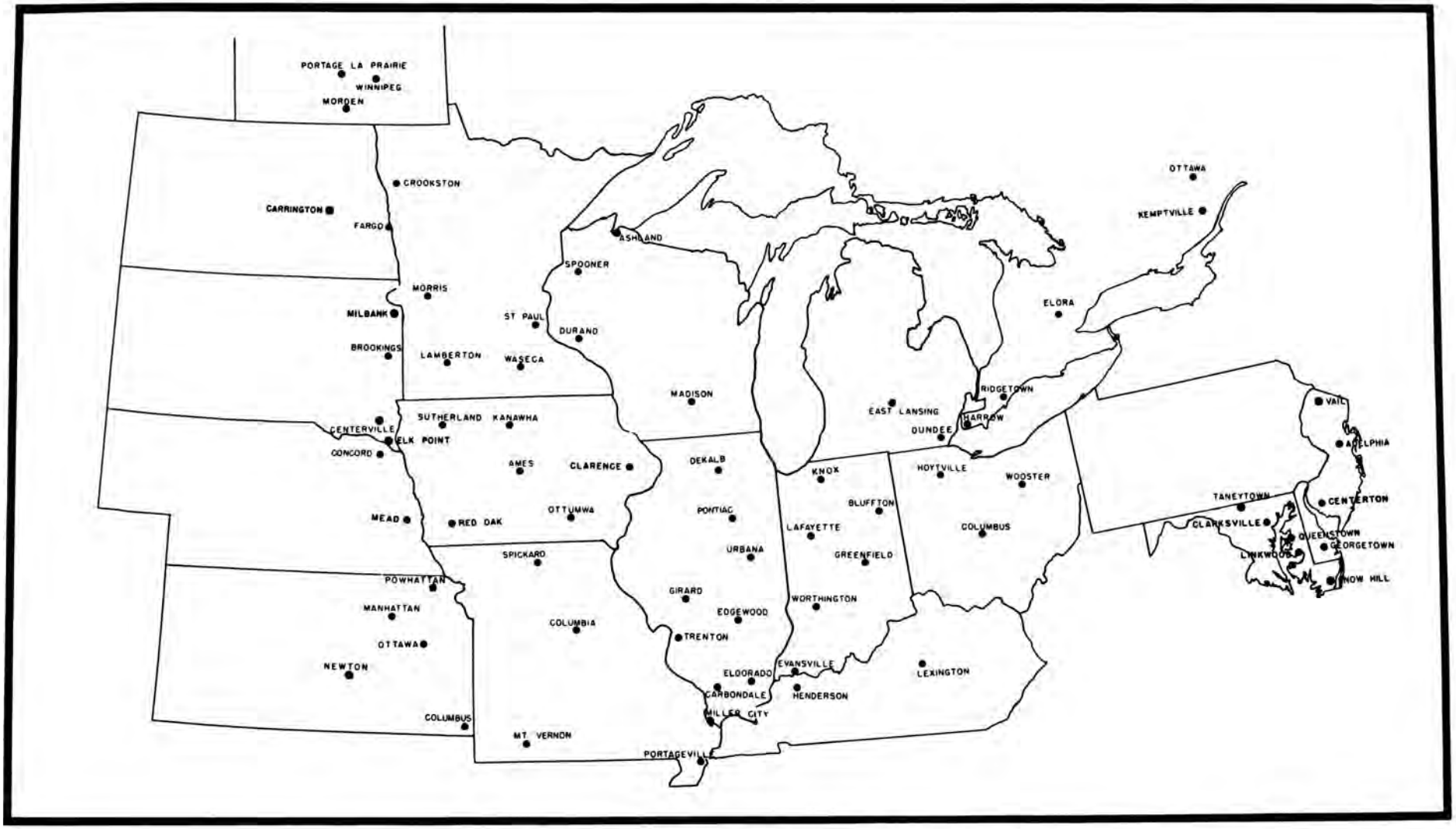

LOCATIONS OF UNIFORM SOYBEAN TESTS, NORTHERN STATES, 1969

THE UNIFORM SOYBEAN TESTS

NORTHERN STATES

1969

RSLM 240

Compiled by:
R. L. Bernard and Ruth E. Lawrence

TABLE OF CONTENTS

Soybean Investigations Personnel 2
Uniform Test Participants 3
Introduction 5
Methods 6
Uniform Test Locations 10
Uniform Test 00 13
Preliminary Test 00 30
Uniform Test 0 35
Preliminary Test 0 48
Uniform Test I 53
Preliminary Test I 74
Uniform Test II 83
Uniform Test III 107
Preliminary Test III 121
Uniform Test IV 128
Preliminary Test IV 149
Identification of Parent Strains 160
Growing Conditions 161

Issued Feb. 1970

Soybean Investigations, Oilseed and Industrial Crops Research Branch
Crops Research Division, Agricultural Research Service, USDA

R. W. Howell, Branch Chief
S. N. Brooks, Assistant Branch Chief
B. E. Caldwell, Soybean Investigations Leader

U. S. Regional Soybean Laboratory, Urbana, Illinois

R. L. Cooper, Agronomist-in-Charge
C. J. Younger, Admin. Officer
P. A. Lathouwers, Clerk-Typist
R. L. Warsaw, Crops Res. Helper

D. W. Chamberlain, Plant Pathologist
L. E. Gray, Plant Pathologist
L. L. Lange, Crops Res. Helper

F. I. Collins, Chemist
S. J. Gibbons, Phys. Sci. Technician
V. E. Sedgwick, Phys. Sci. Technician

R. L. Bernard, Geneticist
R. E. Lawrence, Statistical Clerk
C. R. Cremeens, Agric. Res. Technician
D. A. Lindahl, Agric. Res. Technician
P. J. Amdor, Crops Res. Helper
N. H. Maxwell, Lab. Helper

J. E. Harper, Plant Physiologist
W. L. Ogren, Plant Physiologist
R. W. Rinne, Plant Physiologist
R. H. Johnson, Instrument Maker
A. J. Maggio, Agric. Res. Technician
A. M. Rubel, Biol. Lab. Technician

Lafayette, Indiana

T. S. Abney, Plant Pathologist
A. H. Probst, Agronomist
J. R. Wilcox, Geneticist
R. J. Martin, Research Assistant
R. F. Farris, Technician*
P. E. Stingle, Technician*

Ames, Iowa

J. M. Dunleavy, Plant Pathologist
H. Tachibana, Plant Pathologist
R. C. Clark, Agric. Res. Technician
J. W. Fisher, Agric. Res. Technician
S. S. Quiniones, Plant Pathologist*
D. Strissel, Technician*

Beltsville, Maryland

B. E. Caldwell, Agronomist
C. Sloger, Plant Physiologist
H. G. Vest, Jr., Plant Pathologist
D. F. Weber, Microbiologist
C. E. Bass, Agric. Res. Technician
V. L. Miller, Agric. Res. Technician
J. D. Vasvery, Agric. Res. Technician
P. D. Hull, Agric. Res. Technician

Columbia, Missouri

V. D. Luedders, Agronomist
R. D. Scherff, Plant Pathologist
E. R. Smith, Agric. Res. Technician
E. S. Bretz, Res. Microbiologist*

Brawley, California

B. H. Beard, Agronomist

Collaborators in the Northern State Agricultural Experiment Stations

Delaware:	R. H. Cole
Iowa:	W. R. Fehr
Illinois:	H. H. Hadley
Indiana:	F. L. Patterson
Kansas:	E. L. Mader
Maryland:	J. A. Schillinger
Michigan:	T. J. Johnston
Minnesota:	H. W. Johnson
	B. W. Kennedy
	J. W. Lambert
Missouri:	L. A. Duclos
Nebraska:	J. H. Williams
Ohio:	A. F. Schmitthenner
	P. E. Smith
South Dakota:	A. O. Lunden
Wisconsin:	J. H. Torrie

* Full-time state employee

UNIFORM TEST PARTICIPANTS - 1969

K. L. Athow
Dept. of Botany and Plant Pathology
Purdue University
Lafayette, Indiana 47907

L. J. Anderson
Canada Dept. of Agriculture
Research Station
Harrow, Ontario

B. H. Beard, ARS, USDA
Southwestern Irrigation Field Sta.
Brawley, California 92227

R. L. Bernard, ARS, USDA
U. S. Regional Soybean Lab.
University of Illinois
Urbana, Illinois 61801

D. R. Browning
Agronomy Research Center
Southern Illinois University
Carbondale, Illinois 62901

R. I. Buzzell
Canada Dept. of Agriculture
Research Station
Harrow, Ontario

D. W. Chamberlain, ARS, USDA
U. S. Regional Soybean Lab.
University of Illinois
Urbana, Illinois 61801

F. I. Collins, ARS, USDA
U. S. Regional Soybean Lab.
University of Illinois
Urbana, Illinois 61801

R. L. Cooper, ARS, USDA
U. S. Regional Soybean Lab.
University of Illinois
Urbana, Illinois 61801

H. W. Crittenden
Department of Plant Pathology
University of Delaware
Newark, Delaware 19711

J. D. Curtis
Kemptville Agricultural School
Kemptville, Ontario

L. S. Donovan
Genetics and Plant Breeding Research Inst.
Canada Dept. of Agriculture
Ottawa, Ontario

L. A. Duclos
University of Missouri
Delta Center
Portageville, Missouri 63873

J. M. Dunleavy, ARS, USDA
Dept. of Botany and Plant Pathology
Iowa State University
Ames, Iowa 50010

D. B. Egli
Department of Agronomy
University of Kentucky
Lexington, Kentucky 40506

W. R. Fehr and R. C. Clark
Department of Agronomy
Iowa State University
Ames, Iowa 50010

J. E. Giesbrecht
Canada Dept. of Agriculture
Experimental Farm
Morden, Manitoba

E. E. Hartwig, ARS, USDA
Delta Branch Experiment Station
Stoneville, Mississippi 38776

D. J. Hume
Department of Crop Science
University of Guelph
Guelph, Ontario

T. J. Johnston
Department of Crop Science
Michigan State University
East Lansing, Michigan 48823

J. R. Justin
Department of Soils and Farm Crops
Rutgers University
New Brunswick, New Jersey 08903

G. L. Kilgore
Kansas State University
Southeast Kansas Experiment Station
Mound Valley, Kansas 67354

UNIFORM TEST PARTICIPANTS - 1969 (Continued)

P. F. Knowles
Department of Agronomy
University of California
Davis, California 95616

J. W. Lambert
Department of Agronomy
University of Minnesota
St. Paul, Minnesota 55101

F. A. Laviolette
Dept. of Botany and Plant Pathology
Purdue University
Lafayette, Indiana 47907

D. A. Littlejohns
Western Ontario Agricultural
School and Experiment Farm
Ontario Dept. of Agriculture
Ridgetown, Ontario

V. D. Luedders, ARS, USDA
Department of Agronomy
University of Missouri
Columbia, Missouri 65201

A. O. Lunden
Department of Agronomy
South Dakota State University
Brookings, South Dakota 57006

C. D. Nickell
Department of Agronomy
Kansas State University
Manhattan, Kansas 66502

A. H. Probst, ARS, USDA
Department of Agronomy
Purdue University
Lafayette, Indiana 47907

C. O. Rydberg
University of Wisconsin
Experimental Farm
Spooner, Wisconsin 54801

J. A. Schillinger
Department of Agronomy
University of Maryland
College Park, Maryland 20742

J. F. Shane
Department of Agronomy
University of Kentucky
Lexington, Kentucky 40506

P. E. Smith
Department of Agronomy
Ohio State University
Columbus, Ohio 43210

B. R. Stefansson
Department of Plant Science
University of Manitoba
Winnipeg, Manitoba

H. Tachibana, ARS, USDA
Dept. of Botany and Plant Pathology
Iowa State University
Ames, Iowa 50010

G. H. Tenpas
University of Wisconsin
Experimental Farm
Ashland, Wisconsin 54806

J. H. Torrie
Department of Agronomy
University of Wisconsin
Madison, Wisconsin 53706

H. G. Vest, Jr., ARS, USDA
Plant Industry Station
Beltsville, Maryland 20705

D. A. Whited
Department of Agronomy
North Dakota State University
Fargo, North Dakota 58102

J. R. Wilcox, ARS, USDA
Department of Agronomy
Purdue University
Lafayette, Indiana 47907

J. H. Williams
Department of Agronomy
University of Nebraska
Lincoln, Nebraska 68503

E. L. Wisk
University Substation
Delaware Agricultural
Experiment Station
Georgetown, Delaware 19947

INTRODUCTION

The U. S. Regional Soybean Laboratory conducts research directed toward breeding better varieties of soybeans in cooperation with federal and state research personnel in all important soybean producing states and with research workers in two provinces in Canada. The purpose of the Uniform Soybean Tests is to evaluate critically the best of the experimental soybean lines developed by these researchers.

