five C strains, all from Harosoy x C1069, matured from 1 to 5 days later than A1-939 but did not yield as well.

L62-361 is a $BC_5$ Harosoy line with a gene for determinate stem ($Dt_2$) transferred from T117. This gene brought about an 8-inch average reduction in plant height without any measurable yield loss and lodging was considerably improved. These plants stopped flowering a few days before Harosoy 63 and therefore ripened a few days earlier.

L62-1932 is a $BC_5$ Clark line with a gene for earliness transferred from P.I. 86024. It matured almost as early as Hoarosoy 63 and yielded slightly better. As expected, it was shorter and resisted lodging and shattering better than Harosoy 63, but the large seed size was an unexpected result.

The two M strains were among the earliest in the test and yielded well for their maturity. W1-4243 appeared to equal A1-939 in most respects but with somewhat less plant height.

Table 53. Descriptive data for the strains in Uniform Preliminary Test II, 1964.

| Strain | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color | Shattering* |
|---|---|---|---|---|---|---|---|
| Harosoy 63 | P | G | Br | D | Y | Y | 3.5 |
| A1-939 | P | G | Tan | S | Y | Y | 3.5 |
| C1253 | P | G | Br | S | Y | Ib | 3.2 |
| C1328 | P | G | Br | D | Y | Y | 2.7 |
| C1329 | P | G | Br | D | Y | Y | 1.0 |
| C1335 | P | G | Br | D | Y | G | 1.0 |
| C1342 | P | T | Br | S | Y | Y | 1.5 |
| C1344 | P | T | Br | D | Y | Y | 2.7 |
| L62-361 | P | G | Br | D | Y | Y | 4.0 |
| L62-1932 | P | T | Br | D | Y | Bl | 1.0 |
| M401 | P | T | Br | D | Y | Br | 1.7 |
| M405 | W | T | Br | D | Y | Y | 2.7 |
| W1-4243 | P | Lt | Br | D | Y | Bl | 2.7 |

*Average of 2 replications at Urbana, Illinois, planted May 6.

Table 54. Summary of data for Uniform Preliminary Test II, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 17 | 17 | 13 | 13 | 17 | 14 | 13 | 10 | 10 |
| Harosoy 63 | 36.8 | 7 | 0 | 2.3 | 40 | 1.9 | 17.4 | 40.5 | 20.6 |
| A1-939 | 40.2 | 1 | +2.5 | 2.1 | 40 | 1.9 | 17.0 | 38.9 | 21.6 |
| C1253 | 35.0 | 13 | +0.5 | 2.3 | 40 | 1.7 | 17.1 | 41.7 | 20.7 |
| C1328 | 36.6 | 8 | +3.2 | 2.1 | 39 | 1.9 | 17.7 | 39.0 | 22.1 |
| C1329 | 38.8 | 4 | +4.5 | 1.9 | 38 | 2.0 | 18.3 | 39.7 | 21.3 |
| C1335 | 39.3 | 3 | +6.7 | 1.9 | 37 | 2.3 | 19.2 | 41.8 | 20.3 |
| C1342 | 36.5 | 9 | +8.0 | 2.6 | 40 | 2.3 | 17.4 | 40.5 | 20.4 |
| C1344 | 36.1 | 12 | +7.2 | 2.7 | 41 | 2.3 | 17.7 | 41.4 | 20.2 |
| L62-361 | 36.2 | 11 | -4.2 | 1.6 | 32 | 1.7 | 15.8 | 40.3 | 21.0 |
| L62-1932 | 37.8 | 6 | +1.9 | 2.0 | 35 | 1.8 | 18.7 | 41.1 | 20.8 |
| M401 | 36.3 | 10 | -4.0 | 2.1 | 34 | 2.0 | 14.6 | 39.0 | 21.1 |
| M405 | 38.1 | 5 | -1.1 | 1.5 | 34 | 1.9 | 16.5 | 38.7 | 22.2 |
| W1-4243 | 40.2 | 1 | +2.3 | 2.2 | 37 | 1.8 | 16.7 | 40.0 | 20.8 |

[1]Days earlier (-) or later (+) than Harosoy 63 which matured September 16, 118 days after planting.

Table 55. Disease data for Uniform Preliminary Test II, 1964.

| Strain | Bacterial Blight | Brown Stem Rot | Phytophthora Rot | Frogeye | | Downy Mildew |
|---|---|---|---|---|---|---|
| | Ill. | Ill. | Ind. | Ind. | | Ind. |
| | a[1] | n[1] | a | Race 1 a | Race 2 a | n |
| Harosoy 63 | 2 | 4 | R | R | 5 | 1.5 |
| A1-939 | 2 | 4 | S | R | 4 | 1.3 |
| C1253 | 1 | 4 | R | S | 5 | 4 |
| C1328 | 2 | 3 | S | R | 5 | 2 |
| C1329 | 1 | 3 | S | R | 1 | 3 |
| C1335 | 1 | 3 | S | R | 2 | 1 |
| C1342 | 1 | 3 | S | R | 5 | 1 |
| C1344 | 2 | 3 | S | R | 5 | 1 |
| L62-361 | 1 | 4 | S | - | 5 | 2 |
| L62-1932 | 2 | 4 | S | - | 5 | 4 |
| M401 | 1 | 1 | S | - | 5 | 3 |
| M405 | 1 | 2 | S | - | 5 | 5 |
| W1-4243 | 1 | 2 | S | - | 5 | 4 |

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

Table 56. Yield and yield rank for Uniform Preliminary Test II, 1964.

| Strain | Mean of 17 Tests | Ridge-town Ont. | Harrow Ont. | Hoyt-ville Ohio | Woos-ter Ohio | Colum-bus Ohio | East Lansing Mich. | Walker-ton Ind. | Lafa-yette Ind. |
|---|---|---|---|---|---|---|---|---|---|
| Harosoy 63 | 36.8 | 46.8 | 37.2 | 33.3 | 33.6 | 33.7 | 41.3 | 43.4 | 42.1 |
| A1-939 | 40.2 | 50.3 | 41.0 | 35.5 | 37.1 | 40.1 | 39.5 | 49.0 | 52.8 |
| C1253 | 35.0 | 40.9 | 35.2 | 28.7 | 30.4 | 25.7 | 38.2 | 43.7 | 46.9 |
| C1328 | 36.6 | 45.6 | 42.6 | 32.8 | 28.4 | 32.2 | 36.9 | 42.5 | 45.1 |
| C1329 | 38.8 | 45.5 | 45.4 | 33.3 | 31.6 | 28.8 | 43.3 | 44.5 | 48.2 |
| C1335 | 39.3 | 50.0 | 35.1 | 33.7 | 35.6 | 29.4 | 39.9 | 45.3 | 50.8 |
| C1342 | 36.5 | 46.3 | 39.4 | 30.3 | 32.9 | 27.9 | 35.3 | 44.1 | 44.8 |
| C1344 | 36.1 | 47.3 | 37.9 | 31.7 | 33.2 | 23.0 | 39.7 | 46.2 | 42.8 |
| L62-361 | 36.2 | 48.2 | 31.7 | 30.5 | 30.0 | 32.1 | 40.9 | 39.5 | 37.2 |
| L62-1932 | 37.8 | 52.3 | 45.3 | 36.0 | 32.4 | 36.4 | 43.3 | 37.6 | 44.0 |
| M401 | 36.3 | 50.3 | 39.6 | 27.9 | 31.9 | 27.3 | 40.9 | 39.7 | 43.7 |
| M405 | 38.1 | 52.2 | 44.4 | 34.5 | 33.2 | 41.5 | 43.4 | 40.6 | 44.7 |
| W1-4243 | 40.2 | 52.5 | 48.1 | 34.5 | 39.4 | 33.8 | 45.4 | 40.9 | 48.2 |
| Coef. of Var. (%) | | 6.6 | 6.6 | 8.2 | 12.7 | 16.6 | 7.3 | 9.4 | 8.1 |
| L.S.D. (5%) | | N.S. | 5.8 | N.S. | N.S. | N.S. | N.S. | N.S. | N.S. |
| Row Spacing (In.) | | 24 | 40 | 28 | 32 | 28 | 24 | 40 | 38 |

| | Yield Rank | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Harosoy 63 | 7 | 9 | 10 | 6 | 4 | 5 | 5 | 7 | 12 |
| A1-939 | 1 | 4 | 6 | 2 | 2 | 2 | 10 | 1 | 1 |
| C1253 | 13 | 13 | 11 | 12 | 11 | 12 | 11 | 6 | 5 |
| C1328 | 8 | 11 | 5 | 8 | 13 | 6 | 12 | 8 | 6 |
| C1329 | 4 | 12 | 2 | 6 | 10 | 9 | 3 | 4 | 3 |
| C1335 | 3 | 6 | 12 | 5 | 3 | 8 | 8 | 3 | 2 |
| C1342 | 9 | 10 | 8 | 11 | 7 | 10 | 13 | 5 | 7 |
| C1344 | 12 | 8 | 9 | 9 | 5 | 13 | 9 | 2 | 11 |
| L62-361 | 11 | 7 | 13 | 10 | 12 | 7 | 6 | 12 | 13 |
| L62-1932 | 6 | 2 | 3 | 1 | 8 | 3 | 3 | 13 | 9 |
| M401 | 10 | 4 | 7 | 13 | 9 | 11 | 6 | 11 | 10 |
| M405 | 5 | 3 | 4 | 3 | 5 | 1 | 2 | 10 | 8 |
| W1-4243 | 1 | 1 | 1 | 3 | 1 | 4 | 1 | 9 | 3 |

Table 56. (Continued)

| Strain | Madison Wis. | Dwight Ill. | Urbana Ill. | Waseca Minn. | Kanawha Iowa | Ames Iowa | Columbia Mo. | Centerville S.D. | Concord Nebr. |
|---|---|---|---|---|---|---|---|---|---|
| Harosoy 63 | 27.1 | 38.9 | 34.9 | 33.4 | 35.4 | 35.4 | 33.9 | 33.6 | 42.4 |
| A1-939 | 26.4 | 43.6 | 34.2 | 36.8 | 34.2 | 40.6 | 39.7 | 40.0 | 43.2 |
| C1253 | 21.8 | 36.5 | 34.4 | 33.8 | 37.2 | 35.6 | 38.5 | 30.9 | 37.3 |
| C1328 | 26.5 | 45.0 | 35.4 | 33.4 | 30.3 | 34.0 | 34.5 | 36.7 | 41.0 |
| C1329 | 28.6 | 47.0 | 39.1 | 36.3 | 36.9 | 36.6 | 41.5 | 35.6 | 38.1 |
| C1335 | 32.1 | 47.6 | 35.5 | 36.5 | 34.4 | 39.6 | 41.4 | 43.1 | 38.3 |
| C1342 | 25.5 | 43.7 | 34.8 | 31.8 | 33.6 | 35.2 | 36.1 | 37.5 | 41.4 |
| C1344 | 27.3 | 41.7 | 31.6 | 32.4 | 39.6 | 35.9 | 30.8 | 38.1 | 35.0 |
| L62-361 | 24.7 | 42.5 | 36.6 | 34.8 | 39.0 | 32.6 | 35.2 | 32.1 | 47.0 |
| L62-1932 | 29.7 | 43.7 | 37.4 | 36.2 | 35.5 | 34.6 | 37.5 | 34.3 | 27.0 |
| M401 | 23.4 | 41.3 | 33.7 | 34.6 | 38.6 | 36.3 | 28.2 | 32.9 | 47.4 |
| M405 | 27.1 | 39.6 | 31.4 | 36.2 | 37.8 | 31.6 | 34.0 | 34.9 | 39.8 |
| W1-4243 | 26.3 | 39.9 | 33.5 | 39.8 | 39.9 | 40.7 | 38.4 | 36.1 | 45.6 |
| Coef. of Var. (%) | 8.3 | 7.7 | 9.7 | -- | 10.5 | 6.3 | -- | 9.6 | 8.6 |
| L.S.D. (5%) | 4.7 | N.S. | N.S. | -- | 8.3 | 4.9 | -- | 7.5 | 7.6 |
| Row Spacing (In.) | 36 | 38 | 40 | 40 | 40 | 40 | 38 | 42 | 40 |
| | Yield Rank | | | | | | | | |
| Harosoy 63 | 5 | 12 | 6 | 10 | 9 | 8 | 11 | 10 | 5 |
| A1-939 | 8 | 6 | 9 | 2 | 11 | 2 | 3 | 2 | 4 |
| C1253 | 13 | 13 | 8 | 9 | 6 | 7 | 4 | 13 | 11 |
| C1328 | 7 | 3 | 5 | 10 | 13 | 11 | 9 | 5 | 7 |
| C1329 | 3 | 2 | 1 | 4 | 7 | 4 | 1 | 7 | 10 |
| C1335 | 1 | 1 | 4 | 3 | 10 | 3 | 2 | 1 | 9 |
| C1342 | 10 | 4 | 7 | 13 | 12 | 9 | 7 | 4 | 6 |
| C1344 | 4 | 8 | 12 | 12 | 2 | 6 | 12 | 3 | 12 |
| L62-361 | 11 | 7 | 3 | 7 | 3 | 12 | 8 | 12 | 2 |
| L62-1932 | 2 | 4 | 2 | 5 | 8 | 10 | 6 | 9 | 13 |
| M401 | 12 | 9 | 10 | 8 | 4 | 5 | 13 | 11 | 1 |
| M405 | 5 | 11 | 13 | 5 | 5 | 13 | 10 | 8 | 8 |
| W1-4243 | 9 | 10 | 11 | 1 | 1 | 1 | 5 | 6 | 3 |

Table 57. Maturity, days earlier (-) or later (+) than Harosoy 63, for Uniform Preliminary Test II, 1964.

| Strain | Mean of 13 Tests | Ridge-town Ont. | Harrow Ont. | Hoyt-ville Ohio | Woos-ter Ohio | Colum-bus Ohio | East Lansing Mich.[1] | Walker-ton Ind. | Lafa-yette Ind. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | * | | | * | | |
| Harosoy 63 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| A1-939 | +2.5 | +1 | +3 | + 6 | +3 | +2 | | - 1 | -1 |
| C1253 | +0.5 | +1 | +2 | +21 | +1 | 0 | | - 1 | -3 |
| C1328 | +3.2 | +1 | +3 | +19 | +1 | +3 | | + 5 | -1 |
| C1329 | +4.5 | +1 | +4 | +19 | +4 | +6 | | + 4 | +2 |
| C1335 | +6.7 | +2 | +5 | +19 | +5 | +6 | | + 7 | +4 |
| C1342 | +8.0 | +1 | +8 | +15 | +5 | +6 | | + 9 | +7 |
| C1344 | +7.2 | +3 | +6 | +19 | +5 | +6 | | + 9 | +8 |
| L62-361 | -4.2 | -3 | -4 | 0 | 0 | +1 | | -13 | -7 |
| L62-1932 | +1.9 | +1 | +3 | +10 | +1 | 0 | | - 2 | 0 |
| M401 | -4.0 | -8 | -7 | +19 | 0 | 0 | | -12 | -6 |
| M405 | -1.1 | -1 | -1 | +20 | +1 | +1 | | - 4 | -6 |
| W1-4243 | +2.3 | +2 | +2 | +10 | +2 | +2 | | + 4 | -2 |
| Date planted | 5-21 | 5-25 | 5-26 | 5-22 | 5-21 | 5-18 | 5-29 | 5-22 | 5-19 |
| Harosoy 63 matured | 9-16 | 10-5 | 9-20 | 9-9 | 9-20 | 9-12 | -- | 9-22 | 9-14 |
| Days to mature | 118 | 133 | 117 | 110 | 122 | 117 | -- | 123 | 118 |

*Not included in the mean.
[1]Missing dates due to frost before maturity.

Table 57. (Continued)

| Strain | Madison Wis. | Dwight Ill. | Urbana Ill. | Waseca Minn.[1] * | Kanawha Iowa | Ames Iowa | Columbia Mo. | Centerville S.D. | Concord Nebr.[1] * |
|---|---|---|---|---|---|---|---|---|---|
| Harosoy 63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A1-939 | + 2 | +1 | + 2 | +6 | + 7 | + 6 | +2 | +5 | -- |
| C1253 | - 2 | +2 | + 2 | +1 | + 1 | + 2 | +2 | 0 | -- |
| C1328 | + 6 | +2 | + 5 | +7 | + 5 | + 4 | +4 | +4 | -- |
| C1329 | + 6 | +3 | + 9 | +6 | + 5 | + 6 | +5 | +4 | -- |
| C1335 | +15 | +2 | + 8 | -- | + 9 | +10 | +7 | +7 | -- |
| C1342 | +10 | +4 | +10 | -- | +15 | +14 | +8 | +7 | -- |
| C1344 | + 9 | +4 | + 9 | -- | +14 | +12 | +2 | +6 | -- |
| L62-361 | - 2 | -8 | - 3 | -8 | - 7 | - 4 | -3 | -2 | +2 |
| L62-1932 | + 6 | 0 | + 3 | +8 | + 5 | + 6 | -2 | +4 | +2 |
| M401 | 0 | -9 | - 2 | -2 | - 1 | - 2 | -3 | -2 | +2 |
| M405 | + 2 | -6 | 0 | -1 | - 1 | 0 | +1 | 0 | +2 |
| W1-4243 | 0 | -1 | + 3 | +5 | + 8 | + 6 | 0 | +4 | -- |
| Date planted | 5-19 | 6-16 | 5-11 | 5-21 | 5-18 | 5-15 | 5-4 | 5-25 | 5-29 |
| Harosoy 63 matured | 9-18 | 10-1 | 8-30 | 10-2 | 9-15 | 9-10 | 8-21 | 9-24 | 9-24 |
| Days to mature | 122 | 107 | 111 | 134 | 120 | 118 | 109 | 122 | 118 |

## UNIFORM TEST III - 1964

| 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 | $F_8$ |
| Wayne (L57-2222) | Ill. A.E.S. & U.S.R.S.L. | L49-4091 x Clark | $F_5$ |
| C1276 | Purdue A.E.S. & U.S.R.S.L. | Mandarin (Ottawa) x Clark | $F_6$ |
| C1317-71 | Purdue A.E.S. & U.S.R.S.L. | C1223 (8) x Mukden | $F_3$ |
| C1317-99 | Purdue A.E.S. & U.S.R.S.L. | C1223 (8) x Mukden | $F_3$ |
| L60-1312 | Ill. A.E.S. & U.S.R.S.L. | Shelby x Clark | $F_3$ |
| L61-1112 | Ill. A.E.S. & U.S.R.S.L. | Clark (3) x T117 | $F_3$ |
| S9-2504 | Mo. A.E.S. & U.S.R.S.L. | Radiated Clark | $R_5$ |

### Identification of Parent Strains

C1223 — $F_6$ line from C1070 x Adams, in Uniform Test III in 1960-61. C1070 is a $F_7$ line from Lincoln x Ogden, from same $F_4$ line as Kent.

L49-4091 — Pustule-resistant $F_4$ line from [$F_3$ Lincoln (2) x Richland] x (Lincoln x CNS), in Uniform Test IV in 1951 and III in 1952-53.

Table 58. Regional testing history and descriptive data for the strains in Uniform Test III, 1964.

| Strain | Years in Uniform Test III | Previous Regional Test | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color | Shattering* George-town | Shattering* Ur-bana |
|---|---|---|---|---|---|---|---|---|---|---|
| Ford | 9 | None | W | T | Br | S | Y | Bl | 1.4 | 1.7 |
| Shelby | 13 | None | P | T | Br | D | Y | Bl | 1.0 | 1.0 |
| Wayne | 4 | P.T. III | W | T | Br | S | Y | Bl | 2.0 | 1.7 |
| C1276 | 2 | P.T. III | P | T | Br | D | Y | Bl | 1.0 | 1.0 |
| C1317-71 | 1 | None | W | G | Tan | S | Y | Bf | 1.5 | 1.7 |
| C1317-99 | 1 | None | W | G | Tan | S | Y | Bf | 2.0 | 1.5 |
| L60-1312 | 1 | P.T. III | P | T | Br | D | Y | Bl | 1.0 | 1.0 |
| L61-1112 | 1 | P.T. III | P | T | Br | D | Y | Bl | 1.1 | 1.0 |
| S9-2504 | 2 | P.T. III | P | T | Br | D | Y | Bl | 1.0 | 1.0 |

*Average of 4 replications at Georgetown, Delaware, planted May 19 and 2 replications at Urbana, Illinois, planted May 6.

Four-year means for Wayne, Shelby, and Ford are given in Tables 65 and 66 showing the superior yield of Wayne at most locations. C1276 and S9-2504, which ranked 1 and 2 in yield last year, averaged only slightly above Shelby this year and well below Wayne. C1276 had good lodging resistance and high protein content but short plant height. The two selections from C1317 performed much like C1317 did in last year's test, yielding between Shelby and Wayne. L60-1312 seemed to be no improvement over Shelby, whereas L61-1112, another new entry, yielded unusually well at a few locations and averaged second only to Wayne. L61-1112 is of interest since it carries a dominant gene for determinate main stem ($Dt_2$), introduced along with other traits from T117 into a predominately Clark genetic background.

## WAYNE

Wayne was named and publicity released in August 1964 by the states of Illinois, Indiana, Iowa, Kansas, Missouri, and Nebraska. It is an $F_4$ plant progeny selected from the cross, L49-4091 x Clark, for bacterial pustule resistance, and good agronomic appearance and performance. It is somewhat similar to Shelby and Ford in maturity and general appearance but has consistently outyielded them. In some tests its stems have remained green after maturity. It has shown iron chlorosis in soils with high pH (which is also characteristic of L49-4091). Judging by its high yields in field tests where susceptible varieties were reduced in yield by Phytophthora rot, it has considerable field tolerance or resistance to this disease. Wayne has white flowers, brown pubescence, brown pods, and a shiny yellow seed coat with a black hilum.

The following is an outline of its development:

| | | |
|---|---|---|
| 1951-53 | | L49-4091, an $F_3$ plant progeny from the cross L44-1219 x (Lincoln x CNS) selected for pustule resistance, early maturity, and lodging resistance, was tested in Uniform Test IV (1951) and III (1952-53). L44-1219 was an $F_3$ line from Lincoln (2) x Richland selected for agronomic appearance. |
| 1953 | | The cross L49-4091 x L59-5138 (Clark) was made in the field at Urbana by Dr. Robert D. Osler for the purpose of transferring bacterial pustule resistance. |
| 1953-54 | $F_1$ | Five plants were grown in the greenhouse. |
| 1954 | $F_2$ | Seventy-eight plants were harvested without selection. |
| 1955 | $F_3$ | Progenies of 78 $F_2$ plants were grown at Urbana in 8-foot rows, pustule-inoculated, and rated for pustule reaction. 187 plants (1 to 3 plants from each of 68 rows), including over 100 resistant ones, were selected. |
| 1956 | $F_4$ | Progeny rows from 187 $F_3$ plants were grown at Urbana, inoculated, and rated for pustule reaction. Resistant plants were selected for plant vigor and lodging resistance, in addition, resistant and susceptible plants were harvested in segregating rows for isoline development. |

1957 $F_5$ Rows from 148 $F_4$ plants were grown at Urbana and also at Eldorado. Rows were pustule-inoculated and the resistance of 95 rows was confirmed. 39 of these (including row 2222) were selected for good plant vigor and lodging resistance.

1958 $F_6$ L57-2222 was tested at three locations in Illinois in unreplicated rod-row plots with 139 other Group III lines (38 from the same cross), and it ranked 32nd in mean yield.

1959 $F_7$ Tested at three Illinois locations with two replications with 44 other Group III experimental strains, and it ranked 7th in mean yield.

1960 Tested in Uniform Preliminary Test III and ranked 1st in mean yield.

1961-64 Tested in Uniform Test III and ranked 1st in yield each year except 1963 when it was 3rd.

1961 Fifty plants taken from Urbana seed increase block and threshed individually.

1962 Isolation block of 50 plant progenies were grown. Because of poor stand, only 31 lines were harvested. These were bulked giving a total of 44 pounds of breeder seed, of which four pounds were placed in cold storage.

Increase for certified seed:

| | 1962 Breeder Seed | | 1963 Foundation Seed | | | 1964 Foundation Seed | |
|---|---|---|---|---|---|---|---|
| State | Production | Allotment* | Planted | Harvested | Distribution | Acres | Production |
| Illinois | 40# | 40% | 33# | 54 bu. | 28 bu. | 50 | 1600 bu. |
| Indiana | -- | 17% | 7# | 45 bu. | 45 bu. | 98 | 2994 bu. |
| Iowa | -- | 10% | -- | -- | 7 bu. | 11 | 398 bu. |
| Kansas | -- | 7% | -- | -- | 5 bu. | 7 | 231 bu. |
| Missouri | -- | 17% | -- | -- | 12 bu. | 32 | 400 bu. |
| Nebraska | -- | 3% | -- | -- | 2 bu. | 2 | 56 bu. |
| Ohio | -- | 6% | -- | -- | (declined) | -- | -- |
| Total | 40# | 100% | 40# | 99 bu. | 99 bu. | 200 | 5679 bu. |

*In proportion to 1961 commercial acreage of Shelby, Lincoln, and Ford, plus one-half that of Clark.

Table 59. Summary of data for Uniform Test III, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 21 | 21 | 20 | 18 | 21 | 20 | 15 | 9 | 9 |
| Ford | 34.6 | 9 | -1.5 | 1.8 | 39 | 2.3 | 16.2 | 40.2 | 21.6 |
| Shelby | 35.3 | 7 | 0 | 1.9 | 40 | 2.1 | 15.6 | 39.7 | 22.1 |
| Wayne | 39.1 | 1 | +2.6 | 1.8 | 40 | 2.1 | 16.9 | 40.9 | 21.3 |
| C1276 | 35.5 | 6 | +6.2 | 1.5 | 35 | 2.1 | 18.2 | 42.0 | 21.6 |
| C1317-71 | 36.3 | 4 | +1.3 | 1.6 | 39 | 2.3 | 16.4 | 38.8 | 22.7 |
| C1317-99 | 36.4 | 3 | -0.1 | 1.6 | 39 | 2.1 | 16.5 | 38.6 | 22.6 |
| L60-1312 | 35.2 | 8 | +1.3 | 1.8 | 40 | 2.0 | 15.6 | 40.5 | 22.1 |
| L61-1112 | 37.5 | 2 | +3.6 | 1.7 | 34 | 1.8 | 15.2 | 40.5 | 21.0 |
| S9-2504 | 36.1 | 5 | +4.8 | 1.8 | 39 | 2.1 | 16.3 | 40.0 | 21.9 |

[1]Days earlier (-) or later (+) than Shelby which matured September 21, 121 days after planting.

Table 60. Disease data for Uniform Test III, 1964.

| Strain | Bacterial Pustule | | Brown Stem Rot | Phytophthora Rot | Frogeye Ind. | | Downy Mildew | | Chocolate Spot[2] |
|---|---|---|---|---|---|---|---|---|---|
| | Ill. | Ia. | Ill. | Ind. | Race 1 | Race 2 | Ill. | Ind. | Ia. |
| | n[1] | a[1] | n | a | a | a | n | n | a |
| Ford | 4 | 3 | 4 | S | R | 5 | 4 | 4.3 | 4 |
| Shelby | 4 | 3 | 3 | S | R | 4 | 3 | 3.0 | 3 |
| Wayne | 1 | 1 | 3 | S | R | 3 | 4 | 4.0 | 2 |
| C1276 | 3 | 3 | 3 | S | R | 5 | 3 | 1.8 | 3 |
| C1317-71 | 3 | 3 | 3 | R | R | 1 | 3 | 4.5 | 4 |
| C1317-99 | 4 | 4 | 3 | R | R | 1 | 4 | 4.5 | 3 |
| L60-1312 | 3 | 3 | 3 | S | - | 5 | 3 | 3.5 | 2 |
| L61-1112 | 4 | 2 | 3 | S | - | 4 | 3 | 3.0 | 3 |
| S9-2504 | 4 | 3 | 3 | S | - | 5 | 4 | 4.0 | 2 |

[1]a = artificial inoculation; n = natural infection.
[2]A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 61. Yield and yield rank for Uniform Test III, 1964.

| Strain | Mean of 21 Tests | Harrow Ont. | Freehold N.J. * | Newark Del. | Georgetown Del.[1] | Hoytville Ohio | Wooster Ohio | Columbus Ohio | Bluffton Ind. | Lafayette Ind. | Greenfield Ind. | Worthington Ind. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ford | 34.6 | 43.5 | 18.2 | 37.9 | 27.1 | 32.6 | 32.9 | 36.4 | 39.8 | 49.7 | 39.7 | 42.7 |
| Shelby | 35.3 | 43.3 | 14.5 | 37.2 | 22.3 | 34.9 | 30.3 | 29.9 | 39.8 | 50.1 | 40.6 | 49.2 |
| Wayne | 39.1 | 45.1 | 23.9 | 33.5 | 27.3 | 36.0 | 37.9 | 35.4 | 43.0 | 52.5 | 42.3 | 56.0 |
| C1276 | 35.5 | 37.6 | 26.0 | 34.9 | 27.3 | 28.2 | 28.5 | 28.2 | 36.0 | 44.6 | 40.1 | 55.1 |
| C1317-71 | 36.3 | 47.6 | 26.6 | 39.7 | 24.8 | 33.9 | 31.1 | 31.5 | 42.4 | 46.9 | 42.7 | 42.2 |
| C1317-99 | 36.4 | 47.8 | 25.1 | 44.4 | 27.9 | 31.3 | 28.9 | 35.5 | 39.3 | 48.0 | 41.6 | 48.7 |
| L60-1312 | 35.2 | 42.4 | 17.9 | 37.7 | 26.8 | 30.9 | 31.3 | 29.9 | 39.5 | 47.3 | 39.5 | 49.3 |
| L61-1112 | 37.5 | 44.8 | 20.9 | 39.6 | 24.3 | 29.7 | 31.3 | 29.7 | 42.5 | 53.5 | 41.4 | 52.6 |
| S9-2504 | 36.1 | 44.3 | 20.8 | 37.3 | 21.3 | 31.4 | 30.8 | 29.1 | 39.7 | 47.2 | 40.1 | 53.3 |
| C. V. (%) | | 6.2 | 20.7 | 7.8 | 14.4 | 12.1 | 9.0 | 13.2 | 4.4 | 7.6 | 6.9 | 7.7 |
| L.S.D. (5%) | | 4.0 | 6.4 | 4.1 | N.S. | 5.5 | 4.1 | 6.0 | 2.5 | 5.3 | N.S. | 5.5 |
| Row Sp. (In.) | | 40 | 24 | 36 | 36 | 28 | 32 | 28 | 38 | 38 | 38 | 38 |

| | Yield Rank | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ford | 9 | 6 | 7 | 4 | 4 | 4 | 2 | 1 | 4 | 4 | 8 | 8 |
| Shelby | 7 | 7 | 9 | 7 | 8 | 2 | 7 | 5 | 4 | 3 | 5 | 6 |
| Wayne | 1 | 3 | 4 | 9 | 2 | 1 | 1 | 3 | 1 | 2 | 2 | 1 |
| C1276 | 6 | 9 | 2 | 8 | 2 | 9 | 9 | 9 | 9 | 9 | 6 | 2 |
| C1317-71 | 4 | 2 | 1 | 2 | 6 | 3 | 5 | 4 | 3 | 8 | 1 | 9 |
| C1317-99 | 3 | 1 | 3 | 1 | 1 | 6 | 8 | 2 | 8 | 5 | 3 | 7 |
| L60-1312 | 8 | 8 | 8 | 5 | 5 | 7 | 3 | 5 | 7 | 6 | 9 | 5 |
| L61-1112 | 2 | 4 | 5 | 3 | 7 | 8 | 3 | 7 | 2 | 1 | 4 | 4 |
| S9-2504 | 5 | 5 | 6 | 6 | 9 | 5 | 6 | 8 | 6 | 7 | 6 | 3 |

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

Table 61. (Continued)

| Strain | Evans-ville Ind. | Ur-bana Ill. | Gi-rard Ill. | Edge-wood Ill. | Eldo-rado Ill. | Car-bon-dale Ill. | Ames Iowa | Ot-tum-wa Iowa | Co-lum-bia Mo. | Pow-hat-tan Kans. | Man-hat-tan Kans. | Man-hat-tan Kans.[1] * | Grand Junc-tion Colo.[1] * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ford | 33.0 | 30.8 | 33.9 | 32.4 | 40.9 | 18.0 | 32.7 | 35.3 | 33.8 | 20.0 | 33.1 | 31.2 | 17.3 |
| Shelby | 40.7 | 34.5 | 34.2 | 32.3 | 42.0 | 20.9 | 31.0 | 37.9 | 29.6 | 21.7 | 39.1 | 35.2 | 17.9 |
| Wayne | 41.1 | 37.2 | 41.3 | 36.2 | 47.0 | 24.6 | 37.8 | 42.8 | 35.4 | 25.2 | 43.6 | 36.4 | 20.0 |
| C1276 | 38.0 | 35.2 | 35.8 | 36.9 | 47.0 | 26.6 | 33.3 | 39.0 | 31.0 | 24.2 | 38.8 | 33.6 | 21.7 |
| C1317-71 | 37.2 | 37.7 | 39.0 | 27.7 | 41.1 | 22.3 | 33.2 | 42.1 | 37.3 | 21.5 | 39.4 | 35.7 | 20.4 |
| C1317-99 | 33.8 | 33.7 | 38.1 | 27.5 | 44.1 | 19.9 | 31.4 | 43.4 | 37.2 | 24.3 | 38.6 | 32.6 | 19.8 |
| L60-1312 | 36.8 | 33.5 | 34.9 | 35.3 | 40.5 | 22.6 | 31.9 | 39.0 | 31.4 | 22.9 | 36.4 | 32.2 | 19.2 |
| L61-1112 | 45.9 | 38.2 | 38.2 | 35.1 | 48.6 | 23.6 | 32.4 | 40.8 | 33.5 | 24.9 | 36.0 | 30.8 | 15.8 |
| S9-2504 | 37.9 | 36.0 | 36.9 | 35.9 | 47.1 | 26.9 | 29.8 | 35.1 | 33.5 | 23.7 | 41.0 | 31.9 | 19.8 |
| C. V. (%) | 6.3 | 8.4 | 5.8 | 7.4 | 7.3 | -- | 7.0 | 7.9 | -- | 12.2 | 5.2 | 10.3 | 13.8 |
| L.S.D. (5%) | 3.5 | 4.3 | 3.1 | 3.6 | 4.7 | -- | 3.1 | 4.4 | -- | N.S. | 2.9 | 5.1 | N.S. |
| Row Sp. (In.) | 40 | 40 | 38 | 36 | 40 | 40 | 40 | 40 | 38 | 40 | 40 | 36 | 24 |
| | Yield Rank | | | | | | | | | | | | |
| Ford | 9 | 9 | 9 | 6 | 8 | 9 | 4 | 8 | 4 | 9 | 9 | 8 | 8 |
| Shelby | 3 | 6 | 8 | 7 | 6 | 7 | 8 | 7 | 9 | 7 | 4 | 3 | 7 |
| Wayne | 2 | 3 | 1 | 2 | 3 | 3 | 1 | 2 | 3 | 1 | 1 | 1 | 3 |
| C1276 | 4 | 5 | 6 | 1 | 3 | 2 | 2 | 5 | 8 | 4 | 5 | 4 | 1 |
| C1317-71 | 6 | 2 | 2 | 8 | 7 | 6 | 3 | 3 | 1 | 8 | 3 | 2 | 2 |
| C1317-99 | 8 | 7 | 4 | 9 | 5 | 8 | 7 | 1 | 2 | 3 | 6 | 5 | 4 |
| L60-1312 | 7 | 8 | 7 | 4 | 9 | 5 | 6 | 5 | 7 | 6 | 7 | 6 | 6 |
| L61-1112 | 1 | 1 | 3 | 5 | 1 | 4 | 5 | 4 | 5 | 2 | 8 | 9 | 9 |
| S9-2504 | 5 | 4 | 5 | 3 | 2 | 1 | 9 | 9 | 5 | 5 | 2 | 7 | 4 |

Table 62. Maturity, days earlier (-) or later (+) than Shelby, and lodging for Uniform Test III, 1964.

| Strain | Mean of 20 Tests | Harrow Ont. | Freehold N.J. * | Newark Del. | Georgetown Del.[1] | Hoytville Ohio | Wooster Ohio | Columbus Ohio | Bluffton Ind. | Lafayette Ind. | Greenfield Ind. | Worthington Ind. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ford | -1.5 | -1 | +1 | -1 | -5 | 0 | 0 | -6 | +6 | -2 | -1 | +1 |
| Shelby | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wayne | +2.6 | +2 | +2 | +1 | -1 | +9 | +3 | +4 | +6 | +7 | +2 | +5 |
| C1276 | +6.2 | +3 | +2 | +4 | +6 | +9 | +5 | +1 | +7 | +8 | +7 | +6 |
| C1317-71 | +1.3 | +1 | 0 | +2 | -2 | +9 | +4 | 0 | +5 | +1 | 0 | -2 |
| C1317-99 | -0.1 | +2 | 0 | +1 | -4 | 0 | +1 | +1 | +3 | 0 | 0 | -2 |
| L60-1312 | +1.3 | +1 | +1 | +2 | +1 | 0 | 0 | +1 | +2 | 0 | +3 | +3 |
| L61-1112 | +3.6 | +3 | +4 | +3 | +1 | +9 | +2 | +1 | +7 | +5 | +4 | +3 |
| S9-2504 | +4.8 | +4 | +3 | +4 | +4 | +9 | +1 | +2 | +6 | +6 | +4 | +3 |
| Date pltd. | 5-23 | 5-26 | 5-25 | 6-1 | 5-19 | 5-22 | 5-21 | 5-18 | 5-21 | 5-19 | 5-18 | 5-26 |
| Shelby mat. | 9-21 | 10-1 | 9-22 | 9-22 | 9-15 | 9-28 | 9-29 | 9-27 | 9-23 | 9-23 | 9-20 | 9-20 |
| Days to mat. | 121 | 128 | 120 | 113 | 119 | 129 | 131 | 132 | 125 | 127 | 125 | 117 |

| | Mean of 18 Tests | Lodging | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | * | | | | * | | | | | |
| Ford | 1.8 | 2.5 | 5.0 | 2.3 | 1.1 | 1.5 | 1.0 | 1.0 | 2.3 | 2.0 | 1.8 | 2.5 |
| Shelby | 1.9 | 3.8 | 4.0 | 2.1 | 1.4 | 1.7 | 1.0 | 1.0 | 2.3 | 2.0 | 2.0 | 2.5 |
| Wayne | 1.8 | 2.8 | 4.0 | 2.3 | 1.3 | 1.0 | 1.0 | 1.0 | 2.0 | 2.0 | 1.5 | 2.3 |
| C1276 | 1.5 | 2.2 | 2.0 | 1.5 | 1.0 | 1.5 | 1.0 | 1.0 | 1.8 | 1.0 | 1.0 | 2.3 |
| C1317-71 | 1.6 | 2.8 | 3.0 | 2.0 | 1.1 | 1.5 | 1.0 | 1.0 | 1.0 | 2.0 | 1.8 | 2.3 |
| C1317-99 | 1.6 | 2.8 | 4.0 | 2.3 | 1.1 | 1.7 | 1.0 | 1.0 | 1.0 | 2.0 | 1.3 | 2.3 |
| L60-1312 | 1.8 | 3.2 | 4.0 | 2.6 | 1.3 | 1.5 | 1.0 | 1.0 | 2.0 | 2.0 | 1.8 | 2.5 |
| L61-1112 | 1.7 | 3.2 | 4.0 | 2.5 | 1.3 | 1.5 | 1.0 | 1.2 | 2.3 | 1.0 | 1.5 | 2.8 |
| S9-2504 | 1.8 | 3.0 | 3.0 | 2.3 | 1.3 | 2.2 | 1.0 | 1.0 | 2.0 | 2.0 | 1.3 | 2.0 |

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

Table 62. (Continued)

| Strain | Evansville Ind. * | Urbana Ill. | Girard Ill. | Edgewood Ill. | Eldorado Ill. | Carbondale Ill. | Ames Iowa | Ottumwa Iowa | Columbia Mo. | Powhattan Kans. | Manhattan Kans. | Manhattan Kans.[1] * | Grand Junction Colo.[1] * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ford | | -2 | -5 | -5 | -2 | - 3 | -2 | -2 | +1 | 0 | -1 | 0 | -2 |
| Shelby | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wayne | | 0 | +3 | -1 | +1 | + 1 | +2 | +2 | +2 | +1 | +3 | 0 | 0 |
| C1276 | | +7 | +9 | +7 | +7 | +14 | +7 | +4 | +6 | +4 | +2 | +6 | +6 |
| C1317-71 | | 0 | +2 | -7 | -2 | +14 | -1 | 0 | -3 | +4 | 0 | 0 | +8 |
| C1317-99 | | 0 | +1 | -8 | -2 | + 8 | -1 | 0 | -4 | +2 | 0 | 0 | +8 |
| L60-1312 | | +1 | +3 | +1 | +4 | + 4 | 0 | -1 | +2 | -1 | 0 | +1 | 0 |
| L61-1112 | | +2 | +8 | +2 | +5 | + 7 | +2 | +2 | +2 | +2 | +2 | +1 | +1 |
| S9-2504 | | +4 | +6 | +4 | +5 | +12 | +6 | +5 | +6 | +1 | +4 | +6 | +9 |
| Date pltd. | 5-14 | 5-11 | 5-21 | 6-2 | 6-4 | 5-25 | 5-15 | 5-16 | 5-4 | 6-4 | 6-2 | 6-28 | 5-23 |
| Shelby mat. | -- | 9-15 | 9-11 | 9-17 | 9-14 | 9-13 | 9-24 | 9-20 | 8-31 | 9-29 | 10-2 | 10-4 | 9-24 |
| Days to mat. | -- | 127 | 113 | 107 | 102 | 111 | 132 | 127 | 119 | 117 | 122 | 98 | 124 |

| | Lodging | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | * | | | | | | * | * |
| Ford | 1.8 | 1.4 | 2.0 | 2.2 | 2.5 | 1.0 | 1.4 | 1.6 | | 1.1 | 1.3 | 1.3 | 1.0 |
| Shelby | 2.3 | 1.3 | 2.0 | 2.0 | 2.1 | 1.0 | 1.4 | 1.6 | | 1.2 | 1.7 | 1.5 | 1.0 |
| Wayne | 2.3 | 1.5 | 2.3 | 1.7 | 2.8 | 1.0 | 1.6 | 1.6 | | 1.2 | 1.8 | 1.4 | 1.0 |
| C1276 | 1.0 | 1.4 | 1.5 | 1.2 | 1.9 | 1.0 | 1.8 | 1.5 | | 1.2 | 1.4 | 1.3 | 1.0 |
| C1317-71 | 1.5 | 1.3 | 1.3 | 1.9 | 1.7 | 1.0 | 1.3 | 1.6 | | 1.2 | 1.5 | 1.5 | 1.0 |
| C1317-99 | 1.3 | 1.3 | 1.3 | 2.1 | 1.9 | 1.0 | 1.3 | 1.5 | | 1.3 | 1.4 | 1.4 | 1.0 |
| L60-1312 | 1.8 | 1.3 | 2.1 | 1.9 | 2.4 | 1.0 | 1.6 | 1.5 | | 1.1 | 1.4 | 1.6 | 1.0 |
| L61-1112 | 1.8 | 1.2 | 1.6 | 1.8 | 2.3 | 1.0 | 1.5 | 1.5 | | 1.1 | 1.3 | 1.5 | 1.0 |
| S9-2504 | 1.5 | 1.4 | 1.8 | 1.7 | 2.2 | 1.0 | 1.5 | 1.5 | | 1.2 | 1.7 | 1.5 | 1.0 |

Table 63. Plant height and seed quality for Uniform Test III, 1964.

| Strain | Mean of 21 Tests | Harrow Ont. | Freehold N.J. * | Newark Del. | Georgetown Del.[1] | Hoytville Ohio | Wooster Ohio | Columbus Ohio | Bluffton Ind. | Lafayette Ind. | Greenfield Ind. | Worthington Ind. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ford | 39 | 39 | 38 | 38 | 32 | 34 | 30 | 39 | 44 | 45 | 41 | 45 |
| Shelby | 40 | 41 | 38 | 41 | 35 | 33 | 31 | 40 | 45 | 48 | 44 | 49 |
| Wayne | 40 | 40 | 38 | 36 | 32 | 30 | 30 | 37 | 47 | 46 | 43 | 46 |
| C1276 | 35 | 35 | 35 | 30 | 30 | 32 | 27 | 38 | 40 | 38 | 36 | 41 |
| C1317-71 | 39 | 40 | 39 | 36 | 29 | 32 | 27 | 39 | 46 | 44 | 41 | 46 |
| C1317-99 | 39 | 40 | 38 | 40 | 29 | 34 | 30 | 39 | 46 | 43 | 40 | 47 |
| L60-1312 | 40 | 41 | 41 | 40 | 34 | 33 | 33 | 40 | 47 | 47 | 44 | 48 |
| L61-1112 | 34 | 37 | 37 | 30 | 29 | 32 | 30 | 38 | 42 | 39 | 37 | 40 |
| S9-2504 | 39 | 38 | 37 | 35 | 32 | 32 | 31 | 40 | 44 | 45 | 42 | 47 |

| | Mean of 20 Tests | Seed Quality | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | * | | | | | | | | | |
| Ford | 2.3 | 1.0 | 1.0 | 2.0 | 4.0 | 2.0 | 2.0 | 2.7 | 2.0 | 1.5 | 2.0 | 2.0 |
| Shelby | 2.1 | 1.2 | 1.0 | 2.0 | 2.9 | 1.2 | 1.7 | 2.0 | 1.0 | 1.0 | 1.5 | 2.0 |
| Wayne | 2.1 | 1.0 | 1.0 | 1.9 | 3.8 | 1.5 | 1.2 | 1.5 | 1.0 | 1.5 | 1.5 | 2.0 |
| C1276 | 2.1 | 1.0 | 2.0 | 2.0 | 1.6 | 1.7 | 1.5 | 1.2 | 1.0 | 1.0 | 1.5 | 2.0 |
| C1317-71 | 2.3 | 1.0 | 1.0 | 1.6 | 3.4 | 1.5 | 1.5 | 2.0 | 1.5 | 1.5 | 2.0 | 2.0 |
| C1317-99 | 2.1 | 1.0 | 1.0 | 1.4 | 3.5 | 1.5 | 2.0 | 2.5 | 1.0 | 1.0 | 1.5 | 2.5 |
| L60-1312 | 2.0 | 1.5 | 1.0 | 1.6 | 2.4 | 1.0 | 1.7 | 2.2 | 1.0 | 1.5 | 1.5 | 2.0 |
| L61-1112 | 1.8 | 1.5 | 1.0 | 1.6 | 3.0 | 1.0 | 1.0 | 2.0 | 1.0 | 1.0 | 1.0 | 1.5 |
| S9-2504 | 2.1 | 1.5 | 1.0 | 2.3 | 2.5 | 1.2 | 1.2 | 1.7 | 1.0 | 1.5 | 1.5 | 2.0 |

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

Table 63. (Continued)

| Strain | Evans-ville Ind. | Ur-bana Ill. | Gi-rard Ill. | Edge-wood Ill. | Eldo-rado Ill. | Car-bon-dale Ill. | Ames Iowa | Ot-tum-wa Iowa | Co-lum-bia Mo. | Pow-hat-tan Kans. | Man-hat-tan Kans. | Man-hat-tan Kans.[1] | Grand Junc-tion Colo.[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | * | * |
| Ford | 49 | 43 | 41 | 39 | 44 | 31 | 45 | 44 | 39 | 24 | 30 | 31 | 33 |
| Shelby | 50 | 44 | 42 | 40 | 45 | 32 | 47 | 45 | 40 | 23 | 35 | 33 | 34 |
| Wayne | 48 | 43 | 42 | 41 | 45 | 31 | 47 | 46 | 40 | 24 | 36 | 34 | 30 |
| C1276 | 44 | 36 | 36 | 36 | 39 | 26 | 40 | 41 | 36 | 22 | 33 | 29 | 30 |
| C1317-71 | 49 | 44 | 41 | 38 | 43 | 31 | 46 | 46 | 37 | 22 | 33 | 33 | 33 |
| C1317-99 | 48 | 43 | 41 | 39 | 44 | 28 | 44 | 44 | 38 | 24 | 31 | 32 | 34 |
| L60-1312 | 49 | 43 | 42 | 40 | 45 | 34 | 47 | 46 | 40 | 23 | 34 | 33 | 34 |
| L61-1112 | 43 | 37 | 36 | 35 | 36 | 27 | 40 | 34 | 33 | 23 | 26 | 26 | 29 |
| S9-2504 | 46 | 41 | 40 | 38 | 43 | 29 | 46 | 45 | 40 | 24 | 35 | 32 | 34 |
| | Seed Quality | | | | | | | | | | | | |
| | | | | | | | * | | | | | * | |
| Ford | 4.0 | 2.8 | 1.6 | 2.8 | 4.1 | 2.0 | 1.0 | 3.3 | 1.5 | 1.5 | 1.2 | 1.2 | |
| Shelby | 4.0 | 2.5 | 1.8 | 2.3 | 4.5 | 2.0 | 1.0 | 3.5 | 1.5 | 1.6 | 1.1 | 1.2 | |
| Wayne | 4.0 | 2.5 | 2.3 | 2.4 | 4.8 | 2.0 | 1.0 | 2.8 | 2.0 | 1.7 | 1.3 | 1.3 | |
| C1276 | 4.0 | 2.5 | 1.8 | 2.1 | 4.8 | 4.0 | 1.0 | 4.2 | 2.0 | 1.3 | 1.4 | 1.2 | |
| C1317-71 | 3.5 | 3.0 | 3.3 | 2.4 | 4.5 | 3.0 | 1.0 | 3.3 | 1.0 | 1.6 | 1.4 | 1.2 | |
| C1317-99 | 3.5 | 3.0 | 3.0 | 2.0 | 4.4 | 2.0 | 1.0 | 3.0 | 1.0 | 1.4 | 1.3 | 1.2 | |
| L60-1312 | 3.5 | 2.4 | 2.3 | 2.5 | 4.8 | 2.0 | 1.0 | 3.0 | 1.5 | 1.2 | 1.2 | 1.1 | |
| L61-1112 | 3.0 | 2.1 | 2.4 | 2.1 | 4.3 | 2.0 | 1.0 | 2.4 | 1.1 | 1.1 | 1.2 | 1.2 | |
| S9-2504 | 3.5 | 2.3 | 2.3 | 2.3 | 5.0 | 3.0 | 1.0 | 3.7 | 1.5 | 1.3 | 1.2 | 1.2 | |

Table 64. Percentages of protein and oil for Uniform Test III, 1964.

| Strain | Mean of 9 Tests | Free-hold N.J. | George-town Del.[1] | Colum-bus Ohio | Lafa-yette Ind. | Wor-thington Ind. |
|---|---|---|---|---|---|---|
| | | * | | | | |
| Ford | 40.2 | 45.2 | 43.1 | 40.9 | 39.9 | 39.6 |
| Shelby | 39.7 | 44.0 | 42.7 | 40.2 | 39.3 | 39.0 |
| Wayne | 40.9 | 43.3 | 43.3 | 41.4 | 40.6 | 40.4 |
| C1276 | 42.0 | 45.6 | 43.7 | 42.7 | 41.9 | 42.2 |
| C1317-71 | 38.8 | 41.8 | 40.5 | 39.4 | 38.8 | 38.7 |
| C1317-99 | 38.6 | 41.9 | 40.3 | 39.0 | 39.1 | 38.5 |
| L60-1312 | 40.5 | 44.2 | 42.9 | 41.1 | 40.1 | 39.7 |
| L61-1112 | 40.5 | 43.4 | 42.5 | 41.4 | 39.7 | 40.6 |
| S9-2504 | 40.0 | 43.2 | 42.5 | 40.4 | 39.5 | 39.6 |
| | Mean of 9 Tests | Percentage of Oil | | | | |
| | | * | | | | |
| Ford | 21.6 | 19.0 | 20.0 | 21.4 | 21.4 | 21.4 |
| Shelby | 22.1 | 20.0 | 20.7 | 21.5 | 22.0 | 22.3 |
| Wayne | 21.3 | 19.8 | 20.6 | 20.6 | 21.3 | 21.7 |
| C1276 | 21.6 | 20.4 | 21.9 | 20.6 | 21.3 | 21.5 |
| C1317-71 | 22.7 | 21.1 | 21.9 | 21.8 | 22.4 | 22.0 |
| C1317-99 | 22.6 | 20.9 | 22.6 | 22.3 | 22.3 | 22.4 |
| L60-1312 | 22.1 | 20.2 | 20.4 | 21.1 | 22.4 | 22.5 |
| L61-1112 | 21.0 | 20.3 | 19.4 | 20.6 | 21.4 | 21.9 |
| S9-2504 | 21.9 | 21.5 | 21.2 | 21.0 | 22.1 | 22.7 |