A test is established for each of ten maturity groups. Test 00 includes maturity Group 00 strains for the northern fringe of the present area of soybean production. Uniform Tests 0 through IV include later strains adapted to locations progressively farther south in the North Central States and areas of similar latitude. Each year new selections are added and others that have been sufficiently tested are dropped. The summary of performance of strains in Uniform Tests 00 through IV in the northern states is included in this report. The report on Uniform Tests IVS through VIII in the southern states is issued separately.

Data from the Uniform Tests form the basis for decisions on the regional release of soybean varieties. Preliminary Tests are grown at a limited number of locations throughout the region to screen the experimental strains for maturity and general agronomic performance for one year before they are entered in the Uniform Tests.

METHODS

Uniform Tests are planted in single-row plots with four replications or double-row plots with three replications, either with or without border rows. Preliminary Tests are planted in single or double rod-row plots with two replications. Usually 18 to 20 feet of row are planted and 16 to 17 feet harvested to eliminate end of row effects. Seeds are packeted at a rate of 180 viable seeds per packet.

Parentage. Parent strains other than named varieties are identified in Table 1.

Previous Testing. The number of previous years in the same Uniform Test is given or, in the case of new entries, a reference to last year's test. The previous regional test is abbreviated: U.T. 0 for Uniform Test 0, P.T. III for Preliminary Test III, etc., and only the most recent test is listed. Testing of similar ancestral strains is listed in footnotes.

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, Tan = tan
Seed Coat Luster: D = dull, S = shiny, I = intermediate
Seed Coat Color: Y = yellow, G = gray, Lg = light gray
Hilum Color: Bl = black, Ib = imperfect black, Br = brown, Bf = buff, G = gray, Tan = tan, Y = yellow, prefixes indicate light or dark shades as, for example, Lbf = light buff
Peroxidase Activity: H = high, L = low
Fluorescent Light Response: E = early flowering (about 35 days), L = late flowering (about 70 days) under 20-hour cool white fluorescent photoperiod

Shattering is scored 14 days after maturity, or at another specified time if more appropriate, and is based on estimates of the percent of open pods as follows:

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

Yield is measured after the seeds have been dried to a uniform moisture content and is recorded in bushels (60 pounds) per acre to the nearest tenth. To convert to kilograms per are (or quintals per hectare) multiply by .6725 (1 kg/are = 1.487 bu/acre).

Maturity is the date when approximately 95% of the pods are ripe. Delayed leaf drop and green stems are not considered in assigning maturity but may be noted separately. Maturity is expressed as days earlier (-) or later (+) than the average date of the reference variety. To aid in maturity group classification, one earlier and one later "tie" variety are listed on the maturity table for each Uniform and Preliminary Test except 00. These are not included in the regional mean since data are not available from all locations. Current reference and tie varieties and the maturity group limits relative to the reference varieties are:

Maturity Group	Reference	Group Range	Early Tie	Late Tie
00	Portage	-2 to +6		
0	Merit	-4 to +4	Flambeau (00)	Chippewa 64 (I)
I	Chippewa 64	-2 to +6	Traverse (0)	Corsoy (II)
II	Corsoy	-3 to +5	Hark (I)	Wayne (III)
III	Wayne	-4 to +4	Amsoy (II)	Clark 63 (IV)
IV	Clark 63	-1 to +9	Wayne (III)	Hill (V)

These maturity group ranges are based on long-time means over many locations. When using data from fewer environments, the interval between reference varieties may differ from that implied above, but the division between maturity groups can be estimated in proportion to the above figures.

Lodging is rated at maturity according to the following scores:

1 Almost all plants erect
2 All plants leaning slightly or a few plants down
3 All plants leaning moderately (45°), 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 the average length of plants from the ground to the tip of the main stem at the time of maturity and is reported to the nearest inch (1 inch equals 2.54 centimeters).

Seed Quality is rated according to the following scores considering the amount and degree of wrinkling, defective seed coat, greenishness, and moldy or rotten seeds. (Threshing or handling damage is not considered, and pigment, including mottling, is noted separately.)

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

Weight per seed is the weight of 100 seeds in grams to the nearest tenth.

Seed Composition is measured on samples submitted to the Laboratory. A 60- to 70-gram sample of clean seeds is prepared by taking an equal volume or weight of seeds from each replication. Protein percentage is measured using the Kjeldahl method and oil percentage is measured using nuclear magnetic resonance. These percentages are expressed on a moisture-free basis.

Iron Chlorosis is rated from 1, no chlorosis, to 5, severe chlorosis. In 1969 data were taken based on observation plots at Lamberton, Minnesota (00 to II), and yield test plots at Crookston, Minnesota (00 to 0).

Hypocotyl Elongation was measured at Ames, Iowa, on 24 seedlings after germinating for nine days at 25° C (a critical temperature for differentiating strains).

Disease Reactions are listed according to "Soybean Disease Classification Standards", March 1955, unless otherwise specified. Disease reaction is scored from 1 (healthy) to 5 (heavily infected). 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. Natural infection ratings are from agronomic tests in some instances and from special disease plantings in others. For diseases where it is clearcut, the reaction is given by letter instead of number: R signifies resistant, S stands for susceptible, I or MR for intermediate, and H for heterogenous, and strains may not be retested each year.

Abbreviation	Disease	Organism
BB	Bacterial blight	Pseudomonas glycinea
BBV	Bud blight	Tobacco ringspot virus
BP	Bacterial pustule	Xanthomonas phaseoli var. sojensis
BS	Brown spot	Septoria glycines
BSR	Brown stem rot	Cephalosporium gregatum
CN	Cyst nematode	Heterodora glycines
DM	Downy mildew	Peronospora manshurica
FE_1, FE_2	Frogeye race 1, 2	Cercospora sojina
PR	Phytophthora rot	Phytophthora sojae
PS	Purple stain	Cercospora kikuchii
PSB	Pod and stem blight	Diaporthe phaseolorum var. sojae
Pyd	Pythium root rot	Pythium debaryanum
Pyu	Pythium root rot	Pythium ultimum
RK (followed by the initial of the specific nematode)	Root knot nematode	Meloidogyne spp.
RR	Rhizoctonia root rot	Rhizoctonia solani
SB	Sclerotial blight	Sclerotium rolfsii
SC	Stem canker	Diaporthe phaseolorum var. caulivora
SMV	Soybean mosaic	Soja virus 1
TS	Target spot	Corynespora cassiicola
WF	Wildfire	Pseudomonas tabaci
YMV	Yellow mosaic	Phaseolus virus 2

Ratings for BB, BP, DM, and FE_2 were based on leaf symptoms; those for PS and PSB on presence of the pathogen in seeds; those for BSR on average height of stem browning of infected plants and percent of plants with these symptoms; those for PR on seedling rotting; and those for SMV were based on agglutination, using the Ottumwa strain (SMV-O) as antigen for antiserum production, and on percent of plants the extracts of which gave a local lesion on Kentucky Wonder Wax Pole Bean.

Strain Designation. Experimental (i.e. unreleased) strains are identified with number and a code letter prefix. These letters indicate the originating agency as follows:

A	Iowa A.E.S. and U.S.R.S.L.
C	Purdue A.E.S. and U.S.R.S.L.
CM	Canada Dept. of Agriculture, Morden, Manitoba
D	Mississippi A.E.S. and U.S.R.S.L.
E	Michigan A.E.S. and U.S.R.S.L.
FC	Forage and Range Research Branch, U.S.D.A.
H	Ohio A.E.S. and U.S.R.S.L.
K	Kansas A.E.S. and U.S.R.S.L.
L	Illinois A.E.S. and U.S.R.S.L.
M	Minnesota A.E.S. and U.S.R.S.L.
Md	Maryland A.E.S. and U.S.R.S.L.
ND	North Dakota A.E.S. and U.S.R.S.L.
O	Central Experiment Farm, Ottawa, Ontario
O	Research Station, Harrow, Ontario
OAC	University of Guelph, Guelph, Ontario
PI	Plant Introduction Investigations, New Crops Research Branch, U.S.D.A.
S	Missouri A.E.S. and U.S.R.S.L.
SD	South Dakota A.E.S. and U.S.R.S.L.
SL	Two or more state experiment stations and U.S.R.S.L.
T	Soybean Genetic Type Collection, U.S.R.S.L.
U	Nebraska A.E.S. and U.S.R.S.L.
UD	Delaware A.E.S. and U.S.R.S.L.
UM	University of Manitoba, Winnipeg, Manitoba
W	Wisconsin A.E.S. and U.S.R.S.L.

UNIFORM TEST LOCATIONS - 1969

Location	Tests Conducted by	Uniform Tests						Preliminary Tests				
		00	0	I	II	III	IV	00	0	I	III	IV
Ont., Ottawa	L. S. Donovan	x						x				
Kemptville	J. D. Curtis	x	x					x	x			
Elora	D. J. Hume	x	x					x	x			
Ridgetown	D. A. Littlejohns		x	x	x				x	x		
Harrow	L. J. Anderson			x	x	x				x		
N. J., Vail	J. R. Justin				x							
Adelphia	"					x						
Centerton	"						x					
Del., Georgetown	E. L. Wisk						x					
Georgetown Irrig.	"						x					x
Md., Taneytown 2nd crop	J. A. Schillinger					x						
Clarksville	"					x	x				x	x
Queenstown	H. G. Vest						x					x
Linkwood	"						x					x
Snow Hill	J. A. Schillinger						x					
Snow Hill 2nd crop	"						x					
Ohio, Hoytville	P. E. Smith		x	x	x	x				x	x	
Wooster	"			x	x	x				x	x	
Columbus	"			x	x	x	x			x	x	x
Mich., East Lansing	T. J. Johnston		o	o	o					o		
Dundee	"		o	x	x					x		
Ind., Knox	A. H. Probst, J. R. Wilcox			x	x							
Bluffton	" "				x	x						
Lafayette	" "			x	x	x	x				x	
Greenfield	" "				x	x						
Worthington	J. R. Wilcox, A. H. Probst				x	x	x				x	x
Evansville	" "					x	x					x
Ky., Lexington	J. F. Shane, D. B. Egli					x	x					
Henderson	" , S. Brabant					x	x					
Wis., Ashland	G. H. Tenpas	x						x				
Spooner	C. O. Rydberg		x						x			
Durand	J. H. Torrie		o	o								
Madison	"			x	x					x		
Ill., Dekalb	R. L. Cooper			x	x					x		
Pontiac	"			x	x							
Urbana	R. L. Bernard			x	x	x	x				x	
Girard	"				x	x	x					
Edgewood	"				x	x	x				x	x
Trenton	"				x	x	x				x	x
Eldorado	"				x	x	x				x	x
Carbondale	D. R. Browning				x	x	x				x	x
Miller City	R. L. Bernard						x					
Minn., Crookston	J. W. Lambert	x	x					x				
Morris	"	x	x									
St. Paul	"	x	x	x					x			
Lamberton	"			x	x							
Waseca	"			x	x					x		
Iowa, Sutherland	R. C. Clark, W. R. Fehr			x	x					x		
Kanawha	" "			x	x					x		
Clarence	" "				x							
Ames	" "				x	x					x	
Ottumwa	" "					x					x	
Red Oak	" "					x					x	

UNIFORM TEST LOCATIONS - 1969 (Continued)

Location	Tests Conducted by	Uniform Tests 00	0	I	II	III	IV	Preliminary Tests 00	0	I	III	IV
Mo., Spickard	V. D. Luedders			x	x	x				x	x	
Columbia	"			o	o	o	o			o	o	o
Mt. Vernon	"				x	x	x				x	x
Portageville Loam	L. A. Duclos						x					x
Portageville Clay	"						x					x
Man., Portage la Prairie	J. E. Giesbrecht	x						x				
Winnipeg	B. R. Stefansson	o						o				
Morden	J. E. Giesbrecht	x						x				
N. D., Fargo	D. A. Whited	x	x	o				x	x	o		
Carrington	"	o										
S. D., Milbank	A. O. Lunden		x	x					x	x		
Brookings	"			x	x					x		
Centerville	"				o							
Elk Point	"					x					x	
Neb., Concord	J. H. Williams			x	x	x						
Mead	"			o	o	o	o					o
Kansas, Powhattan	C. D. Nickell				x	x	x				x	x
Manhattan	"					x	x				x	x
Manhattan Irrig.	"					x	x				x	x
Ottawa	"					x	x				x	x
Newton	"					x	x					
Columbus	G. L. Kilgore					x	x					x
Texas, Lubbock	R. D. Brigham						x					
Cal., Davis	P. F. Knowles, J. E. Dille	x	x	x	x			x	x	x		
Five Points	B. H. Beard	x			x	x	x					
Number of locations with agronomic data (x)		12	11	22	34	34	31	9	8	15	21	19

Disease and Shattering Tests

Del., Georgetown-PSB,PS	H. W. Crittenden					x	x				x	x
Ind., Lafayette-FE$_2$,PR	F. A. Laviolette,	x	x	x	x	x	x	x	x	x	x	x
Worthington-DM	K. L. Athow	o	x	x	x	x	x	o	x	x	x	x
Ill., Urbana-BP,BSR	D. W. Chamberlain	x	x	x	x	x	x	x	x	x	x	x
Minn., Lamberton-Fe chlorosis	J. W. Lambert	x	x	x	x							
Iowa, Ames-BB,BP,BSR,SMV	J. M. Dunleavy	x	x	x	x	x	x					
Ames-BB	H. Tachibana	x	x	x	x	x	x	x	x	x	x	x
Ames-Hyp. elong.	W. R. Fehr	x	x	x	x	x	x					
Miss., Stoneville-PR	E. E. Hartwig				x	x	x				x	x
"-Shattering	"					x	x				x	x
Ill., Urbana- "	R. L. Bernard	x	x					x	x			
Kansas, Manhattan- "	C. D. Nickell	x	x	x	x	x	x	x	x	x	x	x
Ont., Harrow	R. I. Buzzell	o	o	o	o	o	o					
Ohio, Castalia	A. F. Schmitthenner			o	o	o	o					
Hoytville	"			o	o	o	o					
Wooster	"			o	o	o	o					

o Test failed or data not reported

UNIFORM TEST 00, 1969

Strain	Parentage	Generation Composited	Previous Testing (years)
1. Altona	052-903 x Flambeau	F_5	5
2. Flambeau	Introduction from Russia	--	11
3. Norman (M424)	Acme x Hardome	F_5	4
4. Portage	Acme x Comet	F_5	9
5. CM29	Acme x L48-7289	F_7	P.T. 00
6. CM30	Acme x L48-7289	F_7	1
7. CM53	Acme x L48-7289	F_6	P.T. 00
8. CM61	Acme x L48-7289	F_9	1
9. CM79	Acme x L48-7289	F_9	P.T. 00

The five-year performance of the four varieties, Altona, Flambeau, Norman, and Portage, is summarized in Tables 9 and 10. There is a rather strong positive correlation of yield with maturity although the range in mean yield is not great.