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

Table 64. (Continued)

| Strain | Urbana Ill. | Eldorado Ill. | Ames Iowa | Columbia Mo. | Manhattan Kans. | Grand Junction Colo.[1] |
|---|---|---|---|---|---|---|
| | | | | | | * |
| Ford | 39.1 | 41.7 | 37.4 | 40.9 | 39.3 | 39.9 |
| Shelby | 38.1 | 41.8 | 37.0 | 40.5 | 38.9 | 41.5 |
| Wayne | 39.5 | 42.2 | 37.6 | 42.0 | 40.8 | 40.8 |
| C1276 | 41.0 | 43.5 | 41.2 | 42.7 | 39.5 | 43.1 |
| C1317-71 | 37.1 | 39.4 | 37.4 | 40.3 | 37.2 | 40.2 |
| C1317-99 | 37.8 | 40.0 | 36.6 | 39.7 | 36.4 | 39.5 |
| L60-1312 | 38.4 | 42.7 | 37.7 | 41.7 | 40.1 | 42.0 |
| L61-1112 | 38.5 | 41.7 | 37.9 | 41.6 | 40.6 | 42.4 |
| S9-2504 | 38.3 | 42.1 | 37.5 | 40.4 | 39.8 | 43.1 |
| | Percentage of Oil | | | | | |
| | | | | | | * |
| Ford | 22.1 | 20.6 | 22.8 | 22.0 | 22.7 | 19.5 |
| Shelby | 22.4 | 21.4 | 23.8 | 21.8 | 22.9 | 19.5 |
| Wayne | 22.3 | 21.1 | 21.6 | 21.1 | 21.8 | 19.3 |
| C1276 | 21.7 | 21.2 | 22.3 | 21.3 | 22.8 | 19.5 |
| C1317-71 | 23.6 | 22.4 | 23.3 | 23.1 | 23.4 | 20.2 |
| C1317-99 | 23.2 | 22.2 | 22.9 | 22.4 | 23.1 | 19.3 |
| L60-1312 | 22.5 | 21.8 | 23.9 | 21.6 | 22.7 | 19.7 |
| L61-1112 | 21.4 | 21.2 | 21.6 | 19.7 | 22.1 | 19.1 |
| S9-2504 | 22.1 | 22.0 | 22.7 | 21.1 | 22.5 | 19.9 |

Table 65. Four-year summary of data for Uniform Test III, 1961-1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 77 | 77 | 71 | 70 | 77 | 65 | 58 | 47 | 47 |
| Ford | 38.0 | 3 | -1.1 | 2.1 | 41 | 2.2 | 16.7 | 40.9 | 21.2 |
| Shelby | 38.4 | 2 | 0 | 2.2 | 42 | 2.0 | 16.0 | 40.5 | 21.5 |
| Wayne | 42.0 | 1 | +1.7 | 2.1 | 42 | 2.2 | 17.3 | 41.3 | 21.2 |

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

Table 66. Four-year summary of yield and yield rank for Uniform Test III, 1961-1964.

| Strain | Mean of 77 Tests | Freehold N.J.[1] | Newark Del. | Georgetown Del. | Hoytville Ohio | Wooster Ohio | Columbus Ohio | Bluffton Ind. | Lafayette Ind. | Greenfield Ind. | Worthington Ind. | Evansville Ind. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Years Tested | | 1961-1964 | 1963-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961, 1963-64 |
| Ford | 38.0 | 32.2 | 38.7 | 27.6 | 34.3 | 28.5 | 39.4 | 40.8 | 42.7 | 36.9 | 43.1 | 38.5 |
| Shelby | 38.4 | 31.1 | 40.2 | 28.3 | 33.0 | 29.0 | 37.0 | 38.6 | 42.4 | 38.7 | 47.9 | 44.9 |
| Wayne | 42.0 | 35.6 | 38.5 | 31.7 | 36.0 | 35.2 | 39.4 | 45.2 | 48.1 | 43.3 | 52.9 | 45.4 |
| | Yield Rank | | | | | | | | | | | |
| Ford | 3 | 2 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 3 | 3 | 3 |
| Shelby | 2 | 3 | 1 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| Wayne | 1 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

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

Table 66. (Continued)

| Strain | Urbana Ill. | Girard Ill. | Edgewood Ill. | Eldorado Ill. | Carbondale Ill. | Ames Iowa | Ottumwa Iowa | Columbia Mo. | Lincoln Nebr. | Powhattan Kans. | Manhattan Kans. | Manhattan Kans.[2] | Grand Junction Colo. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Years Tested | 1961-1964 | 1961-1964 | 1961-62 1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1964 | 1961-1963 | 1963-1964 | 1961-1964 | 1961-1964 | 1963-1964 |
| Ford | 43.3 | 41.3 | 38.9 | 42.0 | 28.6 | 39.0 | 42.2 | 33.7 | 49.4 | 22.2 | 35.1 | 37.7 | 25.9 |
| Shelby | 43.7 | 41.6 | 37.2 | 44.1 | 29.7 | 38.3 | 42.0 | 34.0 | 50.2 | 25.4 | 38.5 | 40.8 | 28.4 |
| Wayne | 47.3 | 46.7 | 42.7 | 49.2 | 30.9 | 41.0 | 46.5 | 38.1 | 49.5 | 25.1 | 42.9 | 46.3 | 25.1 |
| | Yield Rank | | | | | | | | | | | | |
| Ford | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 |
| Shelby | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 1 |
| Wayne | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 3 |

## UNIFORM PRELIMINARY TEST III - 1964

| Strain | Originating Agency | Origin | Generation Composited |
|---|---|---|---|
| Shelby | Ill. A.E.S. & U.S.R.S.L. | Lincoln (2) x Richland | $F_8$ |
| Wayne (L57-2222) | Ill. A.E.S. & U.S.R.S.L. | L49-4091 x Clark | $F_5$ |
| A1-945 | Iowa A.E.S. & U.S.R.S.L. | Lincoln x Harosoy | $F_8$ |
| A1-1349 | Iowa A.E.S. & U.S.R.S.L. | Harosoy x Clark | $F_8$ |
| A2-5432 | Iowa A.E.S. & U.S.R.S.L. | Clark x Chippewa | $F_7$ |
| AX172-29 | Iowa A.E.S. & U.S.R.S.L. | Ford (3) x P.I. 232990 | $F_3$ |
| C1336 | Purdue A.E.S. & U.S.R.S.L. | Harosoy x C1069 | $F_6$ |
| C1339 | Purdue A.E.S. & U.S.R.S.L. | Harosoy x C1069 | $F_6$ |
| K62-7201 | Kansas A.E.S. & U.S.R.S.L. | C1069 x Chippewa | $F_7$ |
| L62-1161 | Ill. A.E.S. & U.S.R.S.L. | Clark (4) x T117 | $F_3$ |
| L62-1208 | Ill. A.E.S. & U.S.R.S.L. | Clark (5) x T117 | $F_3$ |

### Identification of Parent Strains

| | |
|---|---|
| C1069 | $F_7$ line from Lincoln x Ogden, from same $F_4$ line as Kent, in Uniform Test IV in 1954-58. |
| L49-4091 | Pustule-resistant $F_4$ line from [$F_3$ Lincoln (2) x Richland] x (Lincoln x CNS), in Uniform Test IV in 1951 and III in 1952-53. |
| P.I. 232990 | From Manchuria, "gracilis" type, stem canker resistant. Formerly designated T107. |

Of the nine experimental strains, none had as high a mean yield as Wayne. However, A2-5432 was four days earlier, yielded only slightly less, and had good lodging resistance but short plant height. L62-1208 ranked third in mean yield, was the only strain with improved seed quality relative to the checks, but was rather late for Group III. It carries the gene $Dt_2$ for determinate main stem, transferred from T117 to a genetic background approaching that of Clark. The remaining strains did not perform better than either check variety over the region, although some did well at individual locations. AX172-29 had been selected as stem canker-resistant, but was severely attacked at Urbana with 45% of the plants infected, more than for any other strain, although the infection of Shelby was nearly as severe.

Table 67. Descriptive data for the strains in Uniform Preliminary Test III, 1964.

| Strain | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color | Shattering* | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Georgetown | Urbana |
| Shelby | P | T | Br | D | Y | Bl | 1.0 | 1.0 |
| Wayne | W | T | Br | S | Y | Bl | 2.5 | 1.8 |
| A1-945 | P | G | Br | D | Y | G+Y | 2.5 | 1.7 |
| A1-1349 | P | G | Br | D | Y | Y | 1.0 | 2.0 |
| A2-5432 | P | T | Br | S | Y | Bl | 1.0 | 1.0 |
| AX172-29 | W | T | Br | S | Y | Bl | 1.0 | 1.2 |
| C1336 | P | G | Br | D | Y | G | 3.5 | 1.0 |
| C1339 | P | G | Br | D | Y | G | 5.0 | 2.5 |
| K62-7201 | P | T | Br | S | Y | Bl | 1.0 | 1.5 |
| L62-1161 | P | T | Br | D | Y | Bl | 1.3 | 1.0 |
| L62-1208 | P | T | Br | D | Y | Bl | 1.0 | 1.0 |

*Average of 2 replications at Georgetown, Delaware, planted May 19 and 2 replications at Urbana, Illinois, planted May 6.

Table 68. Summary of data for Uniform Preliminary Test III, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 12 | 12 | 12 | 11 | 12 | 11 | 8 | 7 | 7 |
| Shelby | 33.7 | 6 | 0 | 1.5 | 40 | 2.0 | 15.2 | 39.3 | 22.2 |
| Wayne | 36.5 | 1 | +2.4 | 1.7 | 40 | 2.2 | 16.8 | 41.0 | 21.3 |
| A1-945 | 32.4 | 8 | 0 | 1.9 | 42 | 2.1 | 14.7 | 39.9 | 20.7 |
| A1-1349 | 34.1 | 4 | +1.5 | 1.6 | 41 | 2.1 | 16.9 | 40.8 | 20.9 |
| A2-5432 | 35.0 | 2 | -1.5 | 1.3 | 37 | 2.2 | 14.9 | 39.3 | 22.1 |
| AX172-29 | 30.7 | 10 | -2.3 | 1.7 | 39 | 2.4 | 16.8 | 39.7 | 21.8 |
| C1336 | 34.1 | 4 | -0.8 | 1.4 | 39 | 2.5 | 16.9 | 40.4 | 21.5 |
| C1339 | 31.8 | 9 | -0.8 | 1.3 | 38 | 2.5 | 17.7 | 40.9 | 21.8 |
| K62-7201 | 33.0 | 7 | +5.6 | 1.6 | 41 | 2.3 | 17.4 | 38.8 | 22.4 |
| L62-1161 | 30.2 | 11 | +4.3 | 1.5 | 39 | 2.1 | 15.0 | 39.6 | 21.7 |
| L62-1208 | 34.3 | 3 | +6.4 | 1.4 | 32 | 1.7 | 15.4 | 39.3 | 22.1 |

[1]Days earlier (-) or later (+) than Shelby which matured September 20, 123 days after planting.

Table 69. Disease data for Uniform Preliminary Test III, 1964.

| Strain | Brown Stem Rot | | Phytophthora Rot | Frogeye Ind. | | Downy Mildew | |
|---|---|---|---|---|---|---|---|
| | Ill. | | Ind. | Race 1 | Race 2 | Ill. | Ind. |
| | n[1] | | a[1] | a | a | n | n |
| Shelby | 3 | | S | R | 4 | 3 | 3.0 |
| Wayne | 4 | | S | R | 3 | 4 | 4.0 |
| A1-945 | 4 | | S | - | 5 | 3 | 3.0 |
| A1-1349 | 4 | | S | - | 5 | 3 | 3.0 |
| A2-5432 | 4 | | S | - | 5 | 5 | 4.0 |
| AX172-29 | 3 | | S | - | 5 | 3 | 4.5 |
| C1336 | 4 | | S | R | 1 | 1 | 1.5 |
| C1339 | 4 | | S | R | 1 | 1 | 2.0 |
| K62-7201 | 4 | | S | - | 1 | 3 | 3.5 |
| L62-1161 | 3 | | S | - | 4 | 3 | 3.5 |
| L62-1208 | 4 | | S | - | 4 | 3 | 1.5 |

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

Table 70. Yield and yield rank for Uniform Preliminary Test III, 1964.

| Strain | Mean of 12 Tests | Georgetown Del.[1] | Hoytville Ohio | Wooster Ohio * | Columbus Ohio | Lafayette Ind. | Worthington Ind. | Urbana Ill. |
|---|---|---|---|---|---|---|---|---|
| Shelby | 33.7 | 23.1 | 36.4 | 32.4 | 33.4 | 45.5 | 47.5 | 26.8 |
| Wayne | 36.5 | 26.1 | 35.4 | 36.9 | 26.5 | 45.9 | 52.7 | 32.1 |
| A1-945 | 32.4 | 16.2 | 32.9 | 30.6 | 17.9 | 45.5 | 45.1 | 31.0 |
| A1-1349 | 34.1 | 19.0 | 29.3 | 33.6 | 30.3 | 39.7 | 51.0 | 34.8 |
| A2-5432 | 35.0 | 20.3 | 36.3 | 34.2 | 29.4 | 53.6 | 49.3 | 28.3 |
| AX172-29 | 30.7 | 25.5 | 32.8 | 32.9 | 25.9 | 41.3 | 35.9 | 24.9 |
| C1336 | 34.1 | 24.1 | 32.6 | 34.1 | 29.5 | 45.8 | 54.6 | 27.1 |
| C1339 | 31.8 | 15.0 | 32.3 | 30.7 | 25.3 | 42.9 | 51.4 | 31.5 |
| K62-7201 | 33.0 | 21.5 | 30.0 | 20.5 | 18.9 | 44.8 | 48.0 | 33.4 |
| L62-1161 | 30.2 | 23.1 | 30.6 | 23.7 | 20.3 | 43.3 | 43.1 | 33.8 |
| L62-1208 | 34.3 | 21.8 | 34.1 | 26.4 | 19.3 | 45.5 | 55.1 | 36.0 |
| Coef. of Var. (%) | | 14.7 | 9.7 | 20.5 | 15.8 | 6.7 | 8.2 | 12.6 |
| L.S.D. (5%) | | N.S. | N.S. | N.S. | 8.9 | N.S. | 8.8 | N.S. |
| Row Spacing (In.) | | 36 | 28 | 32 | 28 | 38 | 38 | 40 |
| | Yield Rank | | | | | | | |
| Shelby | 6 | 4 | 1 | 6 | 1 | 4 | 8 | 10 |
| Wayne | 1 | 1 | 3 | 1 | 5 | 2 | 3 | 5 |
| A1-945 | 8 | 10 | 5 | 8 | 11 | 4 | 9 | 7 |
| A1-1349 | 4 | 9 | 11 | 4 | 2 | 11 | 5 | 2 |
| A2-5432 | 2 | 8 | 2 | 2 | 4 | 1 | 6 | 8 |
| AX172-29 | 10 | 2 | 6 | 5 | 6 | 10 | 11 | 11 |
| C1336 | 4 | 3 | 7 | 3 | 3 | 3 | 2 | 9 |
| C1339 | 9 | 11 | 8 | 7 | 7 | 9 | 4 | 6 |
| K62-7201 | 7 | 7 | 10 | 11 | 10 | 7 | 7 | 4 |
| L62-1161 | 11 | 4 | 9 | 10 | 8 | 8 | 10 | 3 |
| L62-1208 | 3 | 6 | 4 | 9 | 9 | 4 | 1 | 1 |

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

Table 70. (Continued)

| Strain | Girard Ill. | Ames Iowa | Ottumwa Iowa | Columbia Mo. | Powhattan Kans. | Manhattan Kans. | Manhattan Kans.[1] * |
|---|---|---|---|---|---|---|---|
| Shelby | 33.2 | 30.8 | 40.8 | 24.2 | 24.0 | 38.4 | 34.4 |
| Wayne | 41.4 | 38.0 | 44.2 | 29.9 | 25.0 | 41.1 | 39.7 |
| A1-945 | 29.5 | 30.9 | 40.1 | 27.1 | 27.1 | 45.2 | 33.6 |
| A1-1349 | 40.3 | 31.8 | 38.8 | 29.1 | 25.9 | 38.9 | 30.9 |
| A2-5432 | 35.6 | 33.8 | 38.8 | 29.0 | 25.4 | 39.7 | 39.3 |
| AX172-29 | 33.7 | 32.1 | 32.6 | 25.8 | 23.4 | 34.8 | 32.9 |
| C1336 | 36.4 | 33.9 | 40.7 | 28.6 | 19.5 | 35.8 | 30.8 |
| C1339 | 29.5 | 37.0 | 35.6 | 27.8 | 19.0 | 34.6 | 25.4 |
| K62-7201 | 40.3 | 31.2 | 36.4 | 21.1 | 25.2 | 44.8 | 38.4 |
| L62-1161 | 33.4 | 30.5 | 31.0 | 23.0 | 13.1 | 36.9 | 35.0 |
| L62-1208 | 38.8 | 35.5 | 42.6 | 21.5 | 22.7 | 38.7 | 40.0 |
| Coef. of Var. (%) | 5.8 | 8.7 | 7.0 | -- | 14.7 | 14.8 | 11.6 |
| L.S.D. (5%) | 4.6 | 6.5 | 6.0 | -- | N.S. | 6.2 | N.S. |
| Row Spacing (In.) | 38 | 40 | 40 | 38 | 40 | 40 | 36 |
| | Yield Rank | | | | | | |
| Shelby | 9 | 10 | 3 | 8 | 6 | 7 | 6 |
| Wayne | 1 | 1 | 1 | 1 | 5 | 3 | 2 |
| A1-945 | 10 | 9 | 5 | 6 | 1 | 1 | 7 |
| A1-1349 | 2 | 7 | 6 | 2 | 2 | 5 | 9 |
| A2-5432 | 6 | 5 | 6 | 3 | 3 | 4 | 3 |
| AX172-29 | 7 | 6 | 10 | 7 | 7 | 10 | 8 |
| C1336 | 5 | 4 | 4 | 4 | 9 | 9 | 10 |
| C1339 | 10 | 2 | 9 | 5 | 10 | 11 | 11 |
| K62-7201 | 2 | 8 | 8 | 11 | 4 | 2 | 4 |
| L62-1161 | 8 | 11 | 11 | 9 | 11 | 8 | 5 |
| L62-1208 | 4 | 3 | 2 | 10 | 8 | 6 | 1 |

Table 71. Maturity, days earlier (-) or later (+) than Shelby, for Uniform Preliminary Test III, 1964.

| Strain | Mean of 12 Tests | George-town Del.[1] | Hoyt-ville Ohio | Woos-ter Ohio | Colum-bus Ohio | Lafa-yette Ind. | Worthing-ton Ind. | Urbana Ill. |
|---|---|---|---|---|---|---|---|---|
| | | | | * | | | | |
| Shelby | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wayne | +2.4 | 0 | 0 | +3 | 0 | +11 | +5 | + 2 |
| A1-945 | 0 | -2 | +9 | +3 | +1 | 0 | +2 | - 1 |
| A1-1349 | +1.5 | +2 | 0 | 0 | 0 | + 6 | +7 | + 1 |
| A2-5432 | -1.5 | -2 | 0 | -6 | -1 | 0 | -3 | - 3 |
| AX172-29 | -2.3 | -6 | 0 | +4 | -1 | + 1 | +3 | - 5 |
| C1336 | -0.8 | -2 | 0 | +4 | -2 | 0 | +3 | - 2 |
| C1339 | -0.8 | -4 | +9 | +5 | +3 | - 1 | +2 | - 2 |
| K62-7201 | +5.6 | +2 | 0 | +1 | +2 | +14 | +8 | +10 |
| L62-1161 | +4.3 | +4 | +4 | +3 | +2 | +10 | +5 | + 4 |
| L62-1208 | +6.4 | +4 | +9 | +6 | +2 | +12 | +6 | +11 |
| Date planted | 5-20 | 5-19 | 5-22 | 5-21 | 5-18 | 5-19 | 5-26 | 5-11 |
| Shelby matured | 9-20 | 9-15 | 9-28 | 9-28 | 9-28 | 9-22 | 9-21 | 9-13 |
| Days to mature | 123 | 119 | 129 | 130 | 133 | 126 | 118 | 125 |

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

Table 71. (Continued)

| Strain | Girard Ill. | Ames Iowa | Ottumwa Iowa | Columbia Mo. | Powhattan Kans. | Manhattan Kans. | Manhattan Kans.[1] * |
|---|---|---|---|---|---|---|---|
| Shelby | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wayne | + 4 | +3 | + 2 | +3 | -2 | +1 | 0 |
| A1-945 | - 4 | +1 | - 2 | -2 | -2 | 0 | -4 |
| A1-1349 | - 2 | +4 | + 3 | -2 | -2 | +1 | +3 |
| A2-5432 | - 2 | 0 | - 2 | -2 | -2 | -1 | 0 |
| AX172-29 | - 5 | -3 | - 6 | -4 | 0 | -1 | -3 |
| C1336 | - 2 | 0 | - 4 | 0 | 0 | -1 | -3 |
| C1339 | - 5 | -2 | - 5 | -5 | 0 | 0 | -3 |
| K62-7201 | +14 | +8 | +10 | -5 | +2 | +2 | +2 |
| L62-1161 | + 2 | +6 | + 6 | +8 | +1 | 0 | 0 |
| L62-1208 | +12 | +6 | + 4 | +4 | +3 | +4 | +2 |
| Date planted | 5-21 | 5-15 | 5-16 | 5-4 | 6-4 | 6-2 | 6-28 |
| Shelby matured | 9-11 | 9-24 | 9-20 | 8-31 | 9-30 | 10-2 | 10-6 |
| Days to mature | 113 | 132 | 127 | 119 | 118 | 122 | 100 |

## UNIFORM TEST IV - 1964

| 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] | 13 $F_3$ lines |
| S3 | Mo. A.E.S. & U.S.R.S.L. | [Clark 63 x L46-2132-A14 (2)] x [L49-4091 x Clark (7)] | $F_3$ lines |
| Kent | Purdue A.E.S. & U.S.R.S.L. | Lincoln x Ogden | $F_7$ |
| 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 | $F_6$ |
| 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 | $F_6$ |
| L60-1385 | Ill. A.E.S. & U.S.R.S.L. | L46-1503 x C985 | $F_8$ |
| S62-4064 | Mo. A.E.S. & U.S.R.S.L. | Clark (3) x L46-1503-4 | $F_3$ |

### Identification of Parent Strains

| | |
|---|---|
| C985 | $F_4$ line from Lincoln x Ogden, progenitor of Kent, in Uniform Test IV in 1951-56. |
| C1069 | $F_7$ line from C985, in Uniform Test IV in 1954-58. |
| L46-1503 | $F_5$ line from Lincoln (2) x Richland, in Uniform Test III in 1949-50. |
| L46-2132-A14 | Sel. from Lincoln (2) x Richland, sib of Clark and Shelby, in Uniform Test IV in 1956-57. |
| L49-4091 | Pustule-resistant $F_4$ line from [$F_3$ Lincoln (2) x Richland] x (Lincoln x CNS), in Uniform Test IV in 1951 and III in 1952-53. |
| S54-1714 | Pustule-resistant selection from L49-4091 x Clark, in Uniform Test IV in 1957. |

Three-year means for the three check varieties are given in Tables 79-80. Clark 63 averaged .6 bushel below Clark and was slightly taller. Phytophthora rot was not known to have infected any of these plantings but some bacterial pustule probably occurred at most of the locations.

C1278 was the outstanding strain in the test, outyielding Kent slightly and maturing almost as early as Clark. Both C1282 and L60-1385 yielded surprisingly low this year after topping the 1963 test in yield.

None of the four new entries was particularly outstanding except that C1311 showed excellent lodging resistance along with a very tall plant. S3 is another Clark backcross carrying pustule and Phytophthora resistance but it yielded slightly less than Clark 63.

Table 72. Regional testing history and descriptive data for the strains in Uniform Test IV, 1964.

| Strain | Years in Uniform Test IV | Previous Regional Test | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color |
|---|---|---|---|---|---|---|---|---|
| Clark | 14 | None | P | T | Br | D | Y | Bl |
| Clark 63 | 3 | None | P | T | Br | D | Y | Bl |
| S3 | 1 | P.T. IV | W | T | Br | D+S | Y | Bl |
| Kent | 11 | P.T. IV | P | T | Br | D | Y | Bl |
| C1278 | 2 | P.T. IV | P | T | Br | S | Y | Bl |
| C1282 | 2 | P.T. IV | P | T | Br | D | Y | Bl |
| C1306 | 1 | P.T. IV | P | T | Br | S | Y | Bl |
| C1311 | 1 | P.T. IV | W | G | Tan | S | Y | Bf |
| L60-1385 | 2 | P.T. IV | P | G | Br | S | Y | Ib |
| S62-4064 | 1 | P.T. IV | W | G | Br | S | Y | Y |

Table 73. Summary of data for Uniform Test IV, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 14 | 14 | 13 | 12 | 14 | 14 | 9 | 7 | 7 |
| Clark | 35.3 | 7 | 0 | 1.9 | 38 | 2.6 | 16.5 | 40.4 | 21.7 |
| Clark 63 | 35.6 | 5 | +0.4 | 2.0 | 40 | 2.7 | 16.1 | 39.9 | 21.8 |
| S3 | 34.8 | 9 | +0.5 | 2.1 | 39 | 2.6 | 16.2 | 39.9 | 21.8 |
| Kent | 37.9 | 2 | +7.2 | 1.6 | 38 | 2.6 | 18.2 | 40.4 | 22.1 |
| C1278 | 38.5 | 1 | +2.0 | 1.6 | 39 | 2.6 | 18.0 | 40.4 | 21.9 |
| C1282 | 35.0 | 8 | +5.5 | 2.4 | 39 | 2.9 | 17.3 | 42.0 | 21.7 |
| C1306 | 36.6 | 3 | +2.4 | 2.1 | 39 | 2.8 | 17.7 | 40.5 | 22.4 |
| C1311 | 35.5 | 6 | +6.5 | 1.7 | 43 | 2.4 | 16.1 | 41.2 | 21.6 |
| L60-1385 | 34.6 | 10 | +6.5 | 1.8 | 40 | 3.3 | 19.7 | 41.3 | 22.4 |
| S62-4064 | 36.5 | 4 | +3.8 | 2.0 | 39 | 2.5 | 15.9 | 39.8 | 22.2 |

[1]Days earlier (-) or later (+) than Clark which matured September 25, 124 days after planting.

Table 74. Disease data for Uniform Test IV, 1964.

| Strain | Bacterial Pustule | | Brown Stem Rot | Phytophthora Rot | Frogeye Ind. | | Downy Mildew | Chocolate Spot[2] |
|---|---|---|---|---|---|---|---|---|
| | Ill. | Ia. | Ill. | Ind. | Race 1 | Race 2 | Ind. | Ia. |
| | n[1] | a[1] | n | a | a | a | n | a |
| Clark | 3 | 2 | 4 | S | R | 5 | 3.3 | 3 |
| Clark 63 | 1 | 1 | 4 | R | R | 4 | 3.5 | 4 |
| S3 | 1 | 2 | 4 | R | R | 5 | 3.8 | 3 |
| Kent | 3 | 3 | 4 | S | R | 1 | 1.0 | 3 |
| C1278 | 3 | 3 | 4 | S | R | 1 | 2.5 | 2 |
| C1282 | 2 | 3 | 3 | S | R | 5 | 2.3 | 3 |
| C1306 | 3 | 3 | 3 | S | R | 1 | 2.3 | 3 |
| C1311 | 3 | 3 | 4 | S | R | 1 | 4.0 | 2 |
| L60-1385 | 3 | 3 | 4 | S | Seg. | 4 | 1.0 | 3 |
| S62-4064 | 3 | 2 | 4 | S | -- | 5 | 3.3 | 3 |

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

[2]A bacterial disease producing symptoms similar to those of brown spot. The organism is unnamed.