Experimental strains in this test consist of five selections from Acme x L48-7289. CM30 had the highest mean yield but is rather late for Group 00 (Table 2). The other strains averaged well below Flambeau in yield. CM61 was a day earlier than Flambeau and showed fair lodging resistance along with excellent height. It averaged 1.4 bushels below Flambeau but equalled it in the 1968 test. Most of these strains showed tendencies toward iron chlorosis (Table 1).

NORMAN

Norman is an F_4 plant progeny selected by J. W. Lambert in Minnesota. A chronological outline of its origin and development is given below:

1955 - Cross of Acme x Hardome made at St. Paul by J. W. Lambert.

1955-6 - F_1 hybrid grown in greenhouse at St. Paul.

1956 - F_2 population grown in field at St. Paul; individual plant selections made.

1957 & 1958 - F_3 and F_4 plant rows grown at Rosemount. Selection on row and plant bases.

1959 - Duplicate F_5 plant rows grown at Rosemount and Crookston. Whole rows selected and bulked. Row 1959 (both locations) designated II-55-14.

1960 - II-55-14 tested in replicated 10-foot, single-row plots at Rosemount and Crookston.

1961 - II-55-14 tested in replicated rod rows at St. Paul and Crookston.

1962 - II-55-14 tested in replicated rod rows at St. Paul and Crookston. Small increase to produce seed for larger plots. 50 "typical" plants selected.

1963 - II-55-14 tested in replicated "combine" plots at Crookston and Morris. 50 plant progenies grown; 46 appeared uniform and were bulked for a "purified" source.

1964 - Designated M55-14 and entered in Uniform Preliminary Test 00. Also tested in "combine" plots at Crookston and Morris

1965 - M55-14 in Uniform Test 00, in "combine" tests at Crookston and Morris, and in multiple rod-row test at Grand Rapids.

1966 - M55-14 in Uniform Test 00, in "combine" tests at Crookston, Moorhead, and Morris, and in multiple rod-row test at Grand Rapids.

1966-7 - Three pounds of breeder's seed increased to 53 pounds in Chile to supplement supply on hand.

1967 - M55-14 in Uniform Test 00 and in same Minnesota locations as in 1966. Initial increase by the Foundation Seedstocks branch of the Minnesota Crop Improvement Association. Seed was shared with North Dakota.

1968 - M55-14 tested as in 1966 and 1967. Seed increased by MCIA and by North Dakota.

1969 - M55-14 named "NORMAN" and released to registered and certified seed growers in two states.

Table 1. Descriptive data and shattering scores, Uniform Test 00, 1969.

Strain	Flower Color	Pubescence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering			Iron Chlorosis	Hypocotyl Length
							Urbana Illinois	Manhattan Kansas			
							4 wks.	2 wks.	4 wks.	Minn.	mm
Altona	P	T	Br	S	Y	Bl	3	2.5	4.6	2.5	212
Flambeau	P	T	Br	S	Y	Bl	3	1	4.2	2	208
Norman	P	G	Br	S	Y	Y	2	3	4.6	1.5	217
Portage	P	G	Br	D+S	Y	Y	5	4.6	5	3	268
CM29	P	G	Br	S	Y	Y	2.5	1	4.6	4	188
CM30	P	G	Br	D	Y	Lib	3.5	1	5	1.5	208
CM53	P	G	Br	S	Y	G	3.5	3	4.6	3.5	214
CM61	P	G	Br	S	Y	G	3	2.5	4	3	226
CM79	P	G	Br	D	Y	Ib	2.5	2.5	3.8	4.5	213

Table 2. Summary of data, Uniform Test 00, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	10	10	8	7	8	10	8	6	6
Altona	33.8	2	+1.9	2.3	29	2.3	18.3	40.6	21.4
Flambeau	34.1	1	+3.6	3.4	31	2.2	17.0	41.4	20.8
Norman	33.4	4	+1.3	2.2	30	2.0	17.4	41.0	21.0
Portage	32.3	6	0	1.4	29	2.1	18.7	39.9	21.0
CM29	30.7	8	+3.5	2.1	31	2.9	19.0	40.4	21.5
CM30	33.6	3	+4.6	2.7	31	2.7	19.5	38.7	22.8
CM53	32.0	7	+2.6	2.3	32	2.5	16.7	39.8	21.7
CM61	32.7	5	+2.5	2.5	33	2.9	16.7	40.1	21.3
CM79	29.4	9	+3.9	2.1	30	2.1	17.9	38.8	22.6

[1] Days earlier (-) or later (+) than Portage which matured September 14, 120 days after planting.

Table 3. Disease data, Uniform Test 00, 1969.

Strain	BB		BP		BSR			FE_2	PR	SMV	
	Ames Iowa		Ill.	Iowa	Urbana Ill.	Kanawha Iowa		Ind.	Ind.	Iowa	
	n	a	a	a	n	n 1	2	a	a	a 3	4
Altona	2	3.5	2	4.0	2	4	20	3	R	65	65
Flambeau	3	3.5	2	4.5	2	6	13	5	S	30	30
Norman (M424)	4	5.0	2	3.5	2	0	0	5	S	60	50
Portage	4	5.0	3	3.5	2	6	33	5	S	65	80
CM29	3	3.0	4	4.0	2	7	25	4	S	40	20
CM30	3	4.0	2	4.5	2	7	10	4	S	50	100
CM53	3	3.0	2	4.5	2	6	20	4	S	60	55
CM61	3	3.0	2	5.0	2	6	8	3	S	85	85
CM79	3	3.5	3	4.5	2	7	18	4	S	25	25

1 Mean height of browning in diseased stems.
2 Percent of plants with browning.
3,4 Percent of plants infected, measured serologically (3) and by transmission to beans (4).

Table 4. Yield and yield rank, Uniform Test 00, 1969.

Strain	Mean of 10 Tests	Ontario			Wisconsin	Minnesota		
		Ottawa[1]	Kempt-ville	Elora	Ashland	Crooks-ton	Morris	St. Paul
Altona	33.8	54.9	40.7	43.7	20.4	22.9	31.8	34.1
Flambeau	34.1	54.5	40.7	42.8	22.1	24.3	32.9	32.7
Norman	33.4	60.8	43.3	36.3	22.2	21.1	27.9	35.8
Portage	32.3	49.4	42.2	38.2	24.3	23.0	28.8	32.8
CM29	30.7	48.9	29.9	36.6	23.3	20.3	27.9	33.2
CM30	33.6	51.6	39.5	39.6	23.4	23.2	30.3	34.9
CM53	32.0	52.8	36.9	38.3	21.9	23.2	28.0	31.4
CM61	32.7	50.2	40.4	35.0	25.9	24.0	29.8	31.6
CM79	29.4	54.5	26.0	38.2	17.9	17.8	27.2	35.5
Coef. of Var. (%)		8.8	12.4	9.4	9.2	13.6	6.8	8.2
L.S.D. (5%)		6.9	4.7	5.3	3.0	4.3	2.9	4.0
Row Spacing (In.)		34	14	12	24	24	30	30
	Yield Rank							
Altona	2	2	3	1	8	6	2	4
Flambeau	1	3	3	2	6	1	1	7
Norman	4	1	1	8	5	7	7	1
Portage	6	8	2	5	2	5	5	6
CM29	8	9	8	7	4	8	7	5
CM30	3	6	6	3	3	3	3	3
CM53	7	5	7	4	7	3	6	9
CM61	5	7	5	9	1	2	4	8
CM79	9	3	9	5	9	9	9	2

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

Table 4. (Continued)

Strain	Manitoba		North Dakota	California	
	Portage la Prairie	Morden	Fargo	Davis[1]	Five Points[1]
				*	*
Altona	37.0	32.4	20.3	15.7	23.0
Flambeau	34.3	33.7	23.3	19.7	22.5
Norman	36.5	33.6	16.9	22.6	24.6
Portage	36.2	30.7	16.9	33.2	22.2
CM29	37.0	32.0	17.6	23.4	24.6
CM30	36.9	35.6	20.6	30.8	28.3
CM53	36.8	32.6	18.5	31.6	23.8
CM61	36.3	33.3	20.3	29.9	26.5
CM79	34.3	25.8	16.6	25.4	21.8
Coef of Var. (%)	8.4	6.4	6.9	--	13.0
L.S.D. (5%)	N.S.	3.2	1.9	--	N.S.
Row Spacing (In.)	36	30	40	30	30

	Yield Rank				
Altona	1	6	3	9	6
Flambeau	8	2	1	8	7
Norman	5	3	7	7	3
Portage	7	8	7	1	8
CM29	1	7	6	6	3
CM30	3	1	2	3	1
CM53	4	5	5	2	5
CM61	6	4	3	4	2
CM79	8	9	9	5	9

Table 5. Maturity dates, Uniform Test 00, 1969.

Strain	Mean of 8 Tests	Ontario			Wisconsin	Minnesota	
		Ottawa[1]	Kempt-ville	Elora	Ashland	Crooks-ton	Morris
Altona	+1.9	*	+1	-1	+ 1	+2	+3
Flambeau	+3.6		+2	+2	+ 5	+2	+5
Norman	+1.3		+2	0	+ 4	0	+2
Portage	0		0	0	0	0	0
CM29	+3.5		+3	+1	+ 8	+5	+5
CM30	+4.6		+4	0	+12	+6	+6
CM53	+2.6		+1	+1	+ 7	+1	+5
CM61	+2.5		+2	+1	+ 6	0	+5
CM79	+3.9		+2	+2	+ 8	+3	+7
Date planted	5-17	5-29	5-22	5-28	5-14	5-28	5-14
Portage matured	9-14	--	9-9	10-1	9-24	9-26	8-29
Days to mature	120	--	110	126	133	121	107

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

Table 5. (Continued)

Strain	Minnesota	Manitoba		North Dakota	California	
	St. Paul	Portage la Prairie	Morden	Fargo	Davis[1]	Five Points[1]
		*			*	*
Altona	0		+1	+8	-3	
Flambeau	+2		+4	+7	-2	
Norman	0		0	+2	-3	
Portage	0		0	0	0	
CM29	+1		+1	+4	-2	
CM30	+2		+2	+5	+2	
CM53	+1		+1	+4	-3	
CM61	+2		+2	+2	-2	
CM79	+2		+2	+5	-3	
Date planted	5-8	5-21	5-13	5-9	6-5	6-18
Portage matured	9-21	--	9-18	9-3	9-4	--
Days to mature	117	--	128	117	91	--

Table 6. Lodging scores and plant height, Uniform Test 00, 1969.