Table 75. Yield and yield rank for Uniform Test IV, 1964.

| Strain | Mean of 14 Tests | Newark Del. | Georgetown Del.[1] | Upper Marlboro Md. | Columbus Ohio * | Worthington Ind. | Evansville Ind. | Edgewood Ill. |
|---|---|---|---|---|---|---|---|---|
| Clark | 35.3 | 37.9 | 22.7 | 25.1 | 30.2 | 54.2 | 37.8 | 34.3 |
| Clark 63 | 35.6 | 36.2 | 22.4 | 29.0 | 29.6 | 45.7 | 38.8 | 35.1 |
| S3 | 34.8 | 37.6 | 23.0 | 25.4 | 30.1 | 46.7 | 42.2 | 33.1 |
| Kent | 37.9 | 39.1 | 30.1 | 24.0 | 21.4 | 61.6 | 40.6 | 33.0 |
| C1278 | 38.5 | 38.2 | 24.8 | 22.6 | 32.6 | 62.5 | 44.0 | 38.1 |
| C1282 | 35.0 | 34.2 | 24.3 | 25.6 | 27.9 | 36.1 | 41.9 | 36.1 |
| C1306 | 36.6 | 37.4 | 26.2 | 24.9 | 29.2 | 51.6 | 46.4 | 35.8 |
| C1311 | 35.5 | 36.4 | 26.7 | 28.0 | 27.6 | 60.8 | 39.9 | 31.7 |
| L60-1385 | 34.6 | 38.2 | 24.6 | 25.6 | 25.6 | 47.0 | 39.3 | 32.8 |
| S62-4064 | 36.5 | 39.8 | 27.7 | 28.9 | 24.8 | 54.3 | 41.1 | 32.6 |
| Coef. of Var. (%) | | 15.6 | 15.0 | 10.6 | 36.3 | 12.4 | 9.5 | 9.2 |
| L.S.D. (5%) | | N.S. | N.S. | 4.0 | N.S. | 9.0 | 5.5 | N.S. |
| Row Spacing (In.) | | 36 | 36 | 36 | 28 | 38 | 40 | 36 |
| | Yield Rank | | | | | | | |
| Clark | 7 | 5 | 9 | 7 | 2 | 5 | 10 | 5 |
| Clark 63 | 5 | 9 | 10 | 1 | 4 | 9 | 9 | 4 |
| S3 | 9 | 6 | 8 | 6 | 3 | 8 | 3 | 6 |
| Kent | 2 | 2 | 1 | 9 | 10 | 2 | 6 | 7 |
| C1278 | 1 | 3 | 5 | 10 | 1 | 1 | 2 | 1 |
| C1282 | 8 | 10 | 7 | 4 | 6 | 10 | 4 | 2 |
| C1306 | 3 | 7 | 4 | 8 | 5 | 6 | 1 | 3 |
| C1311 | 6 | 8 | 3 | 3 | 7 | 3 | 7 | 10 |
| L60-1385 | 10 | 3 | 6 | 4 | 8 | 7 | 8 | 8 |
| S62-4064 | 4 | 1 | 2 | 2 | 9 | 4 | 5 | 9 |

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

Table 75. (Continued)

| Strain | Eldorado Ill. | Carbondale Ill. | Miller City Ill. | Columbia Mo. | Portageville Mo.[1] | Powhattan Kans. | Manhattan Kans. | Manhattan Kans.[1] * | Mound Valley Kans. |
|---|---|---|---|---|---|---|---|---|---|
| Clark | 44.8 | 21.7 | 49.0 | 33.8 | 42.2 | 31.6 | 41.1 | 36.5 | 18.2 |
| Clark 63 | 45.8 | 21.9 | 52.9 | 31.7 | 46.8 | 31.8 | 41.7 | 40.0 | 18.4 |
| S3 | 44.2 | 21.3 | 46.5 | 29.1 | 45.4 | 31.8 | 43.7 | 39.7 | 17.3 |
| Kent | 49.1 | 25.3 | 53.3 | 30.8 | 46.2 | 37.5 | 42.4 | 38.2 | 17.0 |
| C1278 | 51.9 | 23.2 | 55.8 | 31.3 | 51.0 | 35.9 | 42.1 | 39.9 | 17.7 |
| C1282 | 44.6 | 23.0 | 54.9 | 29.5 | 41.9 | 34.3 | 44.6 | 39.5 | 18.3 |
| C1306 | 48.3 | 25.1 | 53.8 | 31.1 | 37.4 | 36.5 | 39.6 | 39.5 | 17.7 |
| C1311 | 40.7 | 26.8 | 52.7 | 26.8 | 37.8 | 34.0 | 38.2 | 38.6 | 16.4 |
| L60-1385 | 45.0 | 23.4 | 52.2 | 29.2 | 43.8 | 30.4 | 38.3 | 35.5 | 14.7 |
| S62-4064 | 47.0 | 25.5 | 53.5 | 30.6 | 41.9 | 32.4 | 39.3 | 35.7 | 16.4 |
| C.V. (%) | 6.5 | -- | 5.2 | -- | 9.7 | 6.5 | 9.0 | 13.5 | 14.0 |
| L.S.D. (5%) | 4.3 | -- | 3.9 | N.S. | 6.1 | 3.2 | N.S. | N.S. | 3.5 |
| Row Sp. (In.) | 40 | 40 | 38 | 38 | 38 | 40 | 40 | 36 | 40 |
| | Yield Rank | | | | | | | | |
| Clark | 7 | 9 | 9 | 1 | 6 | 9 | 6 | 8 | 3 |
| Clark 63 | 5 | 8 | 6 | 2 | 2 | 7 | 5 | 1 | 1 |
| S3 | 9 | 10 | 10 | 9 | 4 | 7 | 2 | 3 | 6 |
| Kent | 2 | 3 | 5 | 5 | 3 | 1 | 3 | 7 | 7 |
| C1278 | 1 | 6 | 1 | 3 | 1 | 3 | 4 | 2 | 4 |
| C1282 | 8 | 7 | 2 | 7 | 7 | 4 | 1 | 4 | 2 |
| C1306 | 3 | 4 | 3 | 4 | 10 | 2 | 7 | 4 | 4 |
| C1311 | 10 | 1 | 7 | 10 | 9 | 5 | 10 | 6 | 8 |
| L60-1385 | 6 | 5 | 8 | 8 | 5 | 10 | 9 | 10 | 10 |
| S62-4064 | 4 | 2 | 4 | 6 | 7 | 6 | 8 | 9 | 8 |

Table 76. Maturity, days earlier (-) or later (+) than Clark, and lodging for Uniform Test IV, 1964.

| Strain | Mean of 13 Tests | Newark Del. | Georgetown Del.[1] | Upper Marlboro Md. | Columbus Ohio * | Worthington Ind. | Evansville Ind. | Edgewood Ill. |
|---|---|---|---|---|---|---|---|---|
| Clark | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clark 63 | +0.4 | + 2 | + 1 | +1 | 0 | 0 | 0 | -1 |
| S3 | +0.5 | + 2 | + 5 | 0 | -1 | 0 | 0 | -2 |
| Kent | +7.2 | + 7 | +12 | +8 | +5 | +9 | +8 | +7 |
| C1278 | +2.0 | + 3 | + 4 | +3 | -1 | +3 | +5 | -1 |
| C1282 | +5.5 | + 7 | +12 | +7 | -1 | +7 | +8 | +3 |
| C1306 | +2.4 | + 4 | + 5 | +3 | -2 | +2 | +4 | +1 |
| C1311 | +6.5 | +12 | +14 | +5 | +4 | +9 | +8 | +6 |
| L60-1385 | +6.5 | + 9 | +14 | +5 | +3 | +9 | +8 | +7 |
| S62-4064 | +3.8 | + 7 | +12 | +1 | +2 | +3 | +6 | 0 |
| Date planted | 5-24 | 6-1 | 5-19 | 5-22 | 5-18 | 5-26 | 5-14 | 6-2 |
| Clark matured | 9-25 | 10-1 | 9-24 | 9-21 | 10-8 | 9-27 | 9-19 | 9-27 |
| Days to mature | 124 | 122 | 128 | 122 | 143 | 124 | 128 | 117 |
| | Mean of 12 Tests | Lodging | | | | | | |
| Clark | 1.9 | 1.9 | 1.3 | 2.2 | 1.0 * | 2.8 | 2.3 | 1.7 |
| Clark 63 | 2.0 | 2.3 | 1.3 | 2.1 | 1.0 | 3.8 | 2.0 | 1.7 |
| S3 | 2.1 | 2.4 | 1.6 | 2.1 | 1.0 | 3.5 | 2.0 | 1.6 |
| Kent | 1.6 | 2.0 | 1.5 | 1.8 | 1.0 | 1.5 | 1.8 | 1.3 |
| C1278 | 1.6 | 2.0 | 1.4 | 1.9 | 1.0 | 2.0 | 1.8 | 1.4 |
| C1282 | 2.4 | 3.4 | 1.6 | 2.0 | 1.0 | 4.3 | 3.3 | 1.9 |
| C1306 | 2.1 | 2.4 | 1.4 | 2.1 | 1.0 | 3.3 | 2.0 | 1.5 |
| C1311 | 1.7 | 1.8 | 1.5 | 1.6 | 1.0 | 1.8 | 2.0 | 1.6 |
| L60-1385 | 1.8 | 1.9 | 1.4 | 1.9 | 1.0 | 3.0 | 2.0 | 1.6 |
| S62-4064 | 2.0 | 1.9 | 1.5 | 2.1 | 1.0 | 2.5 | 2.3 | 1.9 |

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

Table 76. (Continued)

| Strain | Eldorado Ill. | Carbondale Ill. | Miller City Ill. | Columbia Mo. | Portageville Mo.[1] | Powhattan Kans. | Manhattan Kans. | Manhattan Kans.[1] | Mound Valley Kans. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | * | * |
| Clark | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Clark 63 | -1 | 0 | +1 | 0 | +2 | 0 | 0 | 0 | |
| S3 | -1 | +4 | -1 | -2 | +1 | +1 | 0 | 0 | |
| Kent | +8 | +6 | +5 | +8 | +7 | +4 | +5 | +4 | |
| C1278 | -2 | +5 | +1 | +1 | +2 | +1 | +1 | +1 | |
| C1282 | +4 | +6 | +5 | +4 | +4 | +2 | +1 | +2 | |
| C1306 | +1 | +5 | +2 | 0 | +1 | +2 | +1 | +1 | |
| C1311 | +9 | +5 | +4 | +6 | +3 | +1 | +3 | +1 | |
| L60-1385 | +9 | +6 | +4 | +6 | +2 | +2 | +3 | 0 | |
| S62-4064 | 0 | +5 | +5 | +3 | +2 | +3 | +2 | 0 | |
| Date pltd. | 6-4 | 5-25 | 5-15 | 5-4 | 5-18 | 6-4 | 6-2 | 6-28 | 5-18 |
| Clark mat. | 9-27 | 10-6 | 9-14 | 9-10 | 9-13 | 10-11 | 10-11 | 10-15 | 10-12 |
| Da. to mat. | 115 | 134 | 122 | 129 | 118 | 129 | 131 | 109 | 147 |
| | | | | | Lodging | | | | |
| | | * | | | | | | * | * |
| Clark | 2.3 | 1.0 | 2.7 | 1.6 | 1.8 | 1.2 | 1.5 | 1.4 | 1.0 |
| Clark 63 | 2.1 | 1.0 | 2.2 | 1.4 | 2.0 | 1.2 | 1.6 | 1.8 | 1.0 |
| S3 | 2.4 | 1.0 | 2.8 | 1.8 | 1.6 | 1.2 | 1.8 | 1.8 | 1.0 |
| Kent | 1.7 | 1.0 | 1.8 | 1.5 | 1.4 | 1.2 | 1.8 | 1.7 | 1.0 |
| C1278 | 1.5 | 1.0 | 1.5 | 1.2 | 1.4 | 1.2 | 2.0 | 1.7 | 1.0 |
| C1282 | 2.8 | 1.0 | 3.1 | 1.4 | 2.3 | 1.2 | 1.8 | 2.0 | 1.0 |
| C1306 | 2.4 | 1.0 | 2.8 | 1.7 | 2.5 | 1.3 | 1.7 | 1.8 | 1.0 |
| C1311 | 2.6 | 1.0 | 1.9 | 1.1 | 1.7 | 1.2 | 1.4 | 1.4 | 1.0 |
| L60-1385 | 2.6 | 1.0 | 1.7 | 1.3 | 1.6 | 1.2 | 1.7 | 1.7 | 1.0 |
| S62-4064 | 2.2 | 1.0 | 2.5 | 1.7 | 1.9 | 1.5 | 1.4 | 1.7 | 1.0 |

Table 77. Plant height and seed quality for Uniform Test IV, 1964.

| Strain | Mean of 14 Tests | Newark Del. | Georgetown Del.[1] | Upper Marlboro Md. | Columbus Ohio * | Worthington Ind. | Evansville Ind. | Edgewood Ill. |
|---|---|---|---|---|---|---|---|---|
| Clark | 38 | 38 | 28 | 39 | 39 | 46 | 50 | 40 |
| Clark 63 | 40 | 40 | 34 | 42 | 40 | 47 | 51 | 41 |
| S3 | 39 | 39 | 34 | 42 | 41 | 45 | 52 | 41 |
| Kent | 38 | 40 | 33 | 40 | 39 | 46 | 48 | 38 |
| C1278 | 39 | 40 | 32 | 38 | 40 | 48 | 51 | 39 |
| C1282 | 39 | 37 | 32 | 42 | 41 | 42 | 51 | 40 |
| C1306 | 39 | 38 | 33 | 41 | 40 | 44 | 51 | 39 |
| C1311 | 43 | 42 | 37 | 47 | 42 | 53 | 53 | 43 |
| L60-1385 | 40 | 38 | 33 | 41 | 43 | 48 | 52 | 43 |
| S62-4064 | 39 | 39 | 36 | 38 | 42 | 49 | 50 | 40 |

| | Mean of 14 Tests | Seed Quality | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | * | | | |
| Clark | 2.6 | 2.1 | 3.0 | 3.0 | 2.0 | 2.0 | 4.0 | 1.6 |
| Clark 63 | 2.7 | 2.1 | 2.9 | 3.0 | 1.0 | 2.5 | 4.0 | 1.9 |
| S3 | 2.6 | 2.1 | 3.1 | 3.0 | 2.0 | 2.0 | 4.0 | 2.1 |
| Kent | 2.6 | 2.0 | 2.9 | 4.0 | 2.5 | 2.0 | 3.5 | 2.6 |
| C1278 | 2.6 | 2.1 | 2.4 | 4.0 | 2.7 | 1.5 | 4.0 | 1.6 |
| C1282 | 2.9 | 2.5 | 3.6 | 3.0 | 2.2 | 2.0 | 4.0 | 3.1 |
| C1306 | 2.8 | 2.5 | 2.3 | 3.5 | 2.5 | 1.5 | 4.0 | 2.6 |
| C1311 | 2.4 | 2.4 | 3.5 | 3.8 | 2.0 | 2.0 | 3.5 | 2.0 |
| L60-1385 | 3.3 | 3.3 | 4.4 | 4.0 | 2.2 | 2.5 | 4.0 | 4.0 |
| S62-4064 | 2.5 | 2.5 | 2.5 | 3.0 | 1.5 | 1.5 | 3.5 | 1.9 |

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

Table 77. (Continued)

| Strain | Eldorado Ill. | Carbondale Ill. | Miller City Ill. | Columbia Mo. | Portageville Mo. | Powhattan Kans. | Manhattan Kans. | Manhattan Kans.[1] * | Mound Valley Kans. |
|---|---|---|---|---|---|---|---|---|---|
| Clark | 45 | 29 | 47 | 43 | 49 | 26 | 34 | 33 | 23 |
| Clark 63 | 45 | 31 | 47 | 43 | 49 | 27 | 35 | 35 | 23 |
| S3 | 45 | 30 | 47 | 42 | 47 | 28 | 35 | 35 | 23 |
| Kent | 43 | 30 | 47 | 41 | 45 | 27 | 34 | 36 | 22 |
| C1278 | 46 | 31 | 48 | 41 | 49 | 26 | 35 | 34 | 21 |
| C1282 | 44 | 32 | 47 | 41 | 49 | 27 | 35 | 35 | 23 |
| C1306 | 45 | 30 | 48 | 40 | 47 | 26 | 35 | 35 | 22 |
| C1311 | 50 | 34 | 53 | 44 | 52 | 27 | 39 | 37 | 22 |
| L60-1385 | 48 | 34 | 48 | 44 | 49 | 28 | 34 | 32 | 23 |
| S62-4064 | 46 | 32 | 46 | 41 | 49 | 27 | 36 | 33 | 21 |
| | | | | | Seed Quality | | | | |
| Clark | 4.5 | 3.0 | 3.6 | 2.0 | 2.3 | 1.2 | 1.1 | 1.3 * | 3.0 |
| Clark 63 | 4.4 | 3.0 | 3.6 | 2.0 | 2.3 | 1.2 | 1.2 | 1.2 | 3.0 |
| S3 | 4.3 | 2.0 | 3.8 | 2.0 | 2.3 | 1.1 | 1.2 | 1.2 | 3.0 |
| Kent | 4.3 | 3.0 | 3.1 | 2.0 | 2.2 | 1.1 | 1.3 | 1.3 | 3.0 |
| C1278 | 4.8 | 3.0 | 3.4 | 2.0 | 2.0 | 1.2 | 1.1 | 1.3 | 3.0 |
| C1282 | 5.0 | 4.0 | 3.4 | 2.0 | 2.1 | 1.2 | 1.2 | 1.2 | 3.0 |
| C1306 | 4.6 | 4.0 | 3.8 | 2.0 | 2.2 | 1.2 | 1.1 | 1.3 | 4.0 |
| C1311 | 3.5 | 2.0 | 2.3 | 1.5 | 1.5 | 1.2 | 1.2 | 1.1 | 3.0 |
| L60-1385 | 5.0 | 4.0 | 3.9 | 2.0 | 2.5 | 1.6 | 1.1 | 1.3 | 4.0 |
| S62-4064 | 4.0 | 4.0 | 2.9 | 1.5 | 1.7 | 1.1 | 1.2 | 1.2 | 3.0 |

Table 78. Percentages of protein and oil for Uniform Test IV, 1964.

| Strain | Mean of 7 Tests | George-town Del.[1] | Colum-bus Ohio * | Evans-ville Ind. | Eldo-rado Ill. | Miller City Ill. | Colum-bia Mo. | Pow-hattan Kans. | Man-hattan Kans. |
|---|---|---|---|---|---|---|---|---|---|
| Clark | 40.4 | 42.2 | 40.1 | 40.3 | 42.0 | 40.6 | 40.4 | 39.9 | 37.3 |
| Clark 63 | 39.9 | 41.8 | 39.6 | 39.7 | 41.5 | 40.0 | 39.8 | 39.4 | 37.0 |
| S3 | 39.9 | 41.7 | 40.1 | 38.9 | 41.9 | 39.8 | 40.3 | 39.3 | 37.1 |
| Kent | 40.4 | 42.5 | 40.2 | 39.7 | 42.2 | 40.6 | 39.8 | 40.2 | 38.1 |
| C1278 | 40.4 | 42.0 | 40.5 | 39.5 | 41.2 | 40.5 | 40.4 | 41.6 | 37.3 |
| C1282 | 42.0 | 43.4 | 41.6 | 41.4 | 43.3 | 41.9 | 42.0 | 43.0 | 39.1 |
| C1306 | 40.5 | 42.2 | 42.0 | 39.6 | 41.8 | 40.9 | 40.2 | 41.2 | 37.7 |
| C1311 | 41.2 | 43.4 | 40.5 | 40.1 | 43.3 | 41.3 | 41.4 | 41.0 | 37.9 |
| L60-1385 | 41.3 | 43.5 | 40.6 | 39.8 | 43.3 | 41.1 | 41.6 | 42.0 | 37.9 |
| S62-4064 | 39.8 | 42.6 | 39.8 | 39.8 | 41.5 | 39.7 | 39.2 | 39.3 | 36.7 |

| | Mean of 7 Tests | Percentage of Oil | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | * | | | | | | |
| Clark | 21.7 | 20.9 | 20.4 | 22.5 | 20.9 | 23.3 | 21.3 | 20.9 | 22.1 |
| Clark 63 | 21.8 | 20.2 | 21.5 | 21.5 | 21.7 | 23.1 | 21.7 | 21.2 | 22.9 |
| S3 | 21.8 | 20.3 | 21.0 | 22.5 | 21.4 | 23.3 | 21.3 | 21.2 | 22.7 |
| Kent | 22.1 | 21.1 | 21.0 | 23.3 | 21.3 | 22.5 | 21.9 | 21.6 | 22.7 |
| C1278 | 21.9 | 20.6 | 21.3 | 22.5 | 21.4 | 22.6 | 21.3 | 21.0 | 23.0 |
| C1282 | 21.7 | 21.8 | 20.6 | 22.2 | 20.7 | 22.7 | 20.8 | 20.7 | 22.8 |
| C1306 | 22.4 | 21.6 | 21.4 | 23.1 | 21.9 | 23.5 | 21.6 | 21.5 | 23.6 |
| C1311 | 21.6 | 21.3 | 20.8 | 22.7 | 20.6 | 22.2 | 21.3 | 20.9 | 22.0 |
| L60-1385 | 22.4 | 22.5 | 22.1 | 23.7 | 21.7 | 23.2 | 21.9 | 20.1 | 23.7 |
| S62-4064 | 22.2 | 20.9 | 21.3 | 22.7 | 21.9 | 23.3 | 22.1 | 21.5 | 22.8 |

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

Table 79. Three-year summary of data for Uniform Test IV, 1962-1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 38 | 38 | 37 | 34 | 38 | 36 | 25 | 22 | 22 |
| Clark | 37.5 | 2 | 0 | 1.9 | 38 | 2.4 | 16.6 | 40.7 | 21.4 |
| Clark 63 | 36.9 | 3 | +0.3 | 2.0 | 40 | 2.5 | 15.9 | 40.4 | 21.4 |
| Kent | 38.9 | 1 | +7.5 | 1.7 | 38 | 2.6 | 17.8 | 40.8 | 21.6 |

[1]Days earlier (-) or later (+) than Clark which matured September 25, 124 days after planting.

Table 80. Three-year summary of yield and yield rank for Uniform Test IV, 1962-1964.

| Strain | Mean of 38 Tests | Newark Del. | Georgetown Del. | Columbus Ohio | Worthington Ind. | Evansville Ind. | Edgewood Ill. | Eldorado Ill. |
|---|---|---|---|---|---|---|---|---|
| Years Tested | | 1963-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1963-1964 | 1962-1964 | 1962-1964 |
| Clark | 37.5 | 45.7 | 22.9 | 36.4 | 48.5 | 43.6 | 37.7 | 48.4 |
| Clark 63 | 36.9 | 44.8 | 21.2 | 33.7 | 44.7 | 42.1 | 40.9 | 46.7 |
| Kent | 38.9 | 45.3 | 28.6 | 31.2 | 52.3 | 44.3 | 36.5 | 48.2 |
| | Yield Rank | | | | | | | |
| Clark | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 |
| Clark 63 | 3 | 3 | 3 | 2 | 3 | 3 | 1 | 3 |
| Kent | 1 | 2 | 1 | 3 | 1 | 1 | 3 | 2 |

[1]Irrigated.

Table 80. (Continued)

| Strain | Carbon-dale Ill. | Miller City Ill. | Colum-bia Mo. | Portage-ville Mo. | Pow-hattan Kans. | Man-hattan Kans. | Man-hattan Kans.[1] | Mound Valley Kans. | Colum-bus Kans. |
|---|---|---|---|---|---|---|---|---|---|
| Years Tested | 1962-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1963-1964 | 1962-1964 | 1962-1964 | 1962-1964 | 1962-1963 |
| Clark | 29.5 | 44.1 | 36.0 | 42.1 | 31.1 | 39.9 | 43.4 | 17.0 | 16.3 |
| Clark 63 | 29.0 | 46.4 | 34.0 | 45.4 | 31.6 | 40.2 | 47.9 | 17.6 | 15.2 |
| Kent | 31.3 | 46.4 | 35.1 | 48.8 | 37.7 | 44.5 | 46.5 | 18.5 | 14.8 |
| | Yield Rank | | | | | | | | |
| Clark | 2 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 1 |
| Clark 63 | 3 | 1 | 3 | 2 | 2 | 2 | 1 | 2 | 2 |
| Kent | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 3 |

## UNIFORM PRELIMINARY TEST IV - 1964

| 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] | 13 $F_3$ lines |
| SL1-1 | Ill. and Mo. A.E.S. & U.S.R.S.L. | Same as Clark 63 | 6 $F_3$ lines |
| Kent | Purdue A.E.S. & U.S.R.S.L. | Lincoln x Ogden | $F_7$ |
| D60-5702 | Delta Br. E.S. & U.S.R.S.L. | Hill x D53-354 | $F_5$ |
| D60-5764 | Delta Br. E.S. & U.S.R.S.L. | Hill x D53-354 | $F_5$ |
| D62-6225 | Delta Br. E.S. & U.S.R.S.L. | Hill x Sioux | $F_5$ |
| K720 | Kansas A.E.S. & U.S.R.S.L. | Unknown, records destroyed by fire | |
| K62-7221 | Kansas A.E.S. & U.S.R.S.L. | C1069 x Clark | $F_7$ |
| L62-1251 | Ill. A.E.S. & U.S.R.S.L. | Clark (6) x T117 | $F_3$ |
| L62-1579 | Ill. A.E.S. & U.S.R.S.L. | Clark (6) x T204 | $F_3$ |
| S4 | Mo. A.E.S. & U.S.R.S.L. | S3 x [S62-4064 x (Clark (3) x Kanrich)] | $F_3$ lines |
| S62-4067 | Mo. A.E.S. & U.S.R.S.L. | [Clark 63 x L46-2132-A14 (2)] x [L49-4091 x Clark (7)] | $F_3$ |
| S62-4068 | Mo. A.E.S. & U.S.R.S.L. | Same as above | $F_3$ |
| S62-4076 | Mo. A.E.S. & U.S.R.S.L. | Same as above | $F_3$ |
| S62-4087 | Mo. A.E.S. & U.S.R.S.L. | Same as above | $F_3$ |
| S62-4098 | Mo. A.E.S. & U.S.R.S.L. | Same as above | $F_3$ |
| S62-4100 | Mo. A.E.S. & U.S.R.S.L. | Same as above | $F_3$ |
| S62-4104 | Mo. A.E.S. & U.S.R.S.L. | Same as above | $F_3$ |
| S63-3607 | Mo. A.E.S. & U.S.R.S.L. | S62-4064 x [Clark (3) x Kanrich] | $F_3$ |

### Identification of Parent Strains

C1069 — $F_7$ line from Lincoln x Ogden, from same $F_4$ line as Kent, in Uniform Test IV in 1951-56.