Strain	Mean of 7 Tests	Ontario			Wisconsin	Minnesota	
		Ottawa[1]	Kempt-ville	Elora	Ashland	Crooks-ton	Morris
					*		*
Altona	2.3	3.3	1.0	1.8	1.0	1.2	1.0
Flambeau	3.4	4.6	2.0	4.0	1.0	1.8	1.0
Norman	2.2	3.3	2.0	2.4	1.0	1.0	1.0
Portage	1.4	2.8	1.0	1.3	1.0	1.0	1.0
CM29	2.1	3.4	1.0	1.9	1.0	1.0	1.0
CM30	2.7	4.1	1.0	2.3	1.0	1.8	1.0
CM53	2.3	5.0	1.0	2.0	1.0	1.0	1.0
CM61	2.5	4.6	2.0	1.6	1.0	1.0	1.0
CM79	2.1	2.9	1.0	1.8	1.0	1.0	1.0
	Mean of 8 Tests	Plant Height					
Altona	29	33			17	23	31
Flambeau	31	33			18	24	30
Norman	30	35			18	26	29
Portage	29	35			18	25	27
CM29	31	37			20	25	33
CM30	31	35			20	26	32
CM53	32	39			18	26	34
CM61	33	40			20	28	34
CM79	30	34			18	22	34

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

Table 6. (Continued)

Strain	Minnesota	Manitoba		North Dakota	California	
	St. Paul	Portage la Prairie	Morden	Fargo	Davis[1]	Five Points[1]
					*	
Altona	4.0	3.0		2.0	3.0	
Flambeau	4.8	3.7		3.0	3.0	
Norman	3.5	2.0		1.0	2.0	
Portage	1.8	1.0		1.0	2.0	
CM29	3.2	2.0		2.0	1.0	
CM30	4.0	3.0		3.0	2.0	
CM53	3.8	2.5		1.0	2.0	
CM61	4.0	2.5		2.0	1.0	
CM79	3.0	2.8		2.0	1.0	
	Plant Height					
					*	*
Altona	31	34	30	32	36	33
Flambeau	35	38	32	35	34	28
Norman	32	35	31	34	32	31
Portage	31	31	30	33	31	32
CM29	33	35	31	35	30	30
CM30	33	36	31	34	31	36
CM53	35	37	31	36	31	34
CM61	36	36	33	38	32	37
CM79	34	34	29	34	31	31

Table 7. Seed quality scores and seed weight, Uniform Test 00, 1969.

Strain	Mean of 10 Tests	Ontario			Wisconsin	Minnesota	
		Ottawa[1]	Kemptville	Elora	Ashland	Crookston	Morris
Altona	2.3	1.0	4.0	2.0	2.0	2.2	2.5
Flambeau	2.2	1.0	2.0	2.0	2.0	1.8	2.8
Norman	2.0	2.0	3.0	1.0	2.0	1.5	2.5
Portage	2.1	2.0	3.0	1.0	2.0	1.8	2.5
CM29	2.9	2.0	5.0	2.0	3.0	3.8	3.2
CM30	2.7	2.0	4.0	2.0	3.0	2.5	3.0
CM53	2.5	2.0	3.0	2.0	2.0	2.5	3.0
CM61	2.9	3.0	5.0	3.0	2.0	3.0	2.8
CM79	2.1	1.0	3.0	2.0	2.0	2.0	2.8

	Mean of 8 Tests	Seed Weight				
Altona	18.3	22.1	20.6	16.7	16.0	17.0
Flambeau	17.0	20.9	18.5	16.7	16.6	15.5
Norman	17.4	22.6	19.1	15.3	16.5	17.7
Portage	18.7	21.4	20.7	15.7	20.0	16.8
CM29	19.0	23.2	22.9	17.4	19.1	17.0
CM30	19.5	24.1	22.2	17.6	20.6	17.4
CM53	16.7	21.1	17.7	16.3	16.6	14.1
CM61	16.7	20.7	17.2	15.2	17.4	13.7
CM79	17.9	20.6	18.5	17.3	18.7	16.2

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

Table 7. (Continued)

Strain	Minnesota	Manitoba		North Dakota	California	
	St. Paul	Portage la Prairie	Morden	Fargo	Davis[1]	Five Points[1]
					*	*
Altona	3.2	2.1	1.6	2.5	2.0	5.0
Flambeau	3.5	2.1	2.0	2.5	3.0	5.0
Norman	3.2	2.4	1.1	1.5	3.0	5.0
Portage	3.5	1.8	1.6	1.5	2.0	5.0
CM29	4.0	2.3	1.6	2.0	2.0	5.0
CM30	3.8	2.9	1.9	2.0	2.0	5.0
CM53	3.5	2.5	2.1	2.0	1.0	5.0
CM61	3.2	2.3	1.8	2.5	2.0	5.0
CM79	3.0	2.1	1.6	1.5	2.0	4.0

	Seed Weight					
					*	*
Altona	16.4	19.5	17.7		12.2	14.0
Flambeau	14.3	17.1	16.3		17.3	13.8
Norman	14.5	17.9	15.8		18.1	14.2
Portage	16.5	19.8	18.6		18.6	14.8
CM29	17.5	18.1	16.4		16.7	18.2
CM30	16.0	19.2	18.6		14.3	17.3
CM53	14.7	16.9	16.2		21.9	15.0
CM61	15.9	17.4	15.8		23.4	15.8
CM79	15.9	18.8	17.5		17.7	15.2

Table 8. Percentage of protein and oil, Uniform Test 00, 1969.

Strain	Mean of 6 Tests	Ontario		Wisconsin	Minnesota	Manitoba	North Dakota
		Ottawa[1]	Elora	Ashland	Crookston	Morden	Fargo
Altona	40.6	40.9	43.5	39.4	37.7	41.0	41.0
Flambeau	41.4	40.9	46.3	39.0	38.0	42.0	42.0
Norman	41.0	40.0	46.0	38.6	38.6	40.9	41.7
Portage	39.9	39.0	43.2	37.1	38.9	41.1	39.8
CM29	40.4	39.9	44.8	37.3	39.1	40.0	41.1
CM30	38.7	36.8	43.5	37.5	35.4	39.4	39.6
CM53	39.8	39.3	44.8	37.7	36.8	40.2	40.0
CM61	40.1	39.5	44.4	37.6	37.5	40.6	40.9
CM79	38.8	37.8	44.2	34.6	37.3	39.5	39.5
	Mean of 6 Tests	Percentage of Oil					
Altona	21.4	21.8	19.7	21.5	21.8	21.2	22.1
Flambeau	20.8	21.8	18.3	21.5	21.6	19.7	21.6
Norman	21.0	19.4	19.4	21.4	22.1	21.4	22.2
Portage	21.0	20.5	19.9	20.7	21.8	20.9	22.2
CM29	21.5	22.4	19.0	21.3	21.5	21.9	22.7
CM30	22.8	23.4	20.3	22.9	24.1	22.9	23.3
CM53	21.7	24.2	18.8	21.9	21.8	21.0	22.7
CM61	21.3	24.1	18.2	20.9	22.0	20.3	22.5
CM79	22.6	24.8	19.9	21.8	22.7	22.5	23.8

[1] Irrigated.

Table 9. Five-year summary of data, Uniform Test 00, 1965-1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	45	45	36	32	43	40	38	26	26
Altona	29.2	2	+3.8	2.4	28	2.5	18.1	39.8	20.0
Flambeau	29.7	1	+6.4	3.3	30	2.4	16.3	40.8	18.8
Norman	28.7	3	+2.6	2.2	28	2.2	16.8	39.6	20.0
Portage	27.6	4	0	1.6	27	2.3	17.8	38.9	19.9

[1] Days earlier (-) or later (+) than Portage which matured September 15, 115 days after planting.

Table 10. Five-year summary of yield and yield rank, Uniform Test 00, 1965-1969.

Strain	Mean of 45 Tests	Ontario			Wisconsin	Minnesota		
		Ottawa[1]	Kemptville	Elora[2]	Ashland	Crookston	Morris	St. Paul
Years Tested		1967-1969	1967-1969	1966-1969	1965-1969	1965-1969	1966-1969	1965-66 1968-69
Altona	29.2	38.7	41.0	35.6	23.8	18.5	25.7	35.8
Flambeau	29.7	39.4	39.8	36.1	21.4	21.7	27.5	38.4
Norman	28.7	41.0	42.8	33.8	21.2	18.9	23.3	35.7
Portage	27.6	35.4	40.7	33.6	22.1	17.7	23.9	33.9
		Yield Rank						
Altona	2	3	2	2	1	3	2	2
Flambeau	1	2	4	1	3	1	1	1
Norman	3	1	1	3	4	2	4	3
Portage	4	4	3	4	2	4	3	4

[1] Irrigated.
[2] Guelph, 1966-1968.

Table 10. (Continued)

Strain	Manitoba			North Dakota	California	
	Portage la Prairie	Winnipeg	Morden	Fargo	Davis[1]	Five Points[1]
Years Tested	1965-1969	1965-1967	1965-1969	1967, 1969	1968-1969	1966, 1968-69
Altona	30.6	25.2	28.4	19.8	18.3	18.0
Flambeau	24.4	25.8	28.8	21.3	20.8	17.4
Norman	29.6	22.4	28.5	17.9	21.6	19.3
Portage	30.0	22.9	24.9	17.3	28.2	18.8
	Yield Rank					
Altona	1	2	3	2	4	3
Flambeau	4	1	1	1	3	4
Norman	3	4	2	3	2	1
Portage	2	3	4	4	1	2

PRELIMINARY TEST 00, 1969

Strain	Parentage	Generation Composited
1. Flambeau		
2. Portage		
3. CM21A	Acme x L48-7289	F7
4. CM21B	Acme x L48-7289	F7
5. CM24	Acme x L48-7289	F7
6. CM45	Acme x L48-7289	F7
7. CM78	Acme x L48-7289	F9
8. CM93	Acme x L48-7289	F9
9. M61-60	Merit x Norman	F5

Six of the experimental strains are selections from Acme x L48-7289. They averaged very close to each other in yield and maturity and similar to Flambeau in maturity and only slightly lower in yield. M61-60 was similar in maturity but superior in yield. All seven strains showed improved lodging resistance and higher oil content than Flambeau.

Table 11. Descriptive data and shattering scores, Preliminary Test 00, 1969.

Strain	Flower Color	Pubescence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering		
							Urbana [illegible]	Manhattan Kansas	
							4 Wks.	2 Wks.	4 Wks.
Flambeau	P	T	Br	S	Y	Bl	3.0	1.0	3.8
Portage	P	G	Br	D+S	Y	Y	5.0	4.6	5.0
CM21A	P	G	Br	S	Y	G	3.5	1.0	4.6
CM21B	P	G	Br	S	Y	G	3.0	1.5	4.2
CM24	P	G	Br	D	Y	Th	4.0	1.5	4.6
CM45	P	G	Br	S	Y	Y	2.0	1.5	3.8
CM78	P	G	Br	S	Y	G	1.5	1.5	4.2
CM93	P	G	Br	S	Y	Y	1.5	1.5	3.8
M61-60	W	G	Br	S	Y	Y	1.5	1.0	4.2

Table 12. Summary of data, Preliminary Test 00, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	8	8	6	5	6	8	6	6	6
Flambeau	33.1	2	+5.0	3.4	31	2.1	16.7	41.3	20.8
Portage	32.1	8	0	1.4	30	1.8	19.3	40.2	21.5
CM21A	32.1	8	+4.2	1.6	33	2.5	16.9	39.8	20.7
CM21B	32.2	6	+4.5	1.8	33	2.4	17.0	39.3	21.1
CM24	32.4	5	+5.2	2.3	31	2.4	19.8	38.1	22.2
CM45	32.5	4	+4.8	2.0	33	2.6	17.9	38.7	22.0
CM78	32.6	3	+5.7	1.9	31	2.0	16.7	39.1	21.7
CM93	32.2	6	+5.2	2.2	31	2.6	18.5	38.8	22.2
M61-60	34.9	1	+5.2	2.1	33	1.7	17.3	39.8	21.6

[1] Days earlier (-) or later (+) than Portage which matured September 17, 121 days after planting.

Table 13. Disease data, Preliminary 00, 1969.

Strain	BB Ames Iowa	BP Ill.	BSP Urbana Ill.	PR2 Ind.	PR Ind.
	n	a	n	a	a
Flambeau	2	2	2	5	S
Portage	2	3	3	5	S
CM21A	2	2	2	4	S
CM21B	3	3	2	4	H
CM24	3	3	2	5	S
CM45	3	3	2	4	S
CM78	3	3	3	3	S
CM93	2	3	2	4	S
M61-60	3	3	2	5	H

Table 14. Yield and yield rank, Preliminary CO, 1969.