D53-354 — Sel. from D49-2525 x L46-5679, in Uniform Test IV in 1957-58. D49-2525 is a pustule-resistant selection from S100 x CNS and a sib of Lee. L46-5679 is a selection from Lincoln x Richland.

L46-2132-A14 — Sel. from Lincoln (2) x Richland, sib of Clark and Shelby, in Uniform Test IV in 1956-57.

L49-4091 — Pustule-resistant $F_4$ line from [$F_3$ Lincoln (2) x Richland] x (Lincoln x CNS), in Uniform Test IV in 1951 and III in 1952-53.

S3 — In Uniform Test IV.

S54-1714 — Pustule-resistant selection from L49-4091 x Clark, in Uniform Test IV in 1957.

S62-4064 — In Uniform Test IV.

SL1-1 is a composite of the six highest yielding lines of Clark 63 as tested in Missouri over the past several years. However, in this test there was no yield advantage for SL1-1 over Clark 63. The two strains performed very similarly but SL1-1 was slightly later at several locations.

The three D strains did not yield as well as the checks; however, D62-6225 did not have a fair test since stands were very poor at some locations. The two K strains yielded very well but probably should be classified as Group V maturity since they were several days later than Kent at most locations.

The two L strains are closely related to Clark but L62-1251 carries a gene (na) for narrow leaf and high number of seeds per pod and L62-1579 carries a gene ($Dt_2$) for determinate stem, making the plant height several inches less. Both strains were otherwise similar to Clark in appearance and performance but did not quite come up to Clark in average yield.

S4 is similar to Clark 63 except that in addition to pustule and Phytophthora resistance (there is some conflicting evidence on the Phytophthora resistance) it carries a dominant gene from Kanrich for downy mildew resistance. In this test it performed much like Clark 63 except that it averaged slightly later in maturity.

S63-3607 is a related Clark backcross with downy mildew resistance combined with white flowers (w) and gray pubescence (t) giving a buff hilum color. It was also similar to Clark but later.

The remaining seven S strains are isolines selected to compare the effects of pustule and Phytophthora resistance. The first two (S62-4067 and -4068) are from the same $F_2$ plant and the remaining five are likewise from a single $F_2$ plant. S62-4087 had narrow leaves and purple flowers and is apparently of extraneous origin. Among the other six lines, four carry the Phytophthora resistance gene and ranged from 37.1 to 37.7 in mean yield whereas the two susceptible lines averaged 41.0 and 41.2 bushels. While not conclusive, these data suggest that the Phytophthora resistance gene or genes linked to it have a depressing effect on yield in the absence of the disease. No effect of the pustule resistance gene was apparent in these data.

Table 81. Descriptive data for the strains in Uniform Preliminary Test IV, 1964.

| Strain | Flower Color | Pubescence Color | Pod Color | Seed Coat Luster | Seed Coat Color | Hilum Color |
|---|---|---|---|---|---|---|
| Clark | P | T | Br | D | Y | Bl |
| Clark 63 | P | T | Br | D | Y | Bl |
| SL1-1 | P | T | Br | D | Y | Bl |
| Kent | P | T | Br | D | Y | Bl |
| D60-5702 | W | G | Br | S | Y | Bf |
| D60-5764 | P | G | Tan | S | Y | Ib |
| D62-6225 | W | T | Tan | S | Y | G+Bl+Tan |
| K720 | P | T | Br | D | Y | Bl |
| K62-7221 | P | T | Br | D | Y | Bl |
| L62-1251 | P | T | Br | D | Y | Bl |
| L62-1579 | P | T | Br | D | Y | Bl |
| S4 | W | T | Br | S | Y | G+Bl |
| S62-4067 | W | T | Br | S | Y | Bl |
| S62-4068 | W | T | Br | D | Y | Bl |
| S62-4076 | W | T | Br | S | Y | Bl |
| S62-4087 | P | T | Br | D | Y | Bl |
| S62-4098 | W | T | Br | D | Y | Bl |
| S62-4100 | W | T | Br | D | Y | Bl |
| S62-4104 | W | T | Br | D | Y | Bl |
| S63-3607 | W | G | Br | D | Y | Bf |

Table 82. Summary of data for Uniform Preliminary Test IV, 1964.

| Strain | Yield | Rank | Maturity[1] | Lodging | Height | Seed Quality | Seed Weight | Seed Composition | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Protein | Oil |
| No. of Tests | 9 | 9 | 8 | 9 | 9 | 9 | 7 | 3 | 3 |
| Clark | 40.6 | 6 | 0 | 1.9 | 42 | 2.7 | 17.1 | 39.1 | 22.5 |
| Clark 63 | 39.5 | 8 | + 0.5 | 2.0 | 43 | 2.6 | 16.2 | 38.9 | 22.8 |
| SL1-1 | 39.3 | 9 | + 1.6 | 2.0 | 43 | 2.6 | 16.2 | 38.9 | 22.7 |
| Kent | 43.9 | 1 | + 6.9 | 1.6 | 40 | 2.7 | 18.2 | 39.0 | 22.9 |
| D60-5702 | 37.9 | 13 | + 7.9 | 1.9 | 44 | 2.2 | 14.4 | 38.7 | 22.4 |
| D60-5764 | 37.2 | 17 | + 8.8 | 1.8 | 45 | 2.8 | 14.8 | 38.5 | 22.2 |
| D62-6225 | 27.5 | 20 | + 9.9 | 1.9 | 31 | 2.5 | 15.5 | 44.0 | 17.4 |
| K720 | 42.8 | 2 | +11.0 | 2.2 | 43 | 2.4 | 17.9 | 40.0 | 21.9 |
| K62-7221 | 41.3 | 3 | +12.6 | 2.0 | 43 | 2.4 | 16.3 | 39.9 | 22.1 |
| L62-1251 | 38.6 | 12 | - 0.8 | 2.0 | 34 | 2.7 | 15.9 | 38.5 | 22.9 |
| L62-1579 | 39.0 | 10 | 0 | 1.8 | 40 | 2.5 | 15.6 | 38.5 | 22.6 |
| S4 | 39.9 | 7 | + 2.0 | 1.9 | 42 | 2.8 | 16.2 | 38.8 | 22.9 |
| S62-4067 | 37.6 | 15 | + 1.3 | 1.9 | 42 | 2.7 | 16.4 | 38.7 | 22.4 |
| S62-4068 | 37.7 | 14 | + 0.6 | 2.0 | 41 | 2.5 | 16.4 | 39.3 | 22.5 |
| S62-4076 | 41.0 | 5 | + 1.3 | 1.8 | 41 | 2.6 | 16.6 | 39.2 | 22.6 |
| S62-4087 | 35.2 | 19 | - 1.0 | 2.1 | 40 | 2.4 | 15.5 | 38.8 | 22.8 |
| S62-4098 | 41.2 | 4 | + 2.3 | 1.9 | 41 | 2.8 | 16.5 | 38.4 | 22.9 |
| S62-4100 | 37.5 | 16 | + 1.1 | 1.9 | 42 | 2.6 | 16.6 | 39.1 | 22.6 |
| S62-4104 | 37.1 | 18 | + 2.0 | 2.1 | 42 | 2.4 | 16.5 | 38.6 | 22.7 |
| S63-3607 | 39.0 | 10 | + 4.4 | 2.0 | 42 | 2.8 | 16.3 | 39.4 | 22.4 |

[1]Days earlier (-) or later (+) than Clark which matured September 26, 124 days after planting.

Table 83. Disease data for Uniform Preliminary Test IV, 1964.

| Strain | Bacterial Pustule | Brown Stem Rot | Phytophthora Rot | | Frogeye Ind. | | Downy Mildew |
|---|---|---|---|---|---|---|---|
| | Mo. | Ill. | Ind. | Mo. | Race 1 | Race 2 | Ind. |
| | a[1] | n[1] | a | a | a | a | n |
| Clark | S | 4 | S | S | R | 5 | 3.3 |
| Clark 63 | R | 4 | R | R | R | 4 | 3.5 |
| SL1-1 | R | 4 | R | R | R | 5 | 3.0 |
| Kent | - | 4 | S | - | R | 1 | 1.0 |
| D60-5702 | - | 4 | S | - | - | 3 | 1.0 |
| D60-5764 | - | 4 | S | - | - | 4 | 3.0 |
| D62-6225 | - | 4 | S | - | - | 2 | 1.0 |
| K720 | - | 4 | S | - | - | 4 | 1.0 |
| K62-7221 | - | 4 | S | - | - | 5 | 3.0 |
| L62-1251 | - | 4 | S | - | - | 5 | 1.0 |
| L62-1579 | - | 4 | S | - | - | 5 | 2.5 |
| S4 | R | 4 | S | R | - | 5 | 1.0 |
| S62-4067 | R | 4 | R | R | - | 5 | 3.5 |
| S62-4068 | S | 4 | R | R | - | 4 | 4.0 |
| S62-4076 | R | 4 | S | S | - | 4 | 3.0 |
| S62-4087 | S | 4 | S | S | - | 5 | 2.5 |
| S62-4098 | R | 4 | S | S | - | 4 | 4.0 |
| S62-4100 | R | 4 | R | R | - | 4 | 3.5 |
| S62-4104 | S | 4 | R | R | - | 4 | 4.5 |
| S63-3607 | - | 4 | Seg. | - | - | 4 | 1.0 |

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

Table 84. Yield for Uniform Preliminary Test IV, 1964.

| Strain | Mean of 9 Tests | George-town Del.[1] | Upper Marlboro Md. | Worthing-ton Ind. | Evans-ville Ind. | Eldo-rado Ill. |
|---|---|---|---|---|---|---|
| | | * | | | | |
| Clark | 40.6 | 25.1 | 29.8 | 49.9 | 39.6 | 48.7 |
| Clark 63 | 39.5 | 27.5 | 29.2 | 46.1 | 44.4 | 40.8 |
| SL1-1 | 39.3 | 23.9 | 30.1 | 45.1 | 39.8 | 47.7 |
| Kent | 43.9 | 29.9 | 26.3 | 61.1 | 46.1 | 48.5 |
| D60-5702 | 37.9 | 30.4 | 25.9 | 43.2 | 38.5 | 35.3 |
| D60-5764 | 37.2 | 23.3 | 20.8 | 44.0 | 38.2 | 38.4 |
| D62-6225 | 27.5 | 19.2 | 22.6 | 26.2 | 27.1 | 22.7 |
| K720 | 42.8 | 28.7 | 22.2 | 57.4 | 40.5 | 57.3 |
| K62-7221 | 41.3 | 25.2 | 29.0 | 48.2 | 43.8 | 46.4 |
| L62-1251 | 38.6 | 26.3 | 27.5 | 46.0 | 47.3 | 43.7 |
| L62-1579 | 39.0 | 27.6 | 26.0 | 48.6 | 42.0 | 43.6 |
| S4 | 39.9 | 27.5 | 24.6 | 60.7 | 42.0 | 44.7 |
| S62-4067 | 37.6 | 26.3 | 25.4 | 42.5 | 44.9 | 45.6 |
| S62-4068 | 37.7 | 30.0 | 29.4 | 41.8 | 41.9 | 43.5 |
| S62-4076 | 41.0 | 25.8 | 25.7 | 58.7 | 44.1 | 46.6 |
| S62-4087 | 35.2 | 26.0 | 22.0 | 43.4 | 40.4 | 42.6 |
| S62-4098 | 41.2 | 25.4 | 24.6 | 54.3 | 40.6 | 47.7 |
| S62-4100 | 37.5 | 23.5 | 28.0 | 47.8 | 44.3 | 43.6 |
| S62-4104 | 37.1 | 28.2 | 25.8 | 46.4 | 35.2 | 42.1 |
| S63-3607 | 39.0 | 25.3 | 27.6 | 48.0 | 35.4 | 43.8 |
| Coef. of Var. (%) | | 20.7 | 16.2 | 12.0 | 10.5 | 9.7 |
| L.S.D. (5%) | | N.S. | N.S. | 12.1 | 9.0 | N.S. |
| Row Spacing (In.) | | 36 | 36 | 38 | 40 | 40 |

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

Table 84. (Continued)

| Strain | Carbon-dale Ill. | Miller City Ill. | Portage-ville Mo.[1] | Pow-hattan Kans. | Man-hattan Kans. | Man-hattan Kans.[1] * |
|---|---|---|---|---|---|---|
| Clark | 29.9 | 45.3 | 56.6 | 30.8 | 35.2 | 37.3 |
| Clark 63 | 29.0 | 50.3 | 49.3 | 30.0 | 36.5 | 42.3 |
| SL1-1 | 28.1 | 51.7 | 44.7 | 28.4 | 38.2 | 33.2 |
| Kent | 26.4 | 58.5 | 44.8 | 37.7 | 45.5 | 38.9 |
| D60-5702 | 26.1 | 58.1 | 43.4 | 33.9 | 36.8 | 32.3 |
| D60-5764 | 25.4 | 58.6 | 43.0 | 32.5 | 34.3 | 35.6 |
| D62-6225 | 21.4 | 35.5 | 36.4 | 28.5 | 27.0 | 34.9 |
| K720 | 31.0 | 58.1 | 46.3 | 34.6 | 37.8 | 42.0 |
| K62-7221 | 27.9 | 57.7 | 45.2 | 33.4 | 39.8 | 30.7 |
| L62-1251 | 26.0 | 50.4 | 42.3 | 28.8 | 35.1 | 31.4 |
| L62-1579 | 24.5 | 54.6 | 43.5 | 31.4 | 36.8 | 40.0 |
| S4 | 21.8 | 51.4 | 44.7 | 30.3 | 38.5 | 39.3 |
| S62-4067 | 26.1 | 51.0 | 43.5 | 24.5 | 34.9 | 38.3 |
| S62-4068 | 25.2 | 53.2 | 43.3 | 26.4 | 35.0 | 34.6 |
| S62-4076 | 26.3 | 56.0 | 47.3 | 26.4 | 37.9 | 41.7 |
| S62-4087 | 26.8 | 48.2 | 37.5 | 24.5 | 31.2 | 33.1 |
| S62-4098 | 27.7 | 58.2 | 44.1 | 34.0 | 39.6 | 35.8 |
| S62-4100 | 21.3 | 50.2 | 40.2 | 25.0 | 37.3 | 40.2 |
| S62-4104 | 25.2 | 52.6 | 38.1 | 33.4 | 34.9 | 38.1 |
| S63-3607 | 28.0 | 53.8 | 45.0 | 32.5 | 36.8 | 36.6 |
| Coef. of Var. (%) | -- | 8.7 | 11.6 | 13.0 | 11.3 | 11.0 |
| L.S.D. (5%) | -- | 9.6 | N.S. | N.S. | N.S. | N.S. |
| Row Spacing (In.) | 40 | 38 | 38 | 40 | 40 | 36 |

Table 85. Yield rank for Uniform Preliminary Test IV, 1964.

| Strain | Mean of 9 Tests | George-town Del.[1] | Upper Marlboro Md. | Worthing-ton Ind. | Evans-ville Ind. | Eldo-rado Ill. |
|---|---|---|---|---|---|---|
| Clark | 6 | 16 | 2 | 6 | 15 | 2 |
| Clark 63 | 8 | 7 | 4 | 12 | 4 | 17 |
| SL1-1 | 9 | 17 | 1 | 14 | 14 | 4 |
| Kent | 1 | 3 | 9 | 1 | 2 | 3 |
| D60-5702 | 13 | 1 | 11 | 17 | 16 | 19 |
| D60-5764 | 17 | 19 | 20 | 15 | 17 | 18 |
| D62-6225 | 20 | 20 | 17 | 20 | 20 | 20 |
| K720 | 2 | 4 | 18 | 4 | 12 | 1 |
| K62-7221 | 3 | 15 | 5 | 8 | 7 | 7 |
| L62-1251 | 12 | 9 | 8 | 13 | 1 | 11 |
| L62-1579 | 10 | 6 | 10 | 7 | 8 | 12 |
| S4 | 7 | 7 | 15 | 2 | 8 | 9 |
| S62-4067 | 15 | 9 | 14 | 18 | 3 | 8 |
| S62-4068 | 14 | 2 | 3 | 19 | 10 | 14 |
| S62-4076 | 5 | 12 | 13 | 3 | 6 | 6 |
| S62-4087 | 19 | 11 | 19 | 16 | 13 | 15 |
| S62-4098 | 4 | 13 | 15 | 5 | 11 | 4 |
| S62-4100 | 16 | 18 | 6 | 10 | 5 | 12 |
| S62-4104 | 18 | 5 | 12 | 11 | 19 | 16 |
| S63-3607 | 10 | 14 | 7 | 9 | 18 | 10 |

[1]Irrigated.

Table 85. (Continued)

| Strain | Carbon-dale Ill. | Miller City Ill. | Portage-ville Mo.[1] | Pow-hattan Kans. | Man-hattan Kans. | Man-hattan Kans.[1] |
|---|---|---|---|---|---|---|
| Clark | 2 | 19 | 1 | 10 | 13 | 10 |
| Clark 63 | 3 | 16 | 2 | 12 | 12 | 1 |
| SL1-1 | 4 | 12 | 8 | 15 | 5 | 16 |
| Kent | 9 | 2 | 7 | 1 | 1 | 7 |
| D60-5702 | 11 | 4 | 13 | 4 | 9 | 18 |
| D60-5764 | 14 | 1 | 15 | 7 | 18 | 13 |
| D62-6225 | 19 | 20 | 20 | 14 | 20 | 14 |
| K720 | 1 | 4 | 4 | 2 | 7 | 2 |
| K62-7221 | 6 | 6 | 5 | 5 | 2 | 20 |
| L62-1251 | 13 | 15 | 16 | 13 | 14 | 19 |
| L62-1579 | 17 | 8 | 11 | 9 | 9 | 5 |
| S4 | 18 | 13 | 8 | 11 | 4 | 6 |
| S62-4067 | 11 | 14 | 11 | 19 | 16 | 8 |
| S62-4068 | 15 | 10 | 14 | 16 | 15 | 15 |
| S62-4076 | 10 | 7 | 3 | 16 | 6 | 3 |
| S62-4087 | 8 | 18 | 19 | 19 | 19 | 17 |
| S62-4098 | 7 | 3 | 10 | 3 | 3 | 12 |
| S62-4100 | 20 | 17 | 17 | 18 | 8 | 4 |
| S62-4104 | 15 | 11 | 18 | 5 | 16 | 9 |
| S63-3607 | 5 | 9 | 6 | 7 | 9 | 11 |

Table 86. Maturity, days earlier (-) or later (+) than Clark, for Uniform Preliminary Test IV, 1964.

| Strain | Mean of 8 Tests | Georgetown Del.[1] | Upper Marlboro Md. | Worthington Ind. | Evansville Ind. | Eldorado Ill. |
|---|---|---|---|---|---|---|
| | | * | | | | |
| Clark | 0 | 0 | 0 | 0 | 0 | 0 |
| Clark 63 | + 0.5 | 0 | 0 | 0 | 0 | + 1 |
| SL1-1 | + 1.6 | 0 | 0 | + 2 | + 3 | + 2 |
| Kent | + 6.9 | + 8 | +11 | +10 | + 7 | + 5 |
| D60-5702 | + 7.9 | + 8 | + 9 | +13 | + 8 | +10 |
| D60-5764 | + 8.8 | +16 | +13 | +16 | + 9 | + 9 |
| D62-6225 | + 9.9 | +15 | +15 | +18 | +12 | +10 |
| K720 | +11.0 | +10 | +13 | +15 | +10 | +14 |
| K62-7221 | +12.6 | +16 | +19 | +17 | +10 | +15 |
| L62-1251 | - 0.8 | 0 | - 3 | + 2 | + 1 | + 2 |
| L62-1579 | 0 | - 2 | - 5 | + 1 | + 1 | + 1 |
| S4 | + 2.0 | + 4 | - 2 | + 2 | + 4 | + 3 |
| S62-4067 | + 1.3 | + 3 | + 1 | + 1 | + 2 | + 1 |
| S62-4068 | + 0.6 | + 1 | - 2 | + 1 | + 2 | + 1 |
| S62-4076 | + 1.3 | 0 | + 2 | + 1 | + 2 | + 1 |
| S62-4087 | - 1.0 | + 3 | - 5 | 0 | + 2 | - 1 |
| S62-4098 | + 2.3 | 0 | + 3 | + 1 | + 4 | + 3 |
| S62-4100 | + 1.1 | 0 | + 3 | + 2 | + 2 | 0 |
| S62-4104 | + 2.0 | + 1 | + 4 | + 2 | + 4 | + 2 |
| S63-3607 | + 4.4 | +12 | + 5 | + 6 | + 8 | + 4 |
| Date planted | 5-25 | 5-19 | 5-22 | 5-26 | 5-14 | 6-4 |
| Clark matured | 9-26 | 9-25 | 9-24 | 9-26 | 9-20 | 9-26 |
| Days to mature | 124 | 129 | 125 | 123 | 129 | 114 |

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

Table 86. (Continued)

| Strain | Carbon-dale Ill. | Miller City Ill. | Portage-ville Mo.[1] | Pow-hattan Kans. | Man-hattan Kans. | Man-hattan Kans.[1] |
|---|---|---|---|---|---|---|
| | * | | | | | * |
| Clark | 0 | 0 | 0 | 0 | 0 | 0 |
| Clark 63 | 0 | + 1 | + 2 | 0 | 0 | 0 |
| SL1-1 | 0 | + 2 | + 4 | 0 | 0 | 0 |
| Kent | +6 | + 5 | + 8 | +5 | +4 | +4 |
| D60-5702 | +6 | + 8 | +11 | +2 | +2 | 0 |
| D60-5764 | +5 | + 9 | + 9 | +2 | +3 | 0 |
| D62-6225 | -3 | + 9 | + 8 | +4 | +3 | +2 |
| K720 | +2 | +15 | +12 | +5 | +4 | +5 |
| K62-7221 | +4 | +16 | +14 | +5 | +5 | +5 |
| L62-1251 | -5 | - 3 | - 5 | +1 | -1 | 0 |
| L62-1579 | -7 | + 1 | 0 | +1 | 0 | +1 |
| S4 | -5 | + 2 | + 4 | +2 | +1 | +1 |
| S62-4067 | -5 | + 1 | + 3 | +1 | 0 | 0 |
| S62-4068 | -4 | + 1 | + 1 | +1 | 0 | +1 |
| S62-4076 | -7 | + 1 | + 2 | +1 | 0 | +1 |
| S62-4087 | -8 | 0 | - 3 | 0 | -1 | 0 |
| S62-4098 | 0 | + 2 | + 4 | +1 | 0 | +1 |
| S62-4100 | -5 | + 1 | + 1 | +1 | -1 | +1 |
| S62-4104 | 0 | + 2 | + 2 | +1 | -1 | +1 |
| S63-3607 | +3 | + 4 | + 5 | +1 | +2 | 0 |
| Date planted | 5-25 | 5-15 | 5-18 | 6-4 | 6-2 | 6-28 |
| Clark matured | 10-4 | 9-14 | 9-13 | 10-12 | 10-11 | 10-15 |
| Days to mature | 132 | 122 | 118 | 130 | 131 | 109 |

## SOYBEAN DISEASE INVESTIGATIONS IN 1964

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

K. L. Athow, Indiana  D. W. Chamberlain, Illinois  J. M. Dunleavy, Iowa

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 the 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 the seed. The severity classes for these diseases are determined as follows: 1 (no diseased plants in the field or no diseased seed in the sample); 2 (1-3% of the plants or the seed diseased); 3 (4-8% of the plants or seed diseased); 4 (9-19% of the plants or seed diseased); and 5 (20-100% of the plants or seed diseased). Prevalence rating is determined by the same method for all diseases.

### SUMMARY OF DISEASE SURVEY DATA - 1964

| Disease | Percent of Fields Infected | | Average Severity | Average Prevalence | Disease Index |
|---|---|---|---|---|---|
| | | Illinois, August 10-13 | | | |
| Bacterial Blight | 39 | +10* | 2.2 | 3.3 | 2.8 |
| Bacterial Pustule | 35 | +17* | 2.3 | 3.2 | 2.5 |
| Downy Mildew | 35 | +10* | 2.2 | 3.0 | 2.3 |
| Brown Stem Rot | 27 | + 1* | 2.3 | 2.0 | 1.2 |
| Brown Spot | 20 | +20* | 2.0 | 2.9 | 1.2 |
| Phytophthora Rot | 7 | | -- | trace | -- |
| Yellow Mosaic | 7 | | -- | trace | -- |
| Stem Canker | 3 | | -- | trace | -- |
| Wildfire | 1 | | -- | trace | -- |
| | | Iowa, July 9-10 and September 10-11 | | | |
| Bacterial Blight | 82 | | 2.4 | 2.2 | 4.3 |
| Root Rot | 69 | | 2.4 | 2.8 | 4.6 |
| Bacterial Pustule | 56 | | 2.7 | 2.9 | 4.4 |
| Brown Stem Rot | 53 | | 3.1 | 2.6 | 4.3 |
| Septoria | 48 | | 2.4 | 2.9 | 3.3 |
| Bacterial Wilt | 45 | | 2.4 | 1.9 | 2.1 |

*Percent of fields infected with only trace amounts of disease.

SUMMARY OF DISEASE SURVEY DATA - 1964 (Continued)

| Disease | Percent of Fields Infected | Average Severity | Average Prevalence | Disease Index |
|---|---|---|---|---|
| | | Iowa (Continued) | | |
| Stem Canker | 32 | 2.2 | 1.2 | 0.8 |
| Downy Mildew | 21 | 2.5 | 2.5 | 1.3 |
| Bud Blight | 6 | 2.5 | 1.0 | 0.2 |
| Wildfire | 3 | 2.0 | 1.0 | 0.6 |
| Yellow Mosaic | 3 | trace | | |
| | | Indiana, July 28-31 | | |
| Brown Spot | 64 | 2.7 | 1.2 | 2.1 |
| Downy Mildew | 57 | 3.0 | 2.4 | 4.1 |
| Bacterial Pustule | 54 | 3.6 | 1.7 | 3.3 |
| Bacterial Blight | 44 | 2.5 | 1.4 | 1.6 |
| Phytophthora Rot | 11 | 2.9 | 1.6 | 0.5 |
| Bud Blight | 10 | 3.9 | 1.6 | 0.6 |

REGIONAL DISEASE REACTION TEST - 1964

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

*Susceptible check variety.
**Resistant check variety.
[1]a = artificial inoculation.