Strain	Mean of 8 Tests	Ontario			Wisconsin	Minnesota	Manitoba		North Dakota	Calif.
		Ottawa[1]	Kemptville	Elora	Ashland	Crookston	Portage la Prairie	Morden	Fargo	Davis*
Flambeau	33.1	50.2	36.4	43.2	19.5	24.9	35.4	31.8	23.3	24.1
Portage	32.1	46.6	34.7	41.5	20.8	23.9	36.6	33.1	19.2	37.2
CM21A	32.1	50.2	32.7	35.3	22.6	25.0	37.4	31.2	22.0	36.3
CM21B	32.2	52.8	31.5	37.4	24.0	25.5	38.3	30.8	17.6	34.1
CM24	32.4	53.3	33.1	39.6	20.8	22.4	39.0	28.6	22.0	30.7
CM45	32.5	49.6	33.8	43.4	21.9	23.6	35.9	28.8	22.6	33.6
CM78	32.6	57.9	36.7	44.2	18.7	18.8	34.1	30.9	19.7	27.3
CM93	32.2	48.1	39.2	43.9	20.8	18.0	35.6	31.2	20.4	28.4
M61-60	34.9	56.2	49.6	41.7	23.3	21.6	35.7	31.5	19.8	34.5
C.V. (%)		12.6	14.3	5.9	12.5	19.4	5.6	12.0	16.8	—
L.S.D. (5%)		N.S.	11.0	5.6	N.S.	9.2	N.S.	N.S.	7.9	—
Row Sp. (In.)		34	14	12	24	24	36	30	40	30

	Yield Rank									
Flambeau	2	5	4	4	8	3	8	2	1	9
Portage	8	9	5	6	5	4	4	1	8	1
CM21A	8	5	8	9	3	2	3	4	3	2
CM21B	6	4	9	8	1	1	2	7	9	4
CM24	5	3	7	7	5	6	1	9	3	6
CM45	4	7	6	3	4	5	5	8	2	5
CM78	3	1	3	1	9	8	9	6	7	8
CM93	6	8	2	2	5	9	7	4	5	7
M61-60	1	2	1	5	2	7	6	3	6	3

* Not included in the mean.

[1] Irrigated.

Table 15. Maturity dates, Preliminary Test 00, 1969.

Strain	Mean of 6 Tests	Ontario			Wis.	Minnesota	Manitoba		North Dakota	Calif.
		Ottawa-	Kempt-ville	Elora	Ash-land	Crookston	Portage la Prairie	Mor-den	Fargo	Davis-
		*					*			*
Flambeau	+5.0		+1	0	+10	+-		+3	+7	+1
Portage	0		0	0	0	0		0	0	0
OM21A	+-.2		0	0	+12	+6		+2	+5	+1
OM21B	+-.5		+2	+2	+10	+6		+2	+5	+1
OM2-	+5.2		+2	-1	+12	+7		+5	+6	-1
OM-5	+-.6		+2	0	+14	+6		+3	+7	+2
OM-8	+5.7		+2	+2	+16	+7		+5	+5	0
OM93	+5.2		+2	+2	+14	+7		+3	+6	+2
M61-60	+5.2		+1	+2	+13	+7		+1	+7	-1
Date pltd.	5-19	5-29	5-22	5-26	5-14	5-28	5-21	5-13	5-9	6-5
Portage mat.	9-17	—	9-9	9-29	9-18	9-22	--	9-16	9-3	9-2
Days to mat.	121	—	110	126	127	117	—	126	117	89

* Not included in the mean.
- Irrigated.

UNIFORM TEST 3, 1969

Strain	Parentage	Generation Composited	Previous Testing
			years
1. Clay	Capital x Danville	F2	2
2. Grant	Lincoln x Seneca	F2	4
3. Merit	Blackhawk x Capital	F2	4
4. Traverse	Lincoln x Mandarin (Straw)	F2	5
5. M59-121	[illegible]	F2	1
6. M61-39	[illegible]	F2	P.T. 3
7. M61-92	Comet x M313	F2	P.T. 3
8. M61-[illegible]	Blackhawk x Harosoy	F2	P.T. 3
9. M61-[illegible]	Blackhawk x Harosoy	F2	P.T. 3
10. M38-10-	M18-3386 x Clark	F2	1
11. M-8-202	Harisoy x Chippewa	F2	1

The three-year summary of Tables 24 and 25 gives data on Clay, Grant, Merit, and Traverse. The overall mean yields were surprisingly similar, considering that the range in maturity was almost nine days from Clay to Traverse. The early varieties, Clay and Merit despite its height , showed excellent lodging resistance.

Among the experimental strains, which range from two to five days later than Merit, only M59-121 and M61-[illegible] showed evidence of superior yield. M59-121 was in the test last year and yielded well then also. M38-10- yielded well last year but dropped below Clay and Merit this year. M61-92 had good regional yield in 1969 along with high protein content.

Table 16. Descriptive data and shattering scores, Uniform Test 0, 1969.

Strain	Flower Color	Pubescence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering Urbana Ill. 4 wks.	Shattering Manhattan Kansas 2 wks.	Shattering Manhattan Kansas 4 wks.	Minn. Iron Chlorosis	Hypocotyl Length mm
Clay	P	G	Br	S	Y	Y	2.5	2.5	2.5	2	234
Grant	W	Lt	Br	S	Y	Bl	3	2.5	2.5	3.5	214
Merit	W	G	Br	D	Y	Bf	1	1	1	2	229
Traverse	W	G	Br	S	Y	Y	3.5	1	1	4	226
M59-121	W	T	Br	D	Y	Bl	3	1	3.8	1.5	207
M60-39	W	G	Br	D	Y	Y	2.5	1	3	3.5	222
M60-92	P	G	Br	S	Y	Y	2.5	1	3	3.5	231
M60-400	W	G	Br	D	Y	Y	4	1	5	2.5	217
M60-425	W	G	Br	D+S	Y	Y	3.5	1	1	2.5	210
W3S-184	P	T	Br	D	Lg	Bl	1	1	1	2.5	175
W4S-202	P	T	Br	S+D	Y	Bl	1	1	1	3.5	123

Table 17. Summary of data, Uniform Test 0, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition Protein	Seed Composition Oil
No. of Tests	8	8	7	8	8	8	6	4	4
Clay	34.3	3	-4.7	1.7	31	2.2	16.2	42.0	21.9
Grant	31.9	10	+2.6	3.0	35	2.5	16.4	42.3	20.4
Merit	34.2	4	0	2.3	38	2.3	14.0	41.5	21.3
Traverse	32.1	9	+4.6	2.8	35	2.6	17.4	42.5	20.7
M59-121	34.6	2	+2.1	2.5	38	2.7	15.5	40.9	21.4
M60-39	30.8	11	+4.4	2.3	33	2.4	14.3	42.9	20.7
M60-92	32.9	5	+2.1	1.9	33	2.3	17.1	43.0	20.4
M60-400	35.8	1	+4.6	2.8	39	2.2	16.1	41.3	21.4
M60-425	32.4	8	+5.6	2.6	39	2.0	17.3	42.2	20.1
W3S-184	32.8	6	+4.6	2.4	38	2.2	14.2	42.5	20.4
W4S-202	32.5	7	+2.3	2.5	37	2.5	13.8	42.5	20.6

[1] Days earlier (-) or later (+) than Merit which matured September 22, 126 days after planting.

Table 18. Disease data, Uniform Test 0, 1969.

Strain	BB Ames Iowa		BP		BSR Urbana	BSR Kanawha Iowa		DM Worth-ington	FE_2	PR	SMV Iowa	
			Ill.	Iowa	Ill.			Ind.	Ind.	Ind.		
	n	a	a	a	n	n		n	a	a	a	
						1	2				3	4
Clay	2	3.5	4	3.5	2	7	6	3	5	S	85	85
Grant	2	4.0	4	3.5	2	17	46	3	5	S	75	25
Merit	2	3.0	4	3.5	3	10	6	3	5	R	75	25
Traverse	2	4.0	4	3.5	2	14	34	2	3	S	65	50
M59-121	2	3.0	4	4.5	1	12	30	3	5	S	90	45
M60-39	2	4.0	4	4.0	2	13	23	4	5	S	70	15
M60-92	3	4.0	4	4.5	2	14	47	3	5	S	45	55
M60-400	3	2.5	4	4.5	2	14	27	3	4	R	85	65
M60-425	2	4.0	4	4.0	2	15	28	3	5	R	100	35
W3S-184	2	3.0	4	3.5	2	21	59	4	5	S	100	70
W4S-202	3	3.5	4	4.0	2	16	50	2	3	S	95	30

1 Mean height of browning in diseased stems.
2 Percent of plants with browning.
3,4 Percent of plants infected, measured serologically (3) and by transmission to beans (4).

Table 19. Yield and yield rank, Uniform Test C, 1969.

Strain	Mean of 8 Tests	Ontario			Ohio	Wisconsin
		Kempt-ville	Elora	Ridge-town	Hoyt-ville	Spooner-
					*	
Clay	34.3	45.6	44.6	46.2	20.4	27.2
Grant	31.9	44.7	34.3	46.3	17.9	23.3
Merit	34.2	44.8	40.2	51.5	17.2	32.3
Traverse	32.1	45.8	30.9	44.2	21.8	23.4
M59-121	34.6	43.0	30.2	51.3	17.9	34.3
M60-39	30.8	33.2	35.3	43.4	16.1	27.0
M60-92	32.9	45.9	35.4	50.2	20.5	23.2
M60-400	35.8	49.6	40.6	55.9	23.8	32.0
M60-425	32.4	39.6	27.6	48.3	20.4	34.0
W3S-184	32.8	40.6	38.7	45.9	19.3	24.0
W4S-202	32.5	39.8	34.1	50.2	21.8	24.0
Coef. of Var. (%)		12.2	10.5	7.0	--	16.2
L.S.D. (5%)		5.3	6.6	4.8	--	6.9
Row Spacing (In.)		24	12	24	32	36

	Yield Rank					
Clay	3	4	11	10	6	11
Grant	10	6	12	9	10	10
Merit	4	5	3	2	11	1
Traverse	9	3	10	12	8	9
M59-121	2	7	13	3	9	2
M60-39	11	11	6	11	11	11
M60-92	5	2	5	7	5	7
M60-400	1	1	2	1	1	6
M60-425	8	9	11	8	2	5
W3S-184	6	8	4	9	4	8
W4S-202	7	10	8	6	3	4

* Not included in the mean.
1 Irrigated.

Table 19. (Continued)

Strain	Minnesota			North Dakota	South Dakota	Calif.
	Crookston	Morris	St. Paul	Fargo	Milbank	Davis*
Clay	25.5	27.4	35.0	23.0	15.5	27.2
Grant	24.4	26.2	27.0	23.3	16.6	20.9
Merit	22.5	26.6	30.5	24.5	15.5	29.4
Traverse	22.0	30.7	29.8	25.2	20.8	32.0
M59-121	25.9	30.2	33.0	29.0	17.0	23.7
M60-39	22.8	27.1	32.2	25.5	15.1	19.4
M60-92	21.2	24.9	29.2	26.4	19.7	20.9
M60-400	24.8	27.3	27.1	28.8	16.1	24.9
M60-425	22.8	26.7	33.4	25.9	14.5	22.4
W3S-184	21.0	25.9	32.3	24.0	17.6	21.3
W4S-202	20.3	23.9	30.8	27.2	16.6	17.2
Coef. of Var. (%)	9.6	6.7	8.1	13.8	18.4	--
L.S.D. (5%)	3.1	2.6	3.6	5.1	N.S.	--
Row Spacing (In.)	24	30	30	40	36	30

	Yield Rank					
Clay	2	3	1	11	8	3
Grant	4	8	11	10	5	6
Merit	7	7	7	8	8	2
Traverse	8	1	8	7	1	1
M59-121	1	2	3	1	4	5
M60-39	5	5	5	6	10	10
M60-92	9	10	9	4	2	8
M60-400	3	4	10	2	7	4
M60-425	5	6	2	5	11	6
W3S-184	10	9	4	9	3	7
W4S-202	11	11	6	3	5	11

Table 20. Maturity dates, Uniform Test 0, 1969.

Strain	Mean of 7 Tests	Ontario			Ohio	Wisconsin
		Kempt-ville	Elora	Ridge-town	Hoyt-ville	Spooner[1]
					*	
Clay	-4.7	- 2	0	-6	- 5	- 5
Grant	+2.6	+ 7	+3	+1	- 1	+ 3
Merit	0	0	0	0	0	0
Traverse	+4.6	+11	+3	+3	+ 1	+ 8
M59-121	+2.1	+ 7	+3	+1	0	+ 2
M60-39	+4.4	+11	+2	+5	- 2	+ 6
M60-92	+2.1	+ 7	+2	-1	+ 2	+ 4
M60-400	+4.6	+ 7	+3	+3	- 2	+ 8
M60-425	+5.6	+11	+4	+4	+ 4	+10
W3S-184	+4.6	+10	+5	+3	+ 5	+ 3
W4S-202	+2.3	+ 7	+3	+1	+ 6	+ 1
Flambeau (00)		- 8	-2	--	--	--
Chippewa 64 (I)		--	--	+6	+10	+ 4
Date planted	5-19	5-22	5-28	5-26	6-4	5-27
Merit matured	9-22	9-18	10-4	9-27	9-10	9-25
Days to mature	126	119	129	124	98	121

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

Table 20. (Continued)

Strain	Minnesota			North Dakota	South Dakota	California
	Crookston	Morris	St. Paul	Fargo	Milbank	Davis[1]
	*				*	*
Clay		- 7	-6	- 7	-6	0
Grant		+ 2	+1	+ 1	0	+1
Merit		0	0	0	0	0
Traverse		+ 3	+2	+ 2	+1	0
M59-121		+ 1	+2	- 1	-1	+2
M60-39		+ 4	+1	+ 2	+2	+2
M60-92		+ 1	+2	0	-2	+2
M60-400		+ 5	+3	+ 3	+4	0
M60-425		+ 3	+3	+ 4	+3	+1
W3S-184		+ 5	+3	+ 3	-1	+4
W4S-202		+ 2	+2	0	-2	+3
Flambeau (00)		-12	-8	-13	--	-8
Chippewa 64 (I)		+ 3	+3	+ 5	+1	+8
Date planted	5-28	5-14	5-8	5-9	5-26	6-5
Merit matured	--	9-15	9-12	9-23	10-4	9-10
Days to mature	--	124	127	137	131	97

Table 21. Lodging scores and plant height, Uniform Test 3, 1969.

Strain	Mean of 8 Tests	Ontario			Ohio	Wis.	Minnesota			North Dakota	South Dakota	Cal.
		Kemptville	Elora	Ridgetown	Hoytville	Spooner	Crookston	Morris	St. Paul	Fargo	Millbank	Davis
					*							*
Clay	1.7	2.0	1.1	1.0	1.0	1.0	2.0	1.5	2.8	2.0		1.0
Grant	3.0	3.0	3.1	2.5	1.0	3.5	3.5	1.8	4.2	2.0		1.0
Merit	2.3	2.0	1.8	1.6	1.0	2.7	2.2	2.0	4.0	2.0		1.0
Traverse	2.8	3.0	2.1	1.3	1.0	4.0	2.8	3.0	4.2	2.0		2.0
M59-121	2.5	3.0	2.3	1.3	1.0	2.5	2.8	2.0	4.0	2.0		1.0
M60-39	2.3	3.0	1.8	1.1	1.0	1.0	2.8	2.2	3.5	3.0		2.0
M60-92	1.9	2.0	1.3	1.0	1.0	1.0	2.2	2.0	3.8	2.0		1.0
M60-400	2.8	2.0	3.0	2.0	1.0	4.0	2.5	2.0	3.5	3.0		1.0
M60-425	2.6	5.0	1.4	1.4	1.0	2.7	2.2	2.0	3.5	2.0		1.0
W3S-184	2.4	2.0	3.9	2.4	1.0	2.0	2.8	2.2	3.2	1.0		2.0
W4S-202	2.5	2.0	3.4	1.6	1.0	2.7	3.0	2.0	3.5	2.0		2.0

	Mean of 8 Tests	Plant Height										
					*						*	*
Clay	31	37	31	28	22	29	24	30	36	31	26	37
Grant	35	41	36	36	23	33	28	35	39	34	30	36
Merit	38	40	35	39	27	37	28	40	42	39	36	36
Traverse	35	37	33	37	25	34	28	37	40	36	35	35
M59-121	38	41	39	37	26	36	32	39	42	41	35	36
M60-39	33	37	34	31	22	30	26	36	38	34	31	35
M60-92	33	36	31	33	24	31	26	35	39	34	31	35
M60-400	39	40	38	40	25	36	30	40	43	41	37	36
M60-425	39	39	38	39	28	37	32	39	44	41	36	32
W3S-184	38	42	37	38	25	37	28	39	42	40	34	36
W4S-202	37	42	33	38	26	37	30	38	40	40	35	36

* Not included in the mean.
1 Irrigated.

Table 22. Seed quality scores and seed weight, Uniform Test 0, 1969.

Strain	Mean of 8 Tests	Ontario			Ohio	Wis.	Minnesota			North Dakota	South Dakota	Cal.
		Hempt-ville	Elora	Ridge-town	Hoyt-ville	Spoon-er[1]	Crooks-ton	Mor-ris	St. Paul	Fargo	Mil-bank	Davis
					*						*	*
Clay	2.2	3.0	2.0	2.0	1.7	1.0	2.8	2.8	3.0	1.0	2.0	4.0
Grant	2.5	4.0	3.0	2.0	2.0	1.0	3.2	2.2	2.8	1.5	3.0	1.0
Merit	2.3	3.0	2.0	2.0	2.0	1.5	3.2	2.2	2.5	2.0	2.0	4.0
Traverse	2.6	3.0	2.0	2.0	1.7	2.5	3.5	2.0	3.0	2.5	2.0	3.0
M59-121	2.7	4.0	2.0	3.0	2.0	2.0	3.2	2.5	2.8	2.0	2.0	4.0
M60-39	2.4	5.0	2.0	2.0	1.5	1.5	3.0	2.0	2.5	1.0	2.5	3.0
M60-92	2.3	3.0	3.0	2.0	1.2	1.5	2.5	2.0	3.0	1.5	2.0	1.0
M60-400	2.2	4.0	1.0	2.0	1.5	2.0	2.5	2.2	2.2	1.5	2.0	2.0
M60-425	2.0	2.0	2.0	2.0	1.7	1.5	3.0	2.0	2.2	1.0	2.0	3.0
W3S-184	2.2	5.0	1.0	2.0	1.5	1.0	3.2	1.8	2.8	1.0	2.5	4.0
W4S-202	2.5	5.0	2.0	3.0	2.2	1.5	3.2	1.8	2.8	1.0	2.5	4.0

	Mean of 6 Tests	Seed Weight									
					*						*	*
Clay	16.2	17.3	14.8	19.5	16.6		15.5	14.6	15.3		10.9	13.3
Grant	16.4	20.1	15.9	20.8	14.2		14.8	12.5	14.4		11.4	13.9
Merit	14.0	15.4	13.1	16.6	13.8		14.0	12.0	13.0		9.5	12.4
Traverse	17.4	20.6	17.2	22.1	16.0		15.6	13.6	15.8		13.8	14.1
M59-121	15.5	18.8	14.9	18.0	14.3		13.7	13.1	14.6		10.7	13.9
M60-39	14.3	15.2	13.8	16.8	14.2		14.3	12.1	13.4		10.1	15.1
M60-92	17.1	20.3	15.1	23.6	16.5		14.9	13.2	15.3		12.7	18.4
M60-400	16.1	18.4	14.8	21.1	15.1		14.7	13.0	14.4		10.6	13.9
M60-425	17.3	20.2	16.8	23.6	15.8		13.8	12.9	16.2		11.7	13.4
W3S-184	14.2	15.4	13.6	17.9	14.1		12.6	11.8	13.8		10.6	13.2
W4S-202	13.8	16.7	13.4	16.4	13.1		12.7	10.8	12.9		10.0	11.5

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

Table 23. Percentages of protein and oil, Uniform Test 0, 1969.

Strain	Mean of 4 Tests	Ontario Elora	Wisconsin Spooner[1]	Minnesota St. Paul	North Dakota Fargo
Clay	42.0	44.3	43.4	41.5	38.8
Grant	42.3	46.6	42.3	42.4	37.7
Merit	41.5	46.2	40.5	41.0	38.4
Traverse	42.5	46.5	41.2	43.0	39.1
M59-121	40.9	46.0	40.8	41.1	35.6
M60-39	42.9	47.5	42.3	42.6	39.1
M60-92	43.0	47.6	42.6	43.4	38.3
M60-400	41.3	46.4	40.4	40.9	37.4
M60-425	42.2	46.9	41.9	41.4	38.5
W3S-184	42.5	46.5	42.6	41.7	39.1
W4S-202	42.5	46.5	41.8	42.6	39.1
	Mean of 4 Tests	Percentage of oil			
Clay	21.9	20.6	21.4	22.2	23.3
Grant	20.4	18.3	19.9	20.7	22.7
Merit	21.3	19.3	21.2	21.6	23.0
Traverse	20.7	19.3	19.9	20.7	22.7
M59-121	21.4	19.0	21.1	21.8	23.7
M60-39	20.7	19.0	20.5	20.5	22.6
M60-92	20.4	18.7	20.9	20.0	22.0
M60-400	21.4	19.2	21.4	21.0	23.8
M60-425	20.1	18.7	20.3	20.2	21.1
W3S-184	20.4	18.3	20.4	20.5	22.4
W4S-202	20.6	18.7	20.8	20.8	22.1

[1] Irrigated.

Table 24. Three-year summary of data, Uniform Test 0, 1967-1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	25	25	24	21	24	21	16	13	13
Clay	33.2	3	-5.0	1.5	27	2.0	16.2	40.3	21.7
Grant	33.9	1	+1.8	2.5	31	2.0	16.3	40.5	20.1
Merit	33.2	3	0	1.9	33	2.0	14.2	39.7	21.1
Traverse	33.6	2	+3.9	2.3	32	2.1	17.4	41.1	20.4

[1] Days earlier (-) or later (+) than Merit which matured September 22, 123 days after planting.

Table 25. Three-year summary of yield and yield rank, Uniform Test 0, 1967-1969.

Strain	Mean of 25 Tests	Ontario			Michigan	Wisconsin	
		Kemptville	Elora[1]	Ridgetown	East Lansing	Spooner	Durand
Years Tested		1967-1969	1967-1969	1967-1969	1967-1968	1967-1969	1967-1968
Clay	33.2	43.2	34.4	45.7	32.9	29.1	23.5
Grant	33.9	47.0	33.6	51.1	36.7	29.1	26.6
Merit	33.2	44.9	32.4	49.3	29.2	30.4	24.7
Traverse	33.6	46.0	30.3	49.5	38.2	29.2	25.7
	Yield Rank						
Clay	3	4	1	4	3	3	4
Grant	1	1	2	1	2	3	1
Merit	3	3	3	3	4	1	3
Traverse	2	2	4	2	1	2	2

[1] Guelph, 1967-68.
[2] Revillo, 1967-68.
[3] Irrigated.

Table 25. (Continued)

Strain	Minnesota			North Dakota	South Dakota	California
	Crookston	Morris	St. Paul	Fargo	Milbank[2]	Davis[3]
Years Tested	1967-1969	1967-1969	1968-1969	1967, 1969	1967-1969	1968-1969
Clay	20.5	27.7	37.0	22.4	25.8	25.4
Grant	17.0	26.4	29.6	21.5	27.1	22.2
Merit	16.9	25.7	34.0	22.5	24.7	33.1
Traverse	16.4	27.1	33.8	23.0	27.4	28.9
	Yield Rank					
Clay	1	1	1	3	3	3
Grant	2	3	4	4	2	4
Merit	3	4	2	2	4	1
Traverse	4	2	3	1	1	2

PRELIMINARY TEST 0, 1969

Strain	Parentage	Generation Composited
1. Merit		
2. Traverse		
3. M61-51	Merit x M55-67	F_5
4. M61-52	Merit x Harosoy	F_5
5. M61-65	Merit x II-55-19	F_5
6. M61-74	Merit x M55-67	F_5
7. M61-96	Merit x Harosoy	F_5
8. M61-99	Merit x Harosoy	F_5
9. M61-105	Merit x Norman	F_5
10. M62-93	Merit x M406	F_5
11. M62-101	Merit x M406	F_5
12. M62-103	Merit x M406	F_5
13. M62-130	Merit x M406	F_5

There is usually a positive correlation between yield and maturity in this group, and the fact that the early check, Merit, outyielded the late check, Traverse, makes interpreting the relative strain yields difficult. Four strains stand out in yield performance. M62-93 topped the test, well above both checks, and averaged about a day later than Traverse. Among the mid-group 0 strains, M61-96 showed the best mean performance, outyielding Merit. M61-51 and M61-52 ranked fairly high in yield and were two to three days earlier than Merit.

Table 26. Descriptive data and shattering scores, Preliminary Test 0, 1969.

Strain	Flower Color	Pubescence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering		
							Urbana Illinois	Manhattan Kansas	
							4 wks.	2 wks.	4 wks.
Merit	W	G	Br	D	Y	Bf	1.0	1.0	1.0
Traverse	W	G	Br	S	Y	Y	3.5	1.5	3.0
M61-51	P	G	Br	D	Y	Y	1.0	3.8	4.8
M61-52	W	G	Br	D	Y	Y	2.0	3.0	4.8
M61-65	W	G	Br	S	Y	Y	2.5	4.8	5.0
M61-74	W	G	Br	S	Y	Y	3.0	4.8	5.0
M61-96	W	G	Br	D	Y	Y	2.0	3.8	3.8
M61-99	P	G	Br	D	Y	Y	1.0	1.0	1.0
M61-105	W	G	Br	D	Y	Y	1.0	1.0	1.0
M62-93	W	G	Br	D	Y	Y	1.0	1.0	1.0
M62-101	W	G	Br	D	Y	Y	1.5	1.0	4.8
M62-103	W	G	Br	D	Y	Y	1.0	1.0	1.0
M62-130	P	G	Br	D	Y	Y	1.0	3.8	4.2

Table 27. Summary of data, Preliminary Test 0, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	4	4	4	3	3	4	4	4	4
Merit	43.8	4	0	3.1	40	1.9	14.9	41.6	21.3
Traverse	39.9	11	+3.0	3.2	37	2.5	18.1	42.6	20.4
M61-51	42.0	6	-2.8	2.3	38	1.9	15.6	41.2	21.0
M61-52	41.9	7	-2.5	1.5	36	1.9	15.6	41.9	21.2
M61-65	37.7	13	-3.5	3.1	38	2.3	14.2	41.0	21.1
M61-74	40.9	8	-1.0	1.9	38	2.0	19.1	42.7	21.1
M61-96	45.5	2	+0.8	2.3	40	1.6	16.2	41.3	21.8
M61-99	40.9	8	-0.5	2.7	37	1.9	14.3	41.1	21.7
M61-105	40.9	8	0	2.8	40	2.3	17.3	41.4	21.9
M62-93	46.8	1	+4.3	2.7	37	2.9	18.5	40.8	22.1
M62-101	44.0	3	+0.5	2.8	41	2.1	18.9	41.0	21.6
M62-103	43.3	5	+2.5	2.6	36	2.1	20.2	40.7	21.5
M62-130	39.2	12	-0.8	2.5	42	2.5	16.9	42.6	20.6

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

Table 28. Disease data, Preliminary Test 0, 1969.