## WEATHER CONDITIONS AND GENERAL GROWTH RESPONSES AT MOST OF THE NURSERY LOCATIONS DURING THE 1964 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 1964 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.

Guelph, Ontario, Canada. Moisture conditions were good throughout the summer with above normal precipitation in August. August photosynthesis was reduced below normal due to two to three weeks of cloudy weather. Probably the early frost slightly reduced yields of later varieties.

Soil Type: Guelph loam.
Fertilizer Application: None.
Soil Analysis: pH, 7.3; OM, 3%; N, M; P, H; K, H-; Ca, H-; Mg, M.

Ridgetown, Ontario, Canada. The Uniform Tests were planted on May 25. Emergence was very good. Sevin was sprayed to prevent damage that might have been caused by the Clover Worm. Rainfall and temperature were adequate for good growth.

Soil Type: Brookston clay loam.
Fertilizer Application: 1500 lbs./A. 3-11-11.

Harrow, Ontario, Canada. Moisture conditions were good at the time of seeding. Emergence was rapid and uniform stands were established. Growth was slow during the early part of the growing season but improved during mid-summer. A wet spell in late August, with below average temperatures, delayed ripening. May through September precipitation was 14.3 inches compared to the long-term average of 12.6 inches. Temperatures were above average in May and July but below average in June, August, and September.

Soil Type: Brady sandy loam.
Fertilizer Application: 500 lbs./A. 5-10-15.

Freehold, New Jersey. The growing season was unusually dry in May, June, and August with July rain two inches above normal and September, normal. June and July temperatures were normal but August and September were three degrees below normal. One inch of irrigation water was applied to the research area on June 4 when it was obviously needed to promote seedling emergence. The stand in all plots was satisfactory but a variation of about one week in plant age was evident in many plots. Harvest conditions were excellent.

Soil Type: Sassafras sandy loam.
Fertilizer Application: 200 lbs. 0-20-20 one week before planting.
Soil Analysis: pH, 6.4; P, 15; K, 70; Mg, 75.

Newark, Delaware. When the 1964 climatological data is considered, it is surprising that growth of soybeans at this station was as near normal as it was. While temperatures were near normal throughout the summer months, only in July was near normal rainfall obtained. Rainfall during May and June was greater than three

inches below the normals in both months. Drouth was most severe during late August and early September when rainfall was limited and soil moisture was deficient. The early killing frost of October 12 had little if any effect on the later maturing Group IV lines.

Soil Type: Matapeake silt loam.
Fertilizer Application: 0-40-40.
Soil Analysis: pH, 6.3; OM, 3.0%; P, 187 lbs./A.(High); K, 209 lbs./A. (High); Mg, 422 lbs/A. (High+).

Georgetown, Delaware. Vegetative growth was near normal in 1964, but drouth in August and September had an adverse effect on seed size and hastened maturities of both the Group III and Group IV lines. Three irrigations of two inches each (three weeks following planting, before blooming, and after blooming) plus natural rainfall was insufficient to give optimum yields. Rainfall during the summer months was about twelve inches below the normal expected for this station. Temperatures were near normal. A rigorous spray schedule to control insects was maintained. The poor seed appearance evidenced in many of the lines was attributed to a heavy rain and high humidity period of three to five days which occurred about two weeks prior to harvest.

Soil Type: Norfolk sandy loam.
Fertilizer Application: 0-45-90.
Soil Analysis: pH, 6.1; OM, 1.5%; P, 432 lbs./A. (High+); K, 213 lbs./A. (High); Mg, 307 lbs./A. (High).

Upper Marlboro, Maryland. 1964 was a drouthy year; however, at this location, rainfall was intermittant and the soybean plants did not show visible signs of drouth. In fact, plants showed excellent growth. April through September rainfall was 3.82, 0.83, 2.59, 3.40, 1.75, and 5.16 respectively. This may be contrasted to the 1931-1962 average for the same six months as follows: 3.64, 3.75, 3.74, 4.30, 4.53, and 3.28. The killing frost on October 11 occurs with a probability of about 10 percent.

Fertilizer Application: 200 lbs./A. 4-8-12; 1 1/4 Tons of lime.
Soil Analysis: pH, 5.0; $P_2O_5$, 105 (M); $K_2O$, 144 (M); $M_gO$, 129 (M).

Hoytville, Wooster, and Columbus, Ohio. Unfavorable weather during April retarded spring field work and planting of soybeans was somewhat delayed. By late June, soybean growth was retarded by lack of moisture. Thundershower activity occurred during mid-July; however, continued below-normal rainfall during August and September further reduced yields. Soybean harvest was completed under very favorable conditions.

Hoytville--Soil Type: Hoytville clay.
Fertilizer Application: None.
Soil Analysis: pH, 6.1; OM, 3%; P, 32 lbs./A.; K, 294 lbs./A.; Mg, 740 lbs./A.; Mn, Trace; B, 1.25 lbs./A.

Wooster--Soil Type: Wooster silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 7.1; OM, 2%; P, 82 lbs./A.; K, 156 lbs./A.; Mg, 360 lbs./A.; Mn, 87 lbs./A.; B, 0.50 lbs./A.

Columbus--Soil Type: Miami-Brookston silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.2; OM, 3%; P, 82 lbs./A.; K, 222 lbs./A.; Mg, 480 lbs./A.; Mn, 32 lbs./A.; B, 1.0 lbs./A.

Bath, Michigan. Planting was timely on May 22 and frosts the first week of June did no damage, probably due to the plots being irrigated at night. A frost on June 25 did no damage. The first frost to burn the topmost leaves was on August 8. Flambeau had less leaf damage than Acme, but Acme pods were more mature. The severe freeze on September 11 and 12 stopped growth. Sclerotinia was not as evident in the field as last year but showed up in several of the seed lots.

Soil Type: Houghton muck.
Fertilizer Applications: 300 lbs./A. 0-10-20; 20 lbs./A. Mn in $MnSO_4$ broadcast.
Soil Analysis: pH, 6.2; OM, 83.3%; P, 42; K, 132; Ca, 5772; Mg, 600.

East Lansing, Michigan. Planting was timely on May 28 and 29 but dry weather delayed germination. This dryness continued throughout the summer, as evidenced by the shortness of plants. The fall weather delayed maturity. The result was that the freeze October 6-7 caught the Uniform and Preliminary Tests I and II before they reached maturity. Uniform Preliminary Test 00 was grown on an area that apparently needed lime [Soil Analysis (a)], but the other tests were on better soil.

Soil Type: Brookston.
Fertilizer Application: 300 lbs./A. 6-24-12 broadcast +2% Mn.
Soil Analysis: (a) pH, 5.8; OM, 3.2; P, 87; K, 104; Ca, 1976; Mg, 192.
(b) pH, 7.0; OM, 3.6%; P, 53; K, 88; Ca, 2808; Mg, 320.

Dundee, Michigan. Dry weather of several days duration followed planting. There were some showers during the growing season, but in general it was dry. In spite of this, growth was good. The freeze of October 6-7 terminated growth and dry weather allowed the plants to dry out enough to be cut on October 14.

Soil Type: Hoytville.
Fertilizer Application: None.
Soil Analysis: pH, 6.7; OM, 5.1%; P, 42.0; K, 220; Ca, 4472; Mg, 535.

Walkerton, Indiana. Planting on May 22 was 10 to 12 days earlier than usual at this location. The soil was fairly dry and cloddy. Light rain on May 24 helped emergence some. Stands were spotty and emergence delayed in some areas of the plot, accounting for non-uniform maturity between replications in some varieties. The growing season temperatures were somewhat above normal with 40 days of 90° F. or above in the May through September period. May precipitation was only 0.86 inch which is 3.13 inches below normal. Growth-period precipitation totaled 3.52 inches below normal. An above normal 1.61 inches of rain in July was very important in producing slightly above average yields of about 40 bushels per acre for this location. Growth generally was good. There was light bacterial blight, and light to moderate downy mildew and brown spot infection. Since there was little or no rain in early September but frequent showers in the latter part, some varieties appear rather late in comparison with Harosoy 63 which matured ahead of the rains. Harvest was timely and harvest conditions good.

Soil Type: Maumee loam.

Fertilizer Application: None. Soybeans followed well fertilized corn.
Soil Analysis: pH, 6.1; P, 127 lbs./A.; K, 132 lbs./A.

Bluffton, Indiana. Planting was timely on May 21 in a well prepared seedbed. Emergence and growth were good. Although 3% Mn was applied in the fertilizer, Mn deficiency was observed in Uniform Test III, especially in replication 1 and part of replication 2. Growing season temperatures were somewhat above normal with 42 days of 90° F. or above. High late-July and early-August temperatures, along with below normal rainfall in each growing season month for a below season normal of 2.84 inches, produced drouth conditions which reduced Uniform Test II yields about 5 bushels below average for this location. Uniform Test III was about 8 bushels below average. Growth through July was excellent. There was very slight brown spot and bacterial blight and light downy mildew infection. Phytophthora killed some plants of M402 in replication 1. No killing was observed elsewhere. Harvest conditions were excellent.

Soil Type: Nappanee silt loam.
Fertilizer Application: 100 lbs./A. 5-20-20 + 3% Mn.
Soil Analysis: pH, 6.8; P, 178 lbs./A.; K, 200 lbs./A.

Lafayette, Indiana. Planting was very timely on May 19 and 20 in a well prepared seedbed. Emergence was somewhat slow and spotty in some areas. Slow emergence prevented early cultivation and weeds were an early problem. Moderate to heavy hail occurred June 20 and did considerable damage in the plant-row area of the field and in several yield trials, especially in the Lindarin backcross and Harosoy backcross tests. Plant growing points and branches were broken off, leaving the above tests looking very ragged. Recovery was good, with a 41-bushel per acre average for the above tests. Temperatures were only slightly above normal. Precipitation was below normal in each month of the growing season and was 7.38 inches below normal for the season, giving marked drouth effects. Yields, generally, were much better than expected and were near the average for this location. Maturity of Group II and earlier varieties was somewhat ahead of normal. There was little infection from diseases except brown stem rot which was fairly prevalent in Group III and later varieties. Harvest conditions were good to excellent.

Soil Type: Chalmers silty clay loam.
Fertilizer Application: 165 lbs./A. 5-20-20 + 24 lbs./A. $MnSO_4$.
Soil Analysis: pH, 5.8; P, 77 lbs./A.; K, 130 lbs./A.

Greenfield, Indiana. Planting was very timely on May 18 but in soil that was somewhat cloddy. Emergence and stands were fairly good. Temperatures during the growing season were somewhat above normal with 36 days of 90° F. or above. Precipitation was below normal in each growing-season month and 6.25 inches below normal for the season. Growth through July was excellent. There was slight bacterial blight and light to moderate brown spot infection. Phytophthora was fairly severe in replication 1 of Uniform Test II and to some extent in the rest of the plot. The most marked effects were on M402 and A1-1051. There was no observable killing or evidence of depressed growth in Uniform Test III. Average yields for this soil type were low for Uniform Test II and somewhat below average for Uniform Test III. Harvest conditions were excellent and timely.

Soil Type: Brookston-Crosby complex.
Fertilizer Application: 250 lbs./A. 5-20-20.
Soil Analysis: pH, 6.4; P, 136 lbs./A.; K, 138 lbs./A.

Worthington, Indiana. Planting was a little late on May 26 in a well prepared seedbed. Emergence and growth were excellent. These were the best tests ever grown at this location. The average yields of all tests was about 49 bushels per acre. Temperatures were above average, reaching 102° F. on a single day in early August, with 41 days of 90° F. or above during the growing season. Precipitation was 2.52, 2.59, and 2.24 inches below normal in May, August, and September, respectively, and 0.63 and 0.24 inches above normal in June and July. Downy mildew was the only disease of any consequence and rated above 4 on the more susceptible varieties. Early September drouth conditions followed by frequent showers the latter part of the month apparently caused numerous varieties to retain green stems after maturity. Harvest conditions were excellent and timely.

Soil Type: Genesee silt loam.
Fertilizer Applications: 8 Tons manure + 150 lbs./A. 5-20-20.
Soil Analysis: pH, 7.8; P, 352 lbs./A.; K, 194 lbs./A.

Evansville, Indiana. Planting was somewhat early on May 14 in a moderately good seedbed. Emergence and growth through July were very good. August drouth conditions were probably most responsible for reducing average yields at this location by 15 to 20%. Precipitation was about seven inches below normal for May through mid-September. July and August were hot with the temperature reaching 102° F. on a single day in early August. There were 62 days with 90° F. or above in the growing season. Downy mildew was fairly severe and rated 4 or above on susceptible varieties. Phytophthora was evident, with killed plants in spotted areas throughout the plot. There was considerable lodging observed July 30, but this was about average at harvest. Harvest conditions were good and timely.

Soil Type: Montgomery silty clay loam.
Fertilizer Application: 200 lbs./A. liquid 5-15-8. Sprayed with 10 lbs./A. $MnSO_4$.
Soil Analysis: pH, 6.1; P, 530 lbs./A.; K, 177 lbs./A.

Ashland, Wisconsin. Plant growth in the soybean nursery was very variable this year. In some cases, within a 20-foot row, one variety of soybeans would range in height from 16-32 inches, or from 18-33 inches. In part, this variability was due to abnormal weather conditions during the growing season. We received twice the normal rainfall in April and May and about one-third the normal rainfall for June and July. This latter period gave us just under three inches of rain for a ten-week period. August had above normal rainfall and September had twice the normal rainfall. The growing season's temperatures were nearly normal except for August which averaged 3.6° F. below normal.

Soil Type: Ontonagon silty clay loam.
Fertilizer Application: 300 0-20-20.
Soil Analysis: pH, 6.1; OM, 24; P, 100; K, 330.

Spooner, Wisconsin. The temperatures in May were 4.1 degrees above normal and the average rainfall was 2.4 inches above normal, which created ideal planting conditions in this type of sandy soil. Temperatures were normal in June but rainfall was 2.4 inches below normal. However, no damage was visible by these drouth conditions. July was hot and dry, temperatures were 1.7 degrees above normal and rainfall was one inch below normal, almost half of the total rainfall for the month occurring the 24th. The nursery was irrigated July 10. Rainfall in August was about normal, 4.21 inches, with very good distribution. Temperatures averaged 3.5

degrees below normal. Temperatures in September were 2.2 degrees below normal but rainfall was 1.79 inches above normal. The first 14 days were cloudy and rainy and maturity of beans advanced very slowly. A killing frost of 24 degrees occurred on the 15th. Only the earliest varieties had begun turning color at this time.

Fertilizer Application: 200 lbs. 5-10-30.
Soil Analysis: pH, 6.9; OM, 22; P, 160; K, 160.

Madison, Wisconsin. The soybean nursery was planted May 19. Temperatures during the period May through August averaged about three degrees above normal, whereas September and October temperatures were below normal. During the period, April through September, the rainfall was two inches below normal. The plots suffered from drouth during the period, June 23 to July 26, and again during the first three weeks of August. Growth during the entire season was poor, plant height being from one-half to two-thirds of normal. Part of this appeared to be due to residual herbicide effects and part due to low fertility and lack of moisture. Early varieties suffered more than late varieties. Late varieties benefited from 1.78 inches of rain on August 20.

Soil Type: Miami silt loam.
Fertilizer Application: 200 0-20-20.
Soil Analysis: pH, 7.5; OM, 24; P, 100; K, 125.

Shabbona, Illinois. Planting was on May 18 in a rough but moist seedbed which dried rapidly, giving rather uneven stands. Growth was good, with lodging starting in early August. Insect damage was negligible. There was a light epiphytotic of downy mildew, Phyllosticta, and stem canker. Bacterial blight was severe in places in the field.

Soil Type: Flanagan silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.9; $P_1$, 12; $P_2$, 125; K, 276.

Dwight, Illinois. Planting was delayed until June 16, due to very dry weather. The seedbed was rough with limited moisture, but adequate stands were obtained. Moisture was inadequate the first six weeks but adequate in August. There was very good lodging differential among strains and very good yields for a late planting date. Susceptible strains had moderate bacterial pustule, downy mildew, and bacterial blight. Frost the first week in October may have affected yield of some of the late strains.

Fertilizer Application: 1 1/2 Tons of manure/A.
Soil Analysis: pH, 6.7; $P_1$, 45; $P_2$, 115; Flame K, 312.

Urbana, Illinois. Planting was on May 11 in an excellent, moist seedbed and emergence and stands were good. The available moisture was critically short most of the season, causing a reduction in seed production. There was a light epiphytotic of downy mildew, and stem canker was severe in the area of Preliminary Tests II and III but slight to moderate in the Uniform Test area.

Soil Type: Drummer silty clay loam and Flanagan silt loam.
Fertilizer Application: None.
Soil Analysis: pH, 5.9; $P_1$, 58; $P_2$, 111; Flame K, 320.

Girard, Illinois. Planting was on May 21 in a moist, well prepared seedbed. Moisture was adequate through June. July and August were very dry. Plants were standing unusually well for this location. There was slight to severe bacterial pustule, slight to moderate bacterial blight, and a general epiphytotic of downy mildew. In late August, severe brown stem rot was found in almost all plants examined. Rain started at the time Group II matured and continued for three weeks so that harvesting was delayed and some of the Groups II and III strains shattered.

Fertilizer Applications: 150 lbs. 82% anhydrous, 120 lbs. 4670 Triple super phosphate, and 120 lbs. 60% potash.
Soil Analysis: pH, 6.7; $P_1$, 31; $P_2$, 104; Flame K, 220.

Edgewood, Illinois. Planting was on June 2 in an excellent, moist seedbed and emergence was very good. Downy mildew was slight but general. Bacterial pustule was slight to severe and there was slight to moderate bacterial blight and brown spot. Harvest conditions were very good.

Fertilizer Application: 115 lbs. 60% potash.
Soil Analysis: pH, 6.4; $P_1$, 12; $P_2$, 120; Flame K, 128.

Eldorado, Illinois. Planting was on June 4, somewhat late due to lack of soil moisture. A good seedbed with moisture one inch from the surface produced good stands. Late July and August were very dry, causing reduction in yields of the earlier maturing varieties. Downy mildew, bacterial blight, and bacterial pustule occurred with severities ranging up to slight, severe, and moderate, respectively. A slight to severe leaf "puckering" that resembled soybean mosaic occurred generally over the field. Frost may have lowered yields of the late Group IV varieties.

Fertilizer Application: 300 lbs./A. of 10-12-12.
Soil Analysis: pH, 6.7; $P_1$, 31; $P_2$, 130+; Flame K, 240.

Carbondale, Illinois. Planting was made during the latter part of May and emergence was fair, due to a rain shortly after planting which caused soil crusting. During the early part of the growing season, growth was about normal, but the lack of sufficient rain during August prevented maximum growth and resulted in a reduction in yield. Seed quality was fair.

Soil Type: Stoy silt loam.
Fertilizer Application: 300 lbs./A. 0-20-20.
Soil Analysis: pH, 6.4.

Miller City, Illinois. Planting was on May 15 in an excellent, moist seedbed and emergence and stands were very good. Adequate moisture and the high fertility level of this location contributed to rank growth and very good yields. The only disease noted was a light epiphytotic of downy mildew. An early frost damaged the Groups V and VI varieties.

Soil Type: Riley fine sandy loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.3; $P_1$, 97; $P_2$, 130+; Flame K, 360.

Crookston, Minnesota. Drouth very definitely reduced plant yields this year. The Group 00 test matured satisfactorily and relative yields should be meaningful. The Group 0 test was hit by a mid-September frost; hence, the test was discarded.

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

Morris, Minnesota. This was a fair to good year but a little more moisture in August was needed. Yield comparisons should be valid. Bacterial blight infection was prevalent early in the season, associated with the cool wet weather. M417 was severely hit with blight early in the season and it could have been a factor in its poor performance in this test. Also, there was a fairly hard frost September 15 which may have hurt M417.

Soil Type: Baines silt loam.
Fertilizer Application: None.

St. Paul, Minnesota. Drouth was a major factor affecting yields. Group 0 was affected the most and, therefore, discarded. Group 00 was early enough to fill pods before the drouth stress became too great, and Group I was late enough to benefit from the late August rains. Although there may be some drouth-variety interaction, especially in Group I, the relative yields are fairly reliable.

Soil Type: Waukegan silt loam.
Fertilizer Application: Manure.

Lamberton, Minnesota. Moisture stress reduced yields somewhat, but yields should be reliable.

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

Waseca, Minnesota. This was a normal to good year, although yields might have been higher with a little more timely moisture. The data should be reliable.

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

Cresco, Iowa. This nursery is located in northeast Iowa on Cresco loam 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 3.8 inches above normal, and temperatures departed 1.1° above normal for the growing season. In spite of the above normal precipitation, growth response and yields averaged very near normal. Below normal July rains and near normal rains in August and September helped to make this possible. Light frost injured a few later-maturing strains. This nursery was considered good for making strain comparisons.

Soil Type: Cresco loam.
Fertilizer Application: 46 lbs. K/A.
Soil Analysis: pH, 6.8, OM, Medium; N, 86 lbs./A.; P, 21 lbs./A.; K, 145 lbs./A.
Soybean Yields (Long-time Average): 23 bu./A.

Sutherland, Iowa. This nursery represents the northwest section of Iowa with Primghar silty clay loam soil, medium high in productivity, and generally slightly undulating in topography. The nursery was planted May 20. Stands were excellent and plots were kept weed-free. Precipitation was slightly below normal for May,

June, and August and above normal for July and September, which gave a season's average of 4.8 inches above normal. Temperatures for May through September averaged near normal with May and August departing greatest with + 4.0° and -3.9° F, respectively. Frost occurred later than normal after all strains were mature. Growth response and yields were below average. Disease was of little consequence throughout the season. This nursery was considered good for making strain comparisons.

Soil Type: Primghar silty clay loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.8; OM, Medium to high; N, 126 lbs./A.; P, 18 lbs./A.; K, 220 lbs./A.
Soybean Yields (Long-time Average): 38.0 bu./A.

Kanawha, Iowa. This nursery is located in north-central Iowa on level, productive Webster silty clay loam. Planting was completed on May 18 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 in the nursery. During the growing season temperatures averaged near normal with most of the cool temperatures occurring in August and September. Although precipitation was deficient in May and June, all other months were above normal with September 5.1 inches above. The overall average from May through September was 1.8 inches above normal. These conditions permitted slightly above average growth and 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 silty clay loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.6; OM, High; N, 152 lbs./A.; P, 38 lbs./A.; K, 209 lbs./A.
Soybean Yields (Long-time Average): 33.0 bu./A.

Independence, Iowa. This nursery is located in northeast central Iowa on well drained Kenyon loam, medium in productivity. Planting was completed on May 22. Stands were good and plots were kept weed-free. Temperatures averaged 2.8° F. above normal. Precipitation was a little below normal most growing months and departed -1.1 inches below normal for May through September. Growth, yield, and general response was considerably below normal. Strains, except very late ones, were not injured due to frost. This nursery was considered good for making strain comparisons.

Soil Type: Kenyon loam.
Fertilizer Application: 40 lbs. K/A.
Soil Analysis: pH, 6.9; OM, Medium; N, 86 lbs./A.; P, 21 lbs./A.; K, 145 lbs./A.
Soybean Yields (Long-time Average): 33.0 bu./A.

Ames, Iowa. This nursery is centrally located on level, productive Nicollet loam. Planting was completed on May 15 with subsequent stands excellent. Temperatures averaged near normal for the growing season from May through September with May and August departing greatest with +5.3 and -4.4° F., respectively. Precipitation for May through September was 2.3 inches above normal. June and July had the greatest departures above normal. Growth, yield, and general response was a little below normal. There was a low incidence of diseases other than brown stem rot, which occurred rather uniformly heavy. Later strains were more severely affected than

early ones. Later than normal frost permitted all strains to mature. Strain comparisons are believed to be good.

Soil Type: Nicollet loam.
Fertilizer Application: 3 Tons/A. lime.
Soil Analysis: pH, 6.5; OM, Medium to high; N, 110 lbs./A.; P, 41.6 lbs./A.; K, 177 lbs./A.
Soybean Yields (Long-time Average): 38.0 bu./A.

Ottumwa, Iowa. This nursery is in southeastern Iowa on flat, very productive Haig silty clay loam. The nursery was planted May 16. Transplanting was made for satisfactory stands and weeds were controlled. Temperatures averaged near normal with May +5.1 and August -3.7° F. Precipitation averaged below normal for May through September (-2.0 inches) with the greatest departures occurring in May (-1.5) and June (+1.3). Growth and yield response were normal because deficits were not severe in any month. Seed quality was very poor and more pronounced in later strains--mostly bleeding of hila and defective seed coats--believed to be due to some peculiar environmental condition. This caused a loss in yield estimated at 10 to 20%. Lodging was light, which is not normal. Killing frost occurred October 9 (normal October 10). Strain comparisons are believed to be good.

Soil Type: Haig silty clay loam.
Fertilizer Application: None.
Soil Analysis: pH, 6.8; OM, Medium to high; N, 102 lbs./A.; P, 52 lbs./A.; K, 232 lbs./A.
Soybean Yields (Long-time Average): 40.0 bu./A.

Portageville, Missouri. Above normal temperatures and adequate soil moisture at planting (May 18-19) resulted in rapid germination and excellent stands. Rainfall during May and June was well below normal and all plots were furrow-irrigated on June 27. Above normal precipitation fell during July and September, delaying maturity and harvesting of Group IV material. October was extremely dry, with only traces of rain falling on three days. Temperatures averaged 2.5 to 3 degrees above normal during May and June but was well below normal over the balance of the season. Departures from normal were -2.6 degrees in August, -2.0 degrees in September, and -3.9 degrees in October.

Soil Type: Salix silt loam.
Fertilizer Application: 50-50-50 per acre.
Soil Analysis: pH, 5.0; OM, 1.3; P, 212 (High); K, 220 (Medium); ca, 2500 (Medium); Mg, 300 (High).

Winnipeg, Manitoba, Canada. Temperatures were 2.3°, 4.3°, and 3.3° F. below normal in June, August, and September, respectively. Precipitation was below normal in May, July, and September, but above normal in June. The tests were seeded on May 21. The preceding crop was barley. Spring cultivation resulted in a dry seedbed. Therefore, approximately one inch of water was applied on May 28 to facilitate uniform emergence. Emergence and early growth was very uniform. A hail storm occurred on August 2 and resulted in moderate hail damage. The first killing frost occurred on September 14. The relatively poor performance of late maturing varieties probably was due to relatively low temperatures during the growing season, which tended to delay maturity, and to frost damage which occurred on September 14.