Strain	BB Ames Iowa n	BP Ill. a	BSR Urbana Ill. n	DM Worthington Ind. n	FE$_2$ Ind. a	PR Ind. a
Merit	3	4	2	3	5	R
Traverse	3	3	2	2	3	S
M61-51	3	4	2	3	4	R
M61-52	4	4	2	4	5	R
M61-65	3	3	2	-	4	R
M61-74	3	4	2	3	4	R
M61-96	4	4	2	3	5	R
M61-99	4	4	2	3	5	R
M61-105	2	4	2	-	5	R
M62-93	3	4	2	3	5	R
M62-101	3	4	3	3	5	R
M62-103	2	4	2	3	5	R
M62-130	3	4	3	3	5	R

Table 29. Yield and yield rank, Preliminary Test 0, 1969.

Strain	Mean of 4 Tests	Ontario			Wisconsin	Minnesota	North Dakota	South Dakota	California[1]
		Kemptville	Elora	Ridgetown	Spooner	St. Paul	Fargo	Milbank	Davis
					*		*	*	*
Merit	43.8	52.2	39.6	50.5	24.3	33.0	26.3	15.9	31.6
Traverse	39.9	44.5	37.6	44.7	15.6	32.7	28.1	17.9	26.8
M61-51	42.0	54.4	39.2	41.9	22.6	32.3	25.6	15.5	33.6
M61-52	41.9	45.4	41.3	45.4	16.0	35.3	22.6	17.5	27.3
M61-65	37.7	39.9	37.3	40.6	21.3	33.1	26.3	16.9	28.8
M61-74	40.9	45.2	40.1	44.6	22.1	33.6	27.5	14.8	21.9
M61-96	45.5	49.2	42.4	56.3	26.6	33.9	32.6	19.3	30.1
M61-99	40.9	39.1	43.8	47.9	19.7	32.7	28.2	16.7	33.6
M61-105	40.9	41.4	39.8	46.9	32.7	35.3	33.8	19.0	25.0
M62-93	46.8	53.2	45.1	49.9	24.0	39.1	24.9	20.3	29.0
M62-101	44.0	39.2	47.0	54.0	30.4	35.9	22.5	18.1	28.6
M62-103	43.3	42.4	38.9	52.2	30.7	39.5	24.6	19.2	24.9
M62-130	39.2	40.6	41.3	45.8	26.1	29.1	25.4	17.5	24.0
Coef. of Var. (%)		16.1	10.3	6.4	24.1	10.0	20.1	15.2	--
L.S.D. (5%)		15.0	9.2	6.7	N.S.	7.0	11.7	N.S.	--
Row Spacing (In.)		14	12	24	36	30	40	36	30
					Yield Rank				
Merit	4	3	9	4	6	9	6	11	3
Traverse	11	7	12	10	13	10	4	6	9
M61-51	6	1	10	12	8	12	8	12	1
M61-52	7	5	5	9	12	4	12	7	8
M61-65	13	11	13	13	10	8	6	9	6
M61-74	8	6	7	11	9	7	5	13	13
M61-96	2	4	4	1	4	6	2	2	4
M61-99	8	13	3	6	11	10	3	10	1
M61-105	8	9	8	7	1	4	1	4	10
M62-93	1	2	2	5	7	2	10	1	5
M62-101	3	12	1	2	3	3	13	5	7
M62-103	5	8	11	3	2	1	11	3	11
M62-130	12	10	5	8	5	13	9	7	12

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

Table 30. Maturity dates, Preliminary Test 0, 1969.

Strain	Mean of 4 Tests	Ontario			Wisconsin	Minnesota	North Dakota	South Dakota	California[1]
		Kemptville	Elora	Ridgetown	Spooner	St. Paul	Fargo	Milbank	Davis
					*		*	*	*
Merit	0	0	0	0	0	0	0	0	0
Traverse	+3.0	+4	+3	+3	+10	+2	+2	-1	+1
M61-51	-2.8	-1	0	-6	- 8	-4	-7	-5	0
M61-52	-2.5	-1	-3	0	- 5	-6	-9	-4	+1
M61-65	-3.5	-1	-1	-5	-10	-7	-9	-6	+1
M61-74	-1.0	0	0	0	- 7	-4	-1	-4	0
M61-96	+0.8	+3	0	-1	0	+1	0	-1	-1
M61-99	-0.5	-1	0	-2	- 5	+1	-8	-2	-1
M61-105	0	0	-1	0	- 3	+1	-3	-2	0
M62-93	+4.3	+5	+2	+8	+ 4	+2	0	+3	-1
M62-101	+0.5	0	+1	0	- 3	+1	-1	-4	+1
M62-103	+2.5	+4	+1	+3	+ 2	+2	+1	0	+2
M62-130	-0.8	-2	0	-2	- 5	+1	-3	-4	+1
Flambeau (00)		-8	-2	--	--	-8	-13	--	- 8
Chippewa 64 (I)		--	--	+6	+ 4	+3	+ 5	+1	+10
Date planted	5-21	5-22	5-28	5-26	5-28	5-8	5-9	5-26	6-5
Merit matured	9-23	9-19	10-5	9-27	9-27	9-12	9-23	10-4	9-11
Days to mature	125	120	130	124	122	127	137	131	98

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

UNIFORM TEST I, 1969

Strain	Parentage	Generation Composited	Previous Testing (years)
1. Chippewa 64	Chippewa^{8} x Blackhawk	29 F_3 lines	7
2. Hark	Hawkeye x Harosoy	F_9	5
3. Rampage (A2-5405)	Clark x Chippewa	F_7	4
4. Wirth (A2-5407)	Clark x Chippewa	F_7	4
5. L65-1342	Wayne^{2} x L62-1926	F_3	P.T. I
6. Anoka (M54-160)	Korean x II-42-37	F_5	3
7. M59-120	II-54-240 x II-54-139	F_5	1
8. M59-213	Blackhawk x Harosoy	F_5	1
9. M60-222	II-42-4-6 x II-44-46	F_5	P.T. I
10. M60-266	II-42-4-6 x Pridesoy II	F_5	P.T. I
11. M60-405	Blackhawk x Harosoy	F_5	P.T. I
12. M60-406	Blackhawk x Harosoy	F_5	P.T. I
13. M60-411	Blackhawk x Harosoy	F_5	P.T. I
14. Dunn (W1-4221)	Grant x Chippewa	F_6	4

The two check varieties, Chippewa and Hark, and the four recently released varieties, Anoka, Dunn, Rampage, and Wirth, have been in this test four years or more and a four-year summary is presented in Tables 39 and 40. Hark and Rampage are on the late side of Group I and have the highest yields, with Rampage averaging a bushel above Hark. They are similar in maturity, lodging, and seed quality and size, but Hark is high in protein and Rampage is high in oil. Rampage has been superior in shattering resistance.

The remaining four varieties are early Group I and very similar in maturity. The three new ones were equal in mean yield, averaging one to two bushels above Chippewa 64. Anoka is larger seeded and higher in oil than the other three. Wirth has Chippewa's good shattering and lodging resistance. The four are similar in most other agronomic traits.

All four of the early experimental strains (M59-213, M60-405, -406, and -411) showed a slight yield advantage over the early varieties, Anoka, Dunn, and Wirth. The four later strains averaged below Hark and Rampage in yield. L65-1342 and M60-266 had higher than average protein contents.

ANOKA

Anoka is an F_4 plant progeny selected by J. W. Lambert in Minnesota. A chronological outline of its origin and development is given below:

1954 - Cross of II-42-37 x Korean made at St. Paul by J. W. Lambert. II-42-37 was a selection of Group I maturity from Lincoln x (Lincoln x Richland).

1954-55 - F_1 hybrid grown in greenhouse at St. Paul.

1955 - F_2 population grown at St. Paul; individual plant selections made.

1956 - F_3 plant rows grown at Rosemount. Selection on row and plant bases.

1957 - F_4 plant rows grown at Waseca. Selection on row and plant bases.

1958 - Duplicate F_5 plant rows grown at Rosemount and Morris. Whole rows selected and bulked. Row 3373 (both locations) designated II-54-160.

1959 - II-54-160 tested in replicated 10-foot, single-row plots at Waseca.

1960 - II-54-160 tested in replicated rod rows at St. Paul and Waseca.

1961 - II-54-160 tested in replicated "combine" plots at Waseca and in replicated rod rows at Lamberton. Thirty individual plants selected.

1962 - II-54-160 tested in replicated rod rows at Waseca, Lamberton, and Blue Earth. Twenty-five uniform plant progeny rows grown at Rosemount and seed bulked for purified seed source.

1963 - II-54-160 tested as in 1962. Purified seed increased for use in larger plots.

1964 - II-54-160 tested in "combine" plots at Waseca and Lamberton and in rod rows at Blue Earth.

1965 - Designated M54-160 and entered in Uniform Preliminary Test I. Also tested in "combine" plots at Waseca and Lamberton.

1966 and 1967 - M54-160 in Uniform Test I in "combine" tests at Waseca and Lamberton, and in rod rows at Blue Earth and Big Lake.

1967-68 - Four pounds of breeder's seed increased to 83 pounds in Chile to supplement supply on hand.

1968 - M54-160 in Uniform Test I and in same Minnesota locations as in 1966 and 1967. Seed supply increased to 87 bushels by the Foundation Seed branch of the Minnesota Crop Improvement Association. Seed shared with Michigan, North Dakota, and South Dakota.

1969 - M54-160 tested as in three previous years. Seed increased by MCIA and other three states.

1970 - M54-160 named "Anoka" and released to registered and certified seed growers in four states.

WIRTH AND RAMPAGE

Wirth and Rampage were developed concurrently by the United States Department of Agriculture - Iowa Agricultural Experiment Station soybean breeding project. The cross and selection were made by C. R. Weber. An outline of the origin follows:

1955 - Cross AX119 (Clark x Chippewa) was made in the field at Ames, Iowa.

1956 - F_1's were grown in the field at Ames.

1957 - 220 seed F_2 bulk was grown in the field at Ames.

1958 - 220 seed F_3 bulk was grown in the field at Ames. At maturity, 24 early (Chippewa), 19 midseason (Hawkeye) and 14 late (Clark) maturing plants were selected.

1959 - A F_4 progeny row was grown at Ames for each selected F_3 plant. Five early, six midseason, and five late maturing rows were selected.

1960 - F_3-derived lines in F_5 were evaluated in a preliminary yield test. Early lines were grown at Kanawha, Iowa, and midseason and late lines at Ames. The one midseason line selected (A9-619) on the basis of yield performance was the progenitor of Wirth and Rampage.

1961 - The F_3-derived line in F_6 (A9-619) was grown in the Early Elite Test at Sutherland, Kanawha, and Independence, Iowa. Five F6 plants were selected.

1962 - A F_7 progeny row of each F_6-derived line was grown at Ames. Three rows were selected. In the same year, A9-619 (F_3-derived line in F_7) was grown in the Early Elite Test at Kanawha and Independence, Iowa.

1963 - The three selected rows from A9-619 (A9-619-2 as A2-5405, A9-619-3 as A2-5406, and A9-619-4 as A2-5407) were grown as F_6-derived lines in F_8 in the Early Elite Test at Sutherland, Kanawha, and Ames.

1964 - A2-5407 (Wirth) and A2-5405 (Rampage) were evaluated in Uniform Preliminary Test I as F_6-derived lines in F_9.

1965-69 - A2-5407 and A2-5405 were evaluated in Uniform Test I.

1966 - For purification of each line, 118 single F_{11} plants of A2-5407 and 108 plants of A2-5405 were selected at Ames. The two lines were approved for increase by the Iowa Agricultural Experiment Station.

1967 - Pedigree rows of both lines were grown at Kanawha, Iowa. Each F_{11} plant was grown in a 16-foot row. Off-type rows were discarded and the remainder threshed in bulk. Subsequent production of A2-5405 (Rampage) revealed approximately 2.5% off-type seeds with gray hila. Evaluation of these off-type seed in 1969 indicated that a number of pedigree rows must have been segregating for hilum color, but went undetected because only one plant per pedigree row was checked for hilum color in 1967.

1968 - Wirth and Rampage were approved for release by the USDA and Iowa A.E.S. Pedigree seed of Wirth was increased by the Committee for Agricultural Development at Ames, Iowa. Pedigree seed of Rampage was distributed to participating states.