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

Brandon, Manitoba, Canada. There was ample moisture at the time of seeding, and emergence was good. There was a four-week dry, windy period following the date of seeding which retarded plants during the early part of their development. Rainfall was satisfactory, both in amount and distribution, from June 8 to harvest time. The season was much cooler than average. An early frost occurred on August 12 (32° F.), and cool wet weather from mid-August until harvest prevented good maturation of seed. Plants appeared to develop well throughout the season and there were no insect problems. Disease was less than normal but plants remained in vegetative development too long and reproductive development was thereby restricted.

Soil Type: Fine textured Assiniboine clay loam on alluvium.
Fertilizer Application: None.

Morden, Manitoba, Canada. The Uniform and Preliminary 00 Tests were grown on land seeded to flax in 1963. The soil was rather lumpy and dry at seeding time, resulting in slow and uneven emergence. The very cool temperatures during May and June also contributed to slow growth. By mid-June the rains came, followed by warm humid conditions till the end of July. Soybeans grew very rapidly, resulting in healthy tall plants. All of August and September were considerably below normal in temperature, resulting in immature plants being caught by frost on September 14. Yields were therefore much below that of 1963. Bacterial blight was present in fair amounts on all varieties.

Soil Type: Morden heavy clay loam.
Fertilizer Application: None.

Fargo, North Dakota. Temperatures were above average during May, June, and July and were below average during August and September. Precipitation was below average during May, resulting in a dry seedbed. The plots were artificially watered during the last week of May. This amounted to about one inch of rainfall and resulted in plant emergence. Precipitation was above average during June, below average during July, and near average for September. Delayed emergence and adverse weather conditions had a detrimental effect on seed yield. A killing frost occurred September 14.

Soil Type: Fargo clay.
Fertilizer Application: None.

Casselton, North Dakota. The strains in Uniform Test 0 were planted May 13, 1964. This test was abandoned on June 15 due to very uneven emergence. Some plants were five to six inches high while many others were just emerging, primarily because of uneven soil moisture conditions.

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

Eureka, South Dakota. The 1964 season was poor for soybeans at Eureka. The soil moisture at planting was good, giving rapid emergence and good stands, but rainfall was less than 50 percent of normal from early July through mid-September. The

month of August was very cool with temperatures averaging well below normal (-4.4° F.) and with a light frost on August 13. Seed yields were low with considerable immaturity resulting in shrunken beans at time of harvest. Strain comparisons are questionable due to the immaturity at killing frost on September 11 and due to drouthy conditions during the period from flowering to maturity.

Soil Type: Williams loam.
Fertilizer Application: None.

Watertown, South Dakota. The 1964 season was poor for soybeans at Watertown. Soil moisture at planting was sufficient to allow rapid emergence and good stands, but insufficient to support normal development until the first appreciable rainfall nearly a month after planting. The mean temperature was well below normal during July and August (-4.4° F.) resulting in very slow development from flowering to maturity. Strain comparisons are questionable, especially for Group I beans, due to immaturity at killing frost on September 11.

Soil Type: Kranzburg silt loam.
Fertilizer Application: 60-40-0.

Brookings, South Dakota. The 1964 season was about average for rainfall at Brookings, but temperatures were well below normal during the month of August (-5.0° F.), causing delayed maturity and some reduction in yield. Strain comparisons should be good, and the killing frost on September 27 caused no damage to nearly mature beans.

Soil Type: Vienna loam.
Fertilizer Application: 32-40-0.

Centerville, South Dakota. The 1964 season was about average for rainfall and temperature at Centerville except for cool weather through the month of August (5.1° F. below normal) which caused some reduction in seed set and some delay in maturity, with a slight reduction in yield. Strain comparisons should be good, and the killing frost on September 27 caused no damage as the beans were essentially mature by that time.

Soil Type: Poinsett sandy loam.
Fertilizer Application: 32-40-0.

Mound Valley, Kansas. During the early part of the growing season, soil moisture was adequate to obtain good stands and early growth. High temperatures and limited rainfall between July 15 and August 15 restricted plant growth to some extent. Date of maturity was difficult to establish. All selections appeared to mature at the same time because of the extremely dry weather during September and October. Plants ceased growth rather than maturing naturally.

Soil Type: Parsons silty clay loam.
Fertilizer Application: 0-30-30.
Soil Analysis: pH, 5.8; OM, 1.6; P, 21; K, 142.

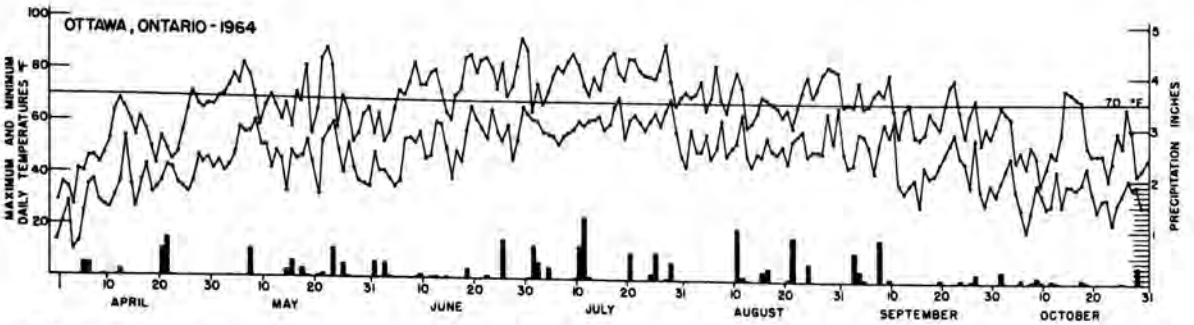
Grand Junction, Colorado. From the standpoint of temperature and other climatic factors, the season seemed to be about average. Nodule formation, a problem in past years, was quite adequate. Insect or disease problems were not encountered during the season. Irrigations were applied on the following dates: May 24,

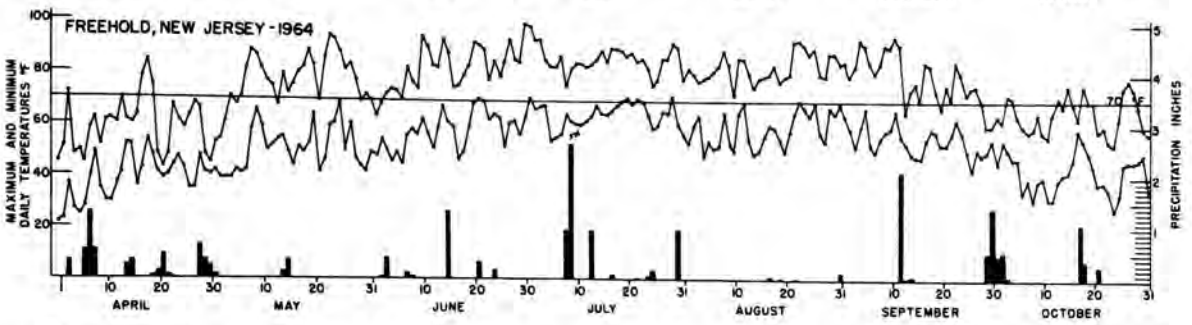
June 2 and 30, July 22, and August 15. The explanation for the low yields obtained from this test is unknown.

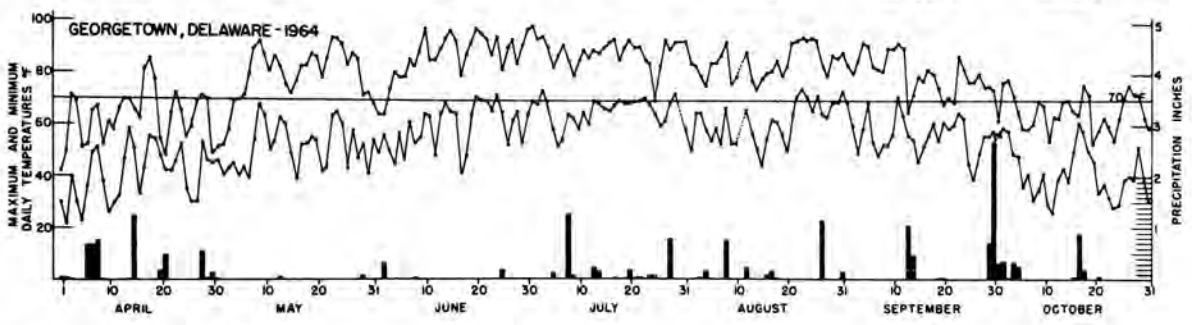
Soil Type: Hinman clay loam.
Fertilizer Application: 85 lbs. $P_2O_5$/A.

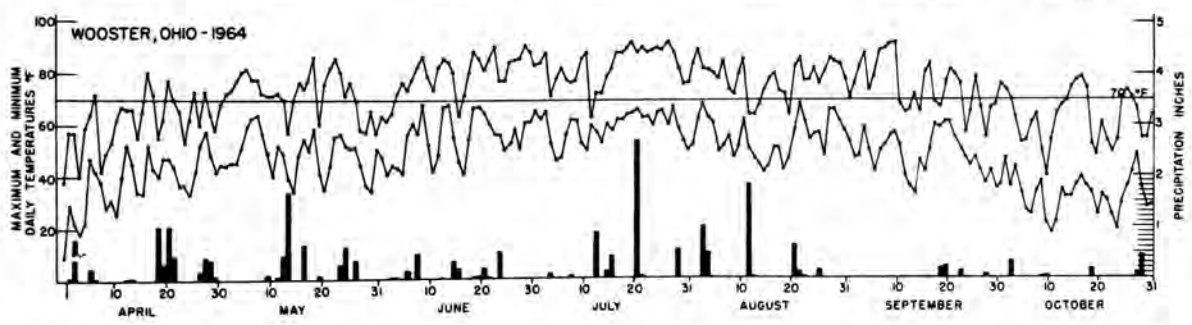
Ontario, Oregon. Planting on May 9 to 13 was timely, emergence was rapid, and stands excellent. A cloudburst on May 27 stripped the small plants of most of the foliage and was followed by an extremely cool, wet period that extended through most of June. Every month in the growing season except July averaged two to three degrees below normal in temperature. July was just normal. A second cloudburst on July 29, accompanied by high winds, flattened all area crops including the entire soybean nursery. Some lines recovered to a degree. The nursery was irrigated seven times, each sufficient to saturate the top two feet of soil (approximately 4" per irrigation). Irrigation dates were June 26, July 3, 11, and 22, and August 3, 14, and 25. Mites were present late in the season and some Sclerotinia was observed at harvest. The nursery was considered poor for making strain comparisons.

Soil Type: Owyhee silt loam.
Fertilizer Application: Approximately 80 lbs./A. $P_2O_5$.
Soil Analysis: pH, 7.4.


OTTAWA, ONTARIO - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


FREEHOLD, NEW JERSEY - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


GEORGETOWN, DELAWARE - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


WOOSTER, OHIO - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
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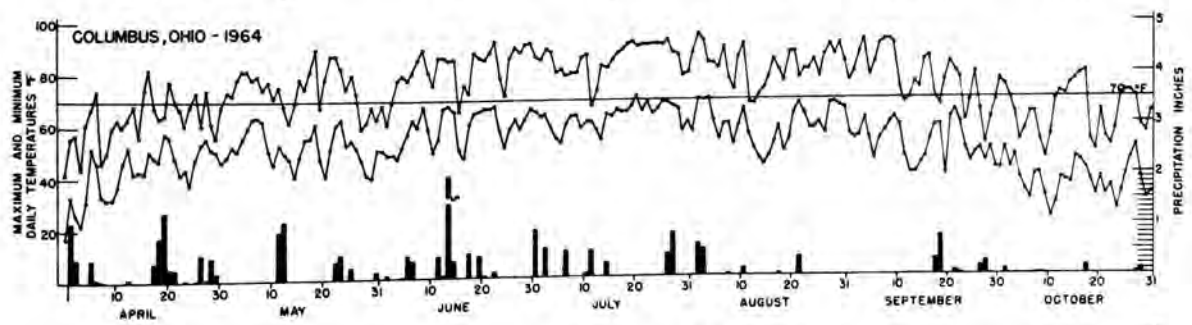
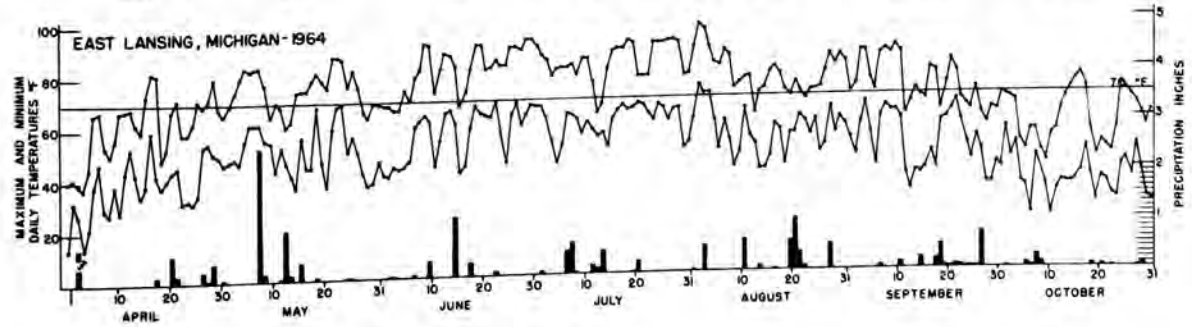
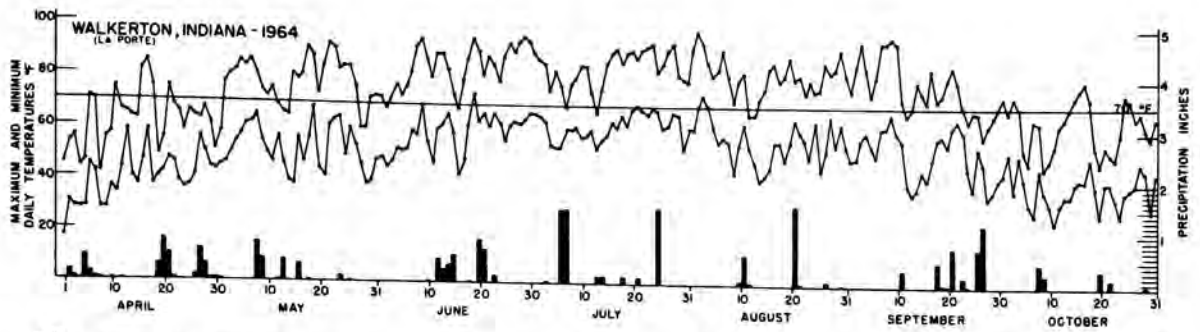
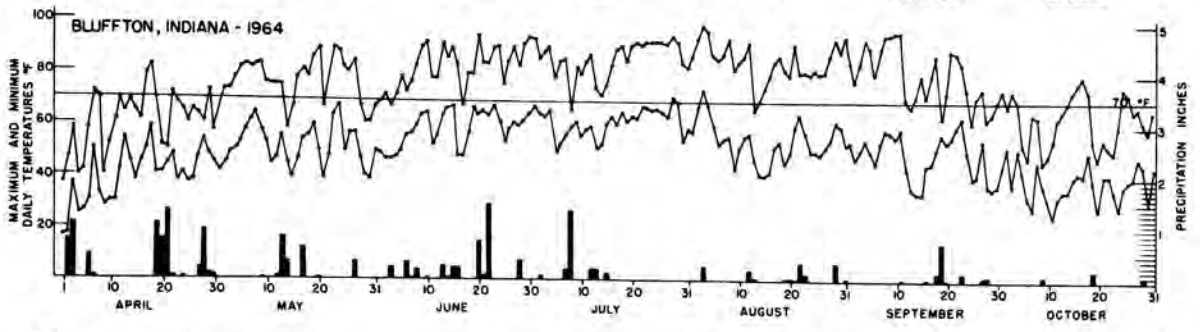
JULY
AUGUST
SEPTEMBER
OCTOBER


COLUMBUS, OHIO - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


EAST LANSING, MICHIGAN - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


WALKERTON, INDIANA - 1964
(LA PORTE)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER


BLUFFTON, INDIANA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
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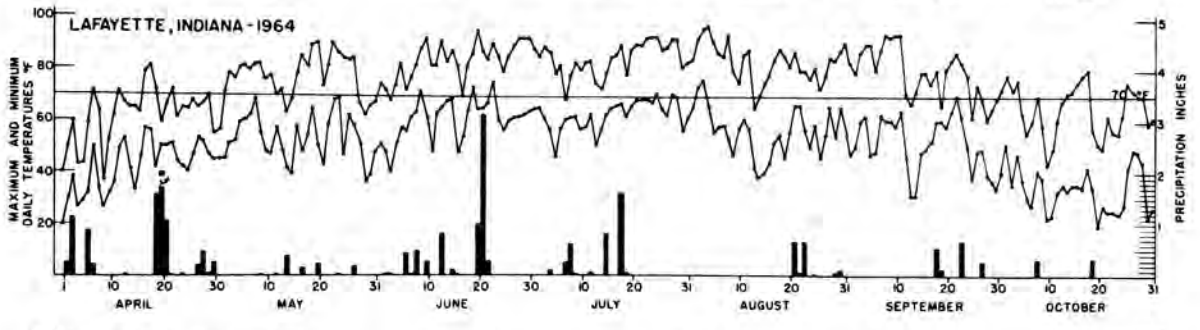
SEPTEMBER
OCTOBER


LAFAYETTE, INDIANA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
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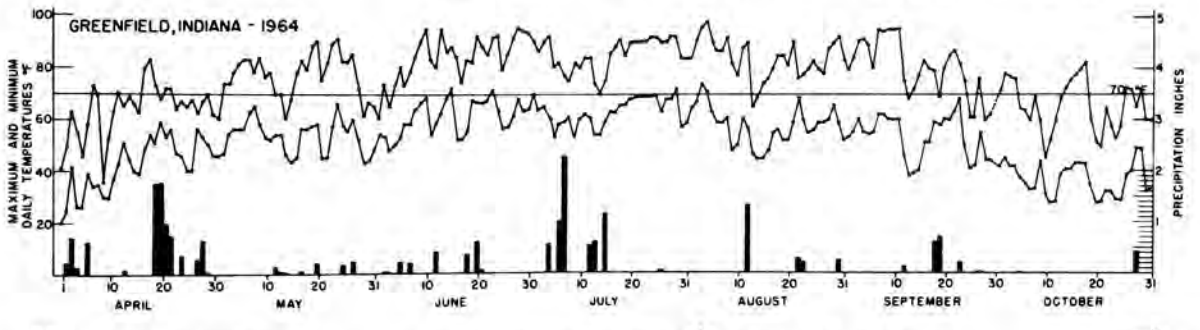
SEPTEMBER
OCTOBER


GREENFIELD, INDIANA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
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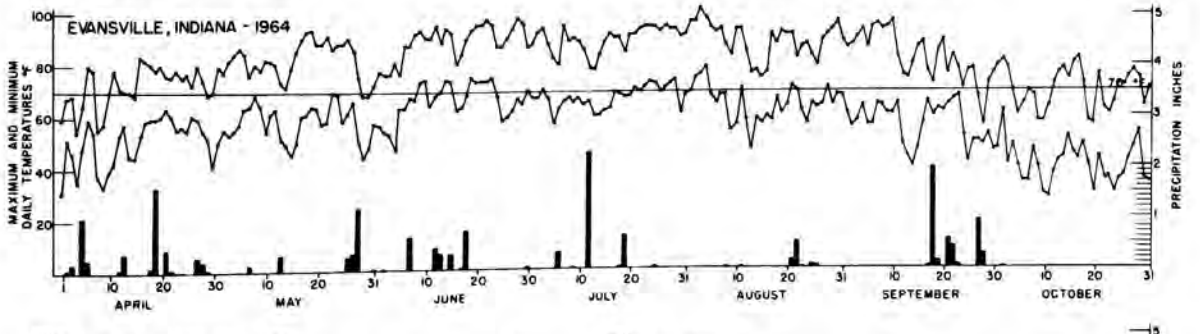
SEPTEMBER
OCTOBER


EVANSVILLE, INDIANA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
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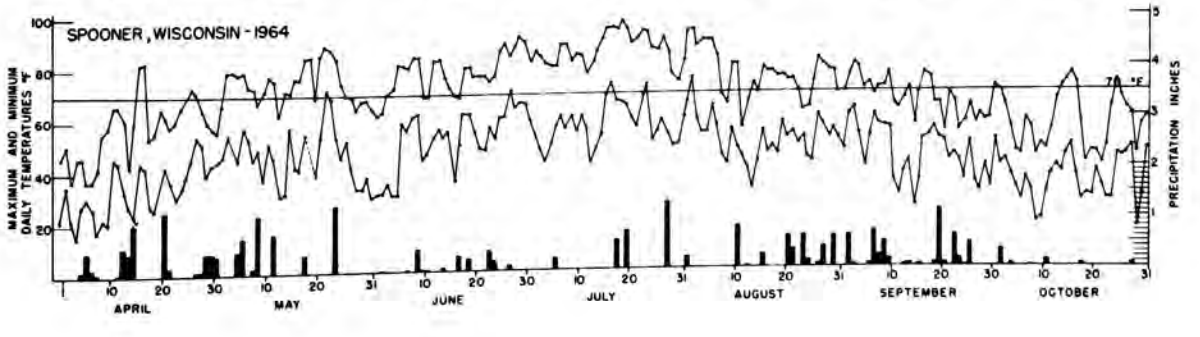
SPOONER, WISCONSIN - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
JUNE
JULY
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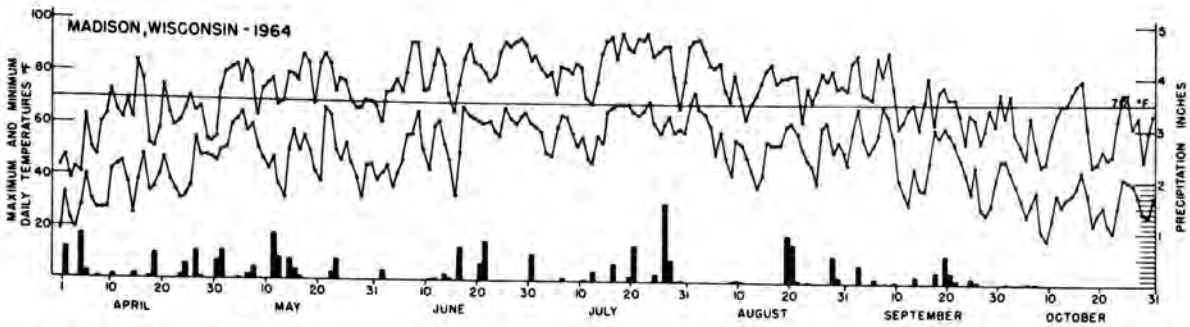
SEPTEMBER
OCTOBER


MADISON, WISCONSIN - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
MAY
JUNE
JULY
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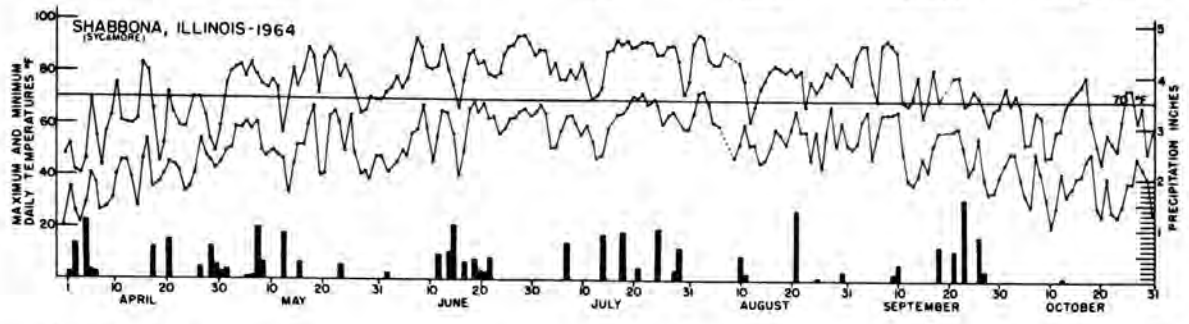
SEPTEMBER
OCTOBER


SHABBONA, ILLINOIS - 1964
(SYCAMORE)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
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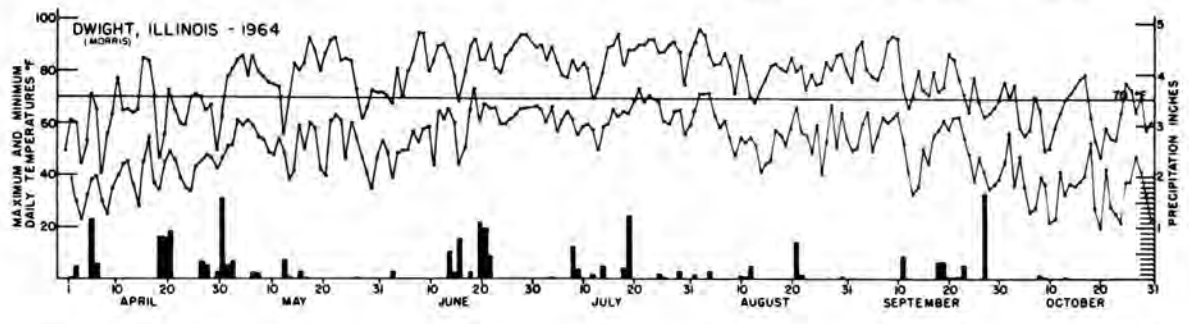
SEPTEMBER
OCTOBER


DWIGHT, ILLINOIS - 1964
(MORRIS)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
MAY
JUNE
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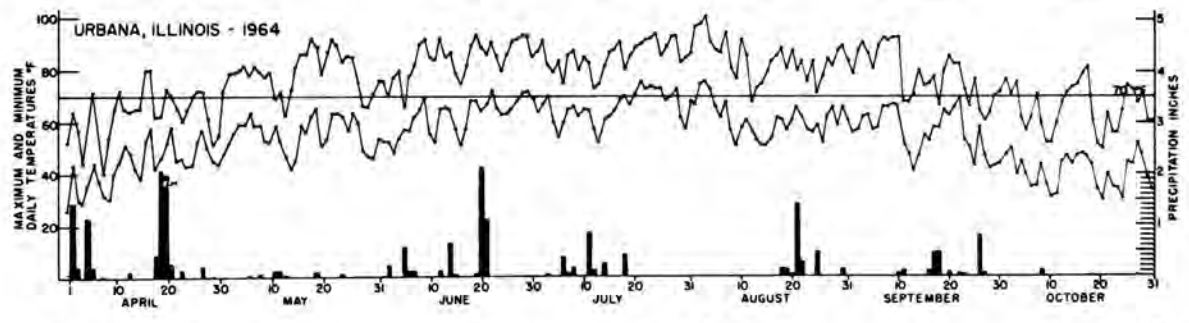
SEPTEMBER
OCTOBER


URBANA, ILLINOIS - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
MAY
JUNE
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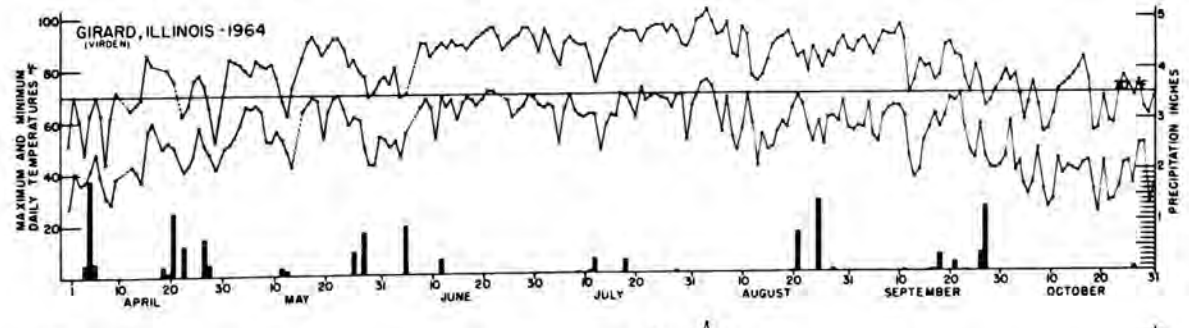
SEPTEMBER
OCTOBER


GIRARD, ILLINOIS - 1964
(VIRDEN)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
MAY
JUNE
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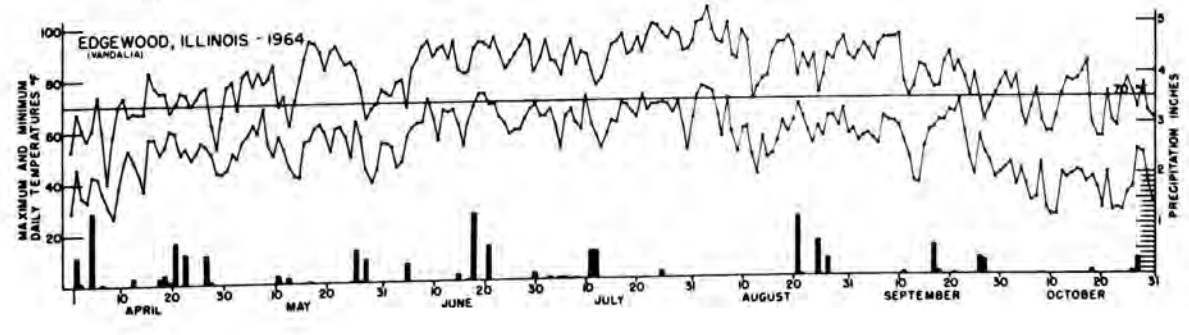
SEPTEMBER
OCTOBER


EDGEWOOD, ILLINOIS - 1964
(VANDALIA)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
APRIL
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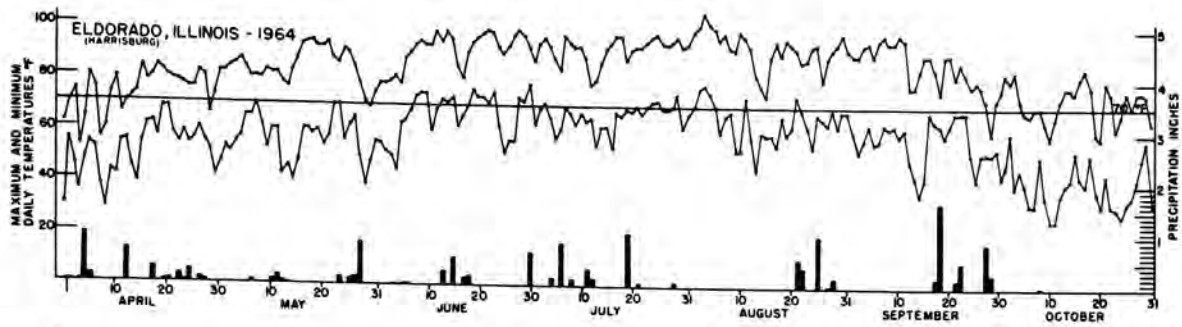
SEPTEMBER
OCTOBER


ELDORADO, ILLINOIS - 1964
(HARRISBURG)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
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SEPTEMBER
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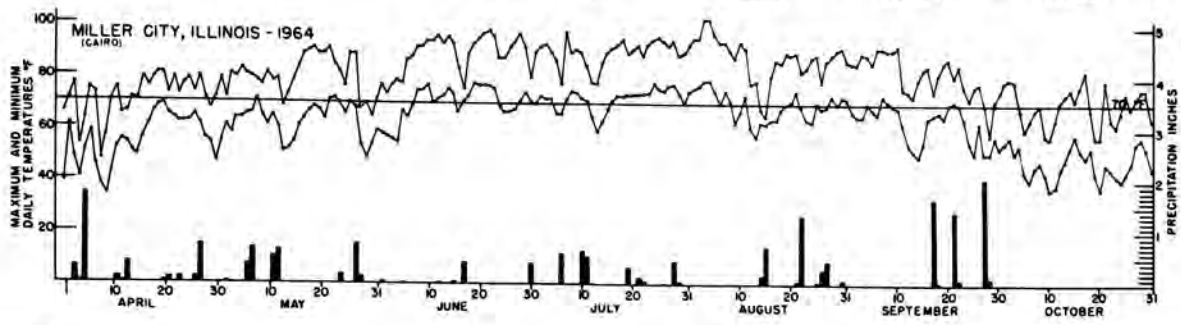
MILLER CITY, ILLINOIS - 1964
(CAIRO)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
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JUNE
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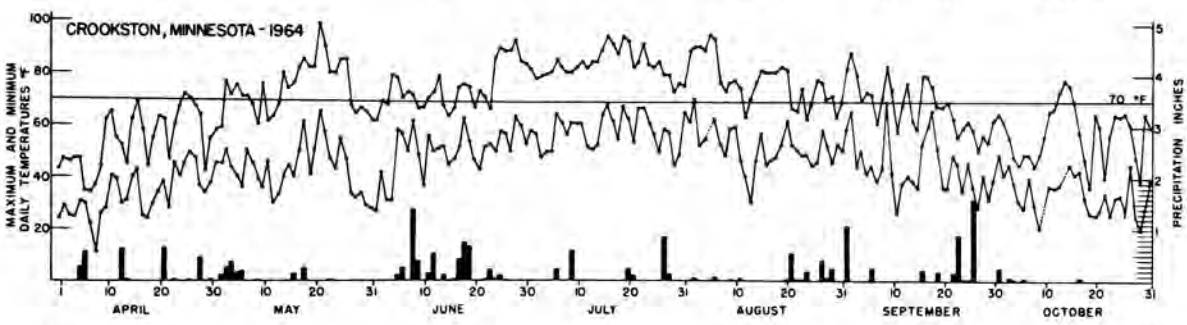
AUGUST
SEPTEMBER
OCTOBER


CROOKSTON, MINNESOTA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
MAY
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AUGUST
SEPTEMBER
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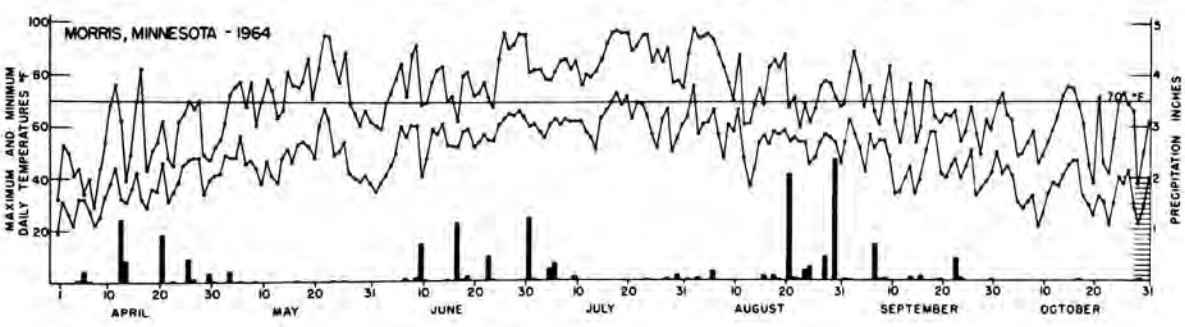
MORRIS, MINNESOTA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
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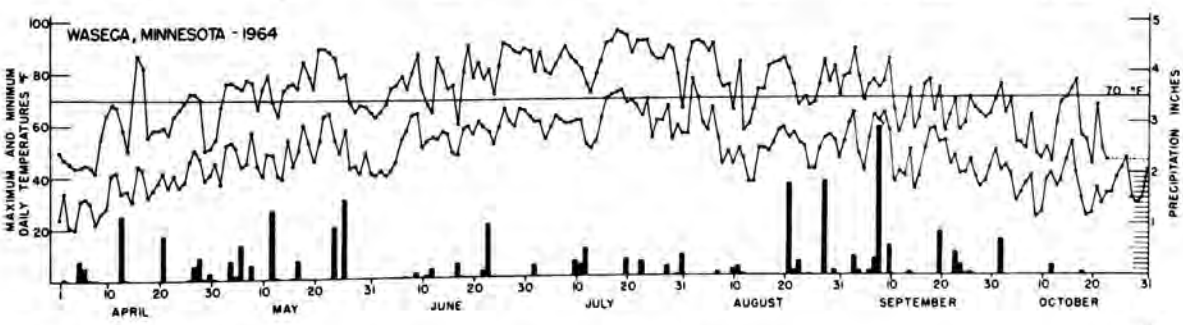
OCTOBER


WASECA, MINNESOTA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
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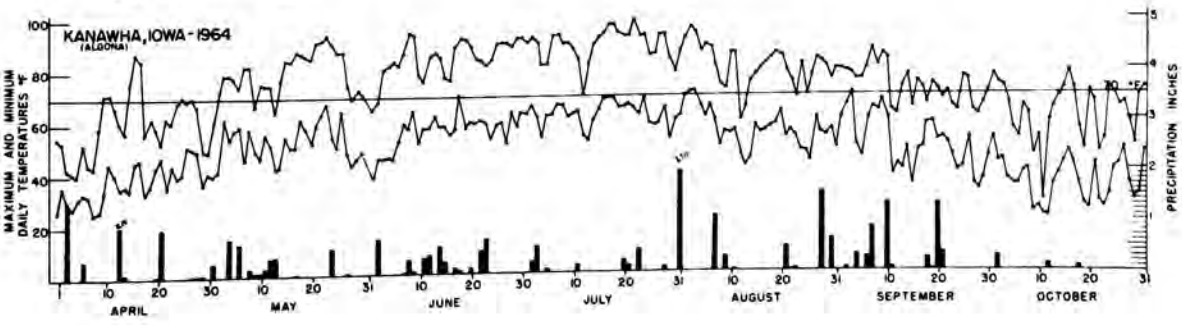
SEPTEMBER
OCTOBER


KANAWHA, IOWA - 1964
(ALGONA)
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
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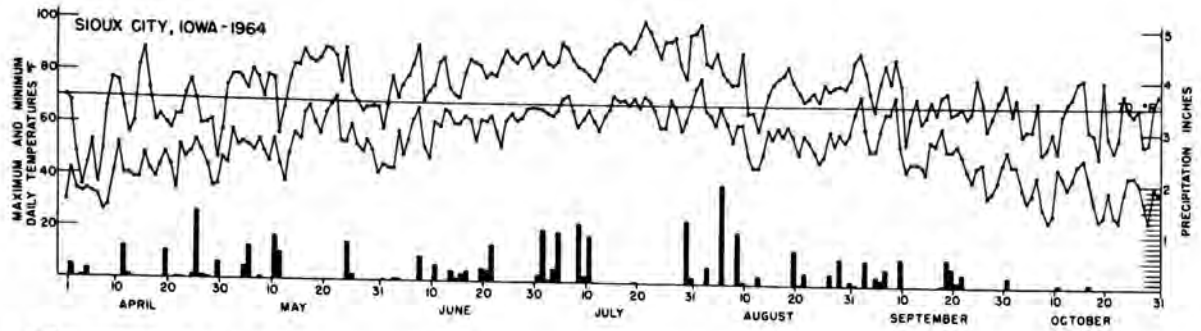
SIOUX CITY, IOWA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
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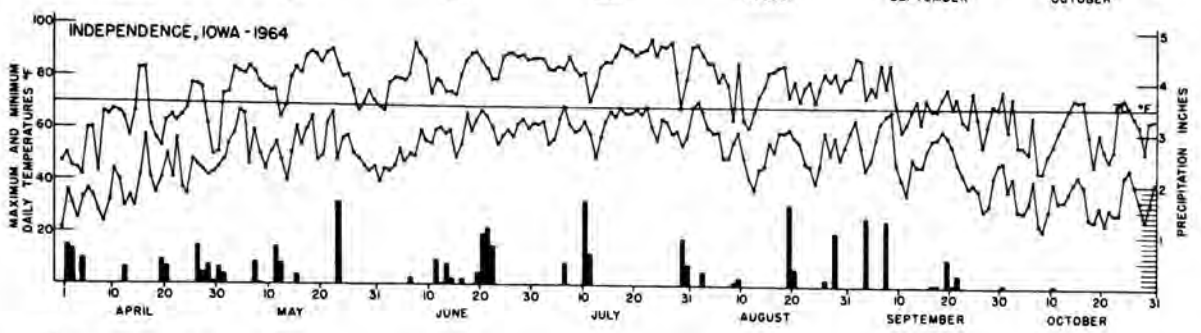
INDEPENDENCE, IOWA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
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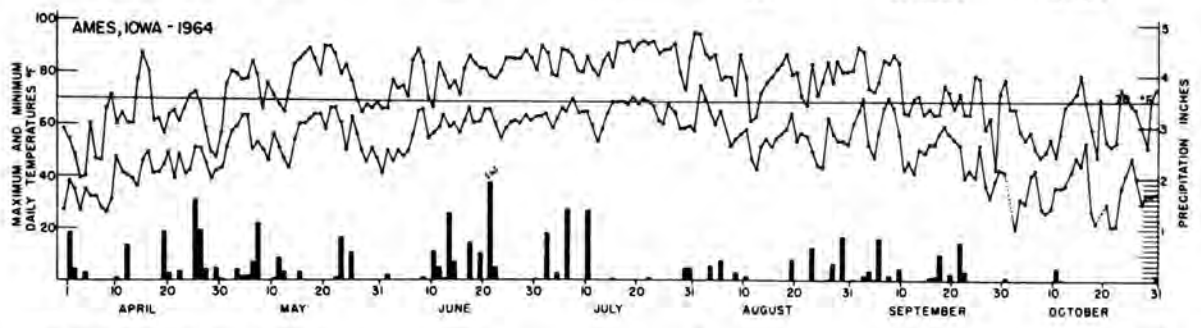
AMES, IOWA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
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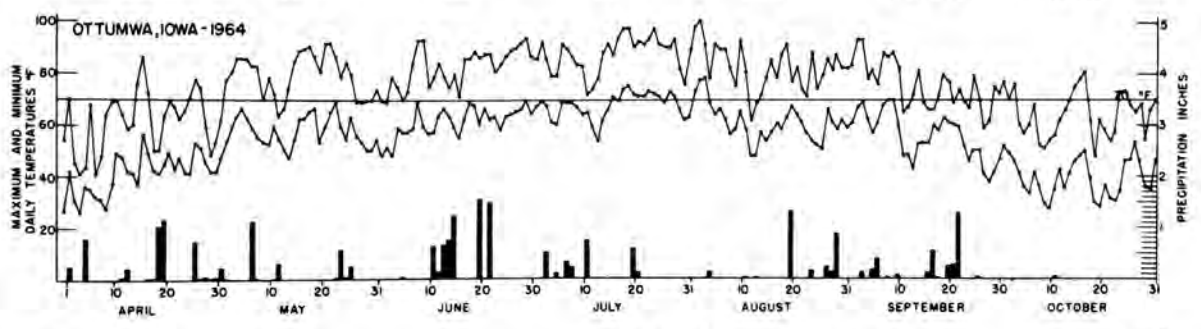
OTTUMWA, IOWA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
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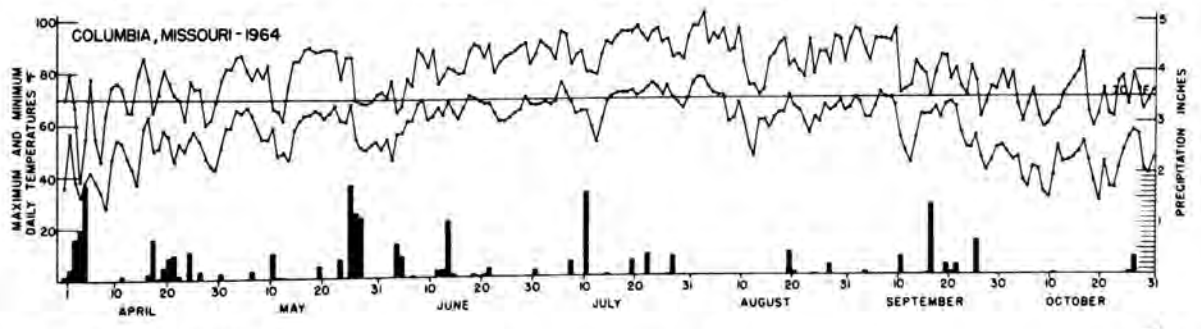
COLUMBIA, MISSOURI - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
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70 °F
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SEPTEMBER
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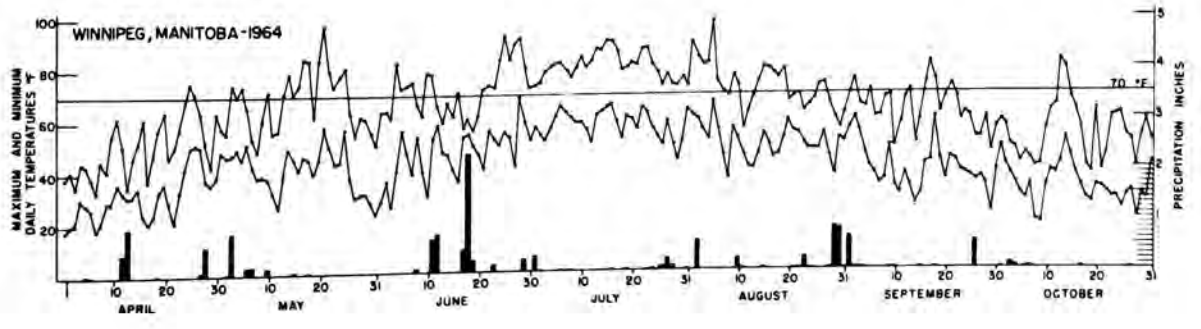
WINNIPEG, MANITOBA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
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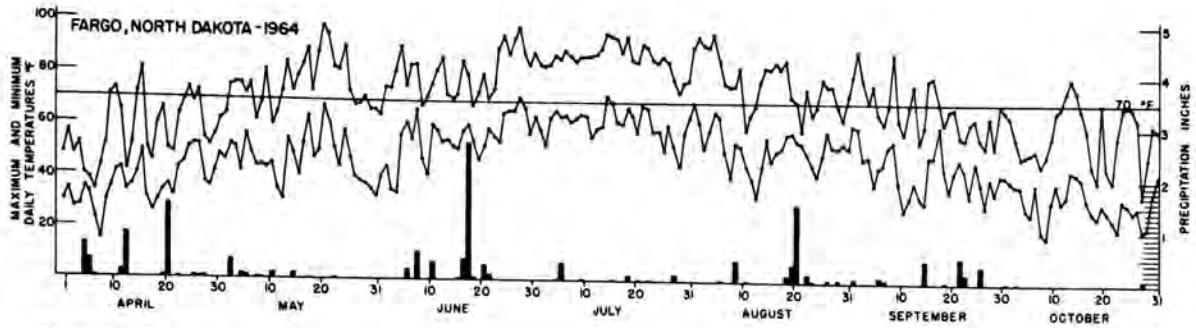
FARGO, NORTH DAKOTA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
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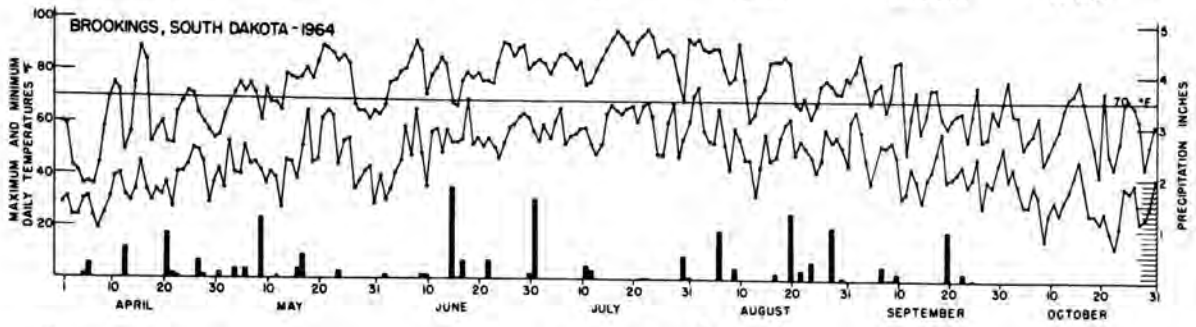
SEPTEMBER
OCTOBER


BROOKINGS, SOUTH DAKOTA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
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APRIL
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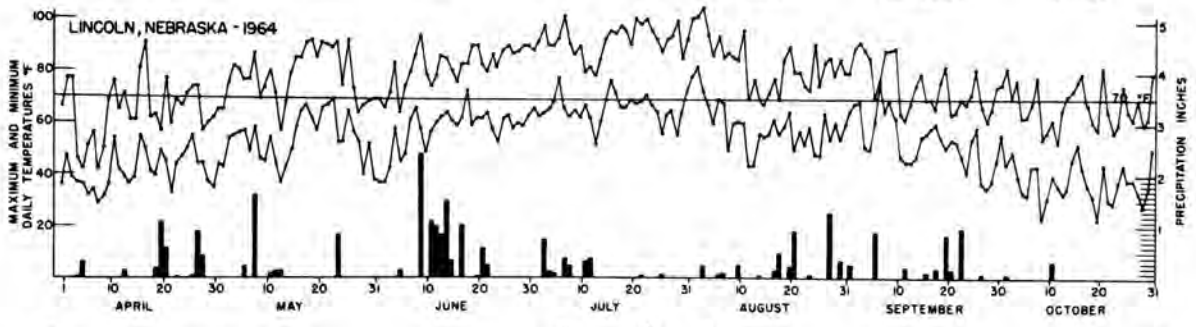
SEPTEMBER
OCTOBER


LINCOLN, NEBRASKA - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
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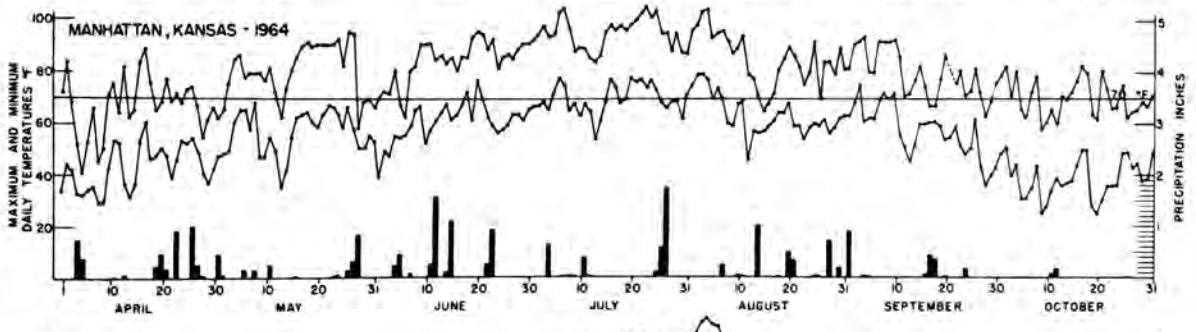
MANHATTAN, KANSAS - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
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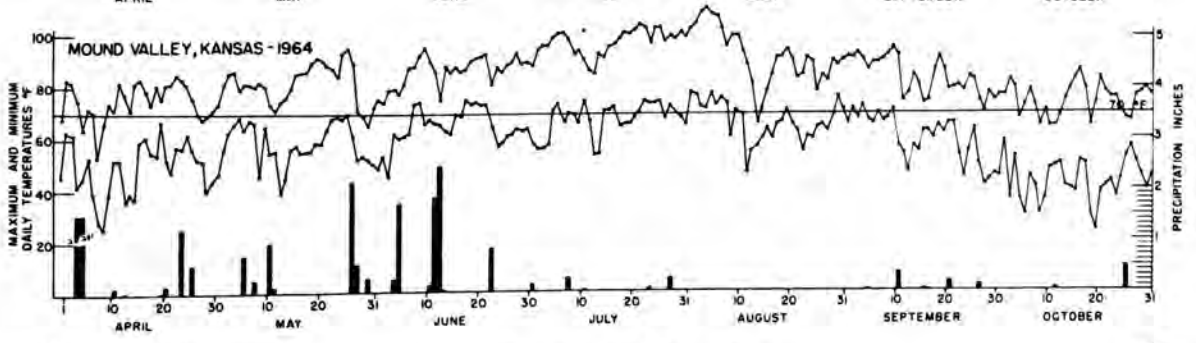
SEPTEMBER
OCTOBER


MOUND VALLEY, KANSAS - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
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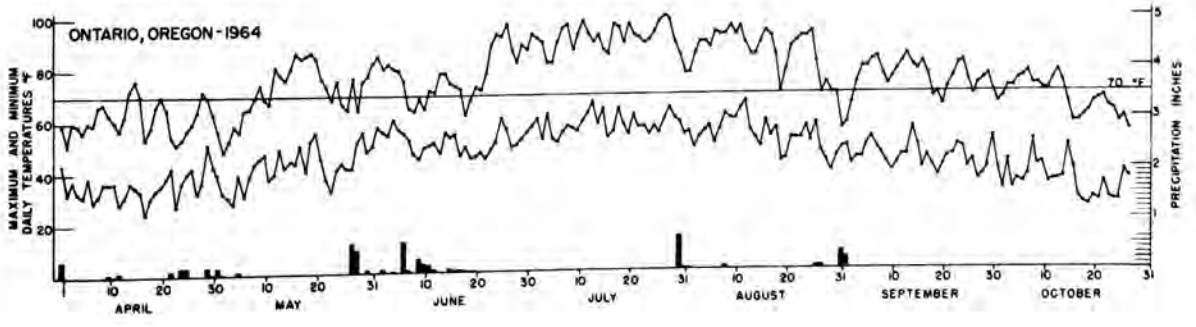
ONTARIO, OREGON - 1964
MAXIMUM AND MINIMUM DAILY TEMPERATURES °F
PRECIPITATION INCHES
70 °F
APRIL
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AUGUST
SEPTEMBER
OCTOBER