1969 - Breeder seed of Wirth was distributed to participating states. Rampage was increased by the states which obtained seed in 1968. Publicity released for the varieties was July 10, 1969.

Seed distribution and increase of Wirth and Rampage

State	Wirth			Rampage			
	For planting 1969 (bu.)	Planted 1969 (acres)	Produced 1969 (bu.)	For planting 1969 (lbs)	Production 1968 (bu.)	Planted 1969 (acres)	Production 1969 (bu.)
Iowa	80	80	1598	8	7	18	615
Illinois				33	20	40	2000 est.
Indiana				22	26	63	1556
Michigan	5	5	200 est.				
Minnesota	50	82	2603	51	42	50	2135
Ohio	35	32	791	16	1	0	0
S. Dakota	40	56	1150	25	16	19	600
Wisconsin				20	10	8	357

DUNN

Dunn is the progeny of an F_6 plant, developed in Wisconsin by J. H. Torrie. A history of its development is given below:

1954 - Cross between Grant x Chippewa made at Madison by J. H. Torrie.

1955 - F_1 hybrid grown in field at Madison.

1956-60 - F_2-F_6 grown as bulk populations at Madison. Individual F_6 plants selected from bulk population in 1960.

1961 - F_7 grown in plant rows and bulked on a row basis. Row 4221 was designated WI-4221.

1962-63 - F_8 and F_9 preliminary tests in two replicates at Madison.

1964 - F_{10} tested in Uniform Preliminary Test I.

1965 - Tested in Uniform Test I.

1966-69 - Tested in Uniform Test I and at 12 locations in Wisconsin. Increased in 1968 with 10 bushels allocated to Wisconsin and one bushel each to Minnesota and South Dakota. Increased to 370 bushels in Wisconsin in 1969.

1970 - Named Dunn and released to certified seed growers.

Table 31. Descriptive data and shattering scores, Uniform Test I, 1969.

Strain	Flower Color	Pubescence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering			Minn. Iron Chlorosis	Hypocotyl Length mm
							Urbana Ill.	Manhattan Kans.			
							4 wks.	2 wks.	4 wks.		
Chippewa 64	P	T	Br	S	Y	Bl	1	1	1	2	180
Hark	P	G	Br	D	Y	Y	1	1	4.6	4.5	177
Rampage	P	T	Br	S	Y	Bl	1	1	1	2.5	178
Wirth	P	T	Br	S	Y	Bl	1	1	1	3	204
L65-1342	W	T	Br	S	Y	Bl	1	3.0	3	5	177
Anoka	P	T	Br	S	Y	Bl	1	3.8	4.6	5	180
M59-120	W	T	Br	D	Y	Br	1	1	1	1	152
M59-213	P	G	Br	D	Y	Y	2	1	1	2.5	158
M60-222	W	G	Br	D	Y	Y	1	1	1	2	214
M60-266	W	G	Br	S	Y	Y	1.5	1	1	4	213
M60-405	W	G	Br	S	Y	Y	1	3.8	4.2	1.5	175
M60-406	W	G	Br	S	Y	Y	1.5	1	1	1.5	174
M60-411	W	G	Br	D	Y	Y	4	1.5	4.2	2.5	156
Dunn	P	Lt	Br	S	Y	Bl	2	3.8	4.2	2.5	190

Table 32. Summary of data, Uniform Test I, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	16	16	14	15	16	14	13	10	10
Chippewa 64	37.2	14	0	1.7	37	1.9	15.4	41.9	21.6
Hark	43.2	1	+4.8	2.0	39	1.6	16.7	42.5	21.7
Rampage	43.0	2	+3.1	2.0	36	1.9	17.0	41.7	21.9
Wirth	39.5	11	-0.6	1.6	35	1.8	15.9	42.3	21.7
L65-1342	42.6	4	+3.9	2.3	38	1.8	18.4	43.3	21.6
Anoka	39.5	11	+0.9	2.2	34	1.8	19.0	41.2	23.4
M59-120	42.7	3	+5.7	2.8	38	2.1	17.8	40.8	22.3
M59-213	42.0	5	+1.0	2.1	38	1.7	16.9	41.1	21.6
M60-222	41.5	6	+4.6	2.5	39	1.5	16.0	40.6	22.3
M60-266	39.8	10	+4.6	2.0	35	1.7	18.1	43.6	21.6
M60-405	41.1	7	+1.1	2.2	37	1.7	15.9	41.7	22.5
M60-406	40.6	9	+0.6	1.9	36	1.8	16.3	41.2	22.4
M60-411	40.9	8	+1.5	2.0	39	1.6	17.6	42.7	22.1
Dunn	39.3	13	+0.8	2.2	36	1.9	16.6	42.3	21.8

[1] Days earlier (-) or later (+) than Chippewa 64 which matured September 20, 117 days after planting.

Table 33. Disease data, Uniform Test I, 1969.

Strain	BB		BP		BSR			DM		FE_2	PR	SMV	
	Ames Iowa		Urbana Ill.	Kanawha Iowa				Worthington Ind.	Urbana Ill.	Ind.	Ind.	Iowa	
	n	a	a	a	n	n 1	n 2	n	n	a	a	a 3	a 4
Chippewa 64	3	3	4	4	3	22	88	4	4.0	4	R	50	30
Hark	3	3.5	4	3.5	3	22	95	4	3.7	5	S	30	50
Rampage	3	4	4	4.5	2	20	100	4	4.0	5	S	80	25
Wirth	3	3	4	3.5	3	21	90	5	4.2	5	S	75	75
L65-1342	4	2.5	1	1	3	27	95	4	4.2	3	S	85	45
Anoka	2	2	4	4.5	2	18	68	3	1.0	5	S	80	15
M59-120	3	2	5	4.5	2	24	93	2	2.5	5	S	20	15
M59-213	3	4	4	4	3	20	73	3	4.7	5	R	15	20
M60-222	3	4.5	4	4.5	2	19	75	4	3.0	4	S	25	20
M60-266	4	4	4	4.5	3	22	98	5	3.3	5	S	90	40
M60-405	3	3	4	4	2	19	60	3	3.8	5	R	20	10
M60-406	3	3	4	4.5	3	20	65	3	3.3	5	H	100	25
M60-411	3	3.5	4	4.5	2	22	85	4	3.3	4	H	35	70
Dunn	3	4	4	5	2	22	80	3	3.2	5	S	100	20

1 Mean height of browning in diseased stems.
2 Percent of plants with browning.
3,4 Percent of plants infected, measured serologically (3) and by transmission to beans (4).

Table 34. Yield and yield rank, Uniform Test I, 1969.

Strain	Mean of 16 Tests	Ontario		Ohio			Mich.	Indiana		Wis.	Ill.
		Ridge-town	Har-row	Hoyt-ville *	Woos-ter *	Co-lum-bus *	Dun-dee *	Knox	Lafa-yette	Madi-son	De-Kalb
Chippewa 64	37.2	39.5	29.8	21.5	32.8	43.0	34.1	35.3	49.9	43.1	37.1
Hark	43.2	48.0	39.3	22.6	34.5	45.7	36.1	45.0	56.2	42.2	42.7
Rampage	43.0	46.2	35.2	26.1	38.2	44.2	36.1	44.3	55.8	47.4	40.5
Wirth	39.5	40.7	32.3	22.5	35.2	42.2	41.6	37.4	52.0	46.4	39.8
L65-1342	42.6	49.2	34.9	27.5	39.3	50.9	38.9	43.2	55.6	44.6	45.4
Anoka	39.5	44.0	35.0	23.9	35.7	45.4	36.3	36.3	45.8	43.8	43.3
M59-120	42.7	53.3	39.8	21.3	42.8	55.2	37.3	43.7	50.1	46.6	43.0
M59-213	42.0	52.6	34.2	23.1	31.2	39.1	29.9	40.4	56.2	45.2	39.6
M60-222	41.5	47.3	38.4	23.9	43.3	53.9	38.5	37.5	52.6	44.6	42.8
M60-266	39.8	43.8	33.6	25.6	37.5	35.6	34.1	39.3	50.2	45.1	42.5
M60-405	41.1	46.1	32.1	23.3	34.9	53.9	39.5	41.7	51.5	43.4	37.4
M60-406	40.6	53.1	31.0	24.3	27.1	41.9	39.2	43.0	51.8	44.3	38.4
M60-411	40.9	49.6	33.8	25.7	32.5	52.7	42.3	45.6	50.6	42.0	41.3
Dunn	39.3	44.1	31.1	24.8	35.0	35.8	35.0	32.4	47.6	43.6	40.9
C.V. (%)		8.8	8.5	--	--	--	29.0	10.0	7.7	7.1	5.2
L.S.D. (5%)		5.9	4.2	--	--	--	13.5	5.8	5.6	N.S.	3.6
Row Sp.(In.)		24	40	32	32	28	28	38	38	36	30
	Yield Rank										
Chippewa 64	14	14	14	13	11	9	12	13	12	12	14
Hark	1	6	2	11	10	6	9	2	1	13	5
Rampage	2	8	4	2	4	8	9	3	3	1	9
Wirth	11	13	10	12	7	10	2	11	6	3	10
L65-1342	4	5	6	1	3	5	5	5	4	6	1
Anoka	11	11	5	7	6	7	8	12	14	9	2
M59-120	3	1	1	14	2	1	7	4	11	2	3
M59-213	5	3	7	10	13	12	14	8	1	4	11
M60-222	6	7	3	7	1	2	6	10	5	6	4
M60-266	10	12	9	4	5	14	12	9	10	5	6
M60-405	7	9	11	9	9	2	3	7	8	11	13
M60-406	9	2	13	6	14	11	4	6	7	8	12
M60-411	8	4	8	3	12	4	1	1	9	14	7
Dunn	13	10	12	5	8	13	11	14	13	10	8

* Not included in the mean.
1 Irrigated.

Table 34. (Continued)

Strain	Illinois		Minnesota			Iowa		Mo.	S. Dakota		Nebr.	Calif.
	Pontiac	Urbana	St. Paul	Lamberton	Waseca	Sutherland	Kanawha	Spickard	Milbank	Brookings	Concord	Davis[1]
									*			*
Chippewa 64	40.3	39.1	20.1	42.4	36.4	37.1	36.1	36.9	17.3	37.6	33.8	23.3
Hark	45.3	46.1	18.6	46.0	43.0	46.5	44.1	44.2	16.1	39.7	44.9	20.6
Rampage	44.5	43.7	21.4	56.6	44.7	40.3	42.7	37.5	14.0	40.6	46.0	18.8
Wirth	39.9	41.7	22.6	42.5	40.2	39.4	39.4	40.8	13.5	39.9	36.3	17.5
L65-1342	46.9	43.3	21.4	48.3	42.0	42.7	41.6	39.1	20.5	40.0	43.6	16.2
Anoka	44.1	41.1	21.0	47.2	37.6	38.7	39.4	38.2	18.6	39.2	36.8	23.8
M59-120	42.5	44.3	19.3	51.9	42.2	44.2	41.1	38.3	14.6	41.6	40.5	21.2
M59-213	46.2	43.0	23.7	45.4	38.2	42.8	36.9	42.2	19.9	42.1	41.7	24.9
M60-222	42.6	44.0	20.7	48.4	39.5	41.1	36.6	43.7	14.4	42.5	41.0	13.1
M60-266	43.9	41.2	21.2	42.9	37.3	41.0	38.2	39.0	14.2	41.5	35.7	17.0
M60-405	43.9	41.5	24.9	51.8	37.7	41.0	39.9	41.5	15.6	39.5	44.0	16.8
M60-406	42.4	41.4	27.1	43.7	35.4	41.5	40.3	38.9	17.1	40.8	36.8	19.1
M60-411	44.3	41.9	25.7	42.3	37.0	40.1	35.4	43.2	16.6	42.0	39.3	19.7
Dunn	40.5	42.0	21.7	48.9	40.6	39.1	39.1	41.1	15.0	38.4	38.1	16.3
C.V. (%)	5.4	4.1	9.4	14.6	9.9	5.1	7.2	7.5	24.5	9.6	7.1	—
L.S.D. (5%)	3.9	2.9	2.9	9.7	5.5	3.0	4.1	4.3	N.S.	N.S.	4.1	--
Row Sp.(In.)	38	30	30	30	30	40	40	25	36	30	30	30

	Yield Rank											
Chippewa 64	13	14	12	13	13	14	13	14	4	14	14	3
Hark	3	1	14	8	2	1	1	1	7	10	2	5
Rampage	4	4	7	1	1	9	2	13	13	7	1	8
Wirth	14	9	5	12	6	11	7	7	14	9	12	9
L65-1342	2	5	7	6	4	4	3	8	1	8	4	13
Anoka	6	13	10	7	10	13	7	12	3	12	11	2
M59-120	10	2	13	2	3	2	4	11	10	4	7	4
M59-213	1	6	4	9	8	3	11	4	2	2	5	1
M60-222	9	3	11	5	7	6	12	2	11	1	6	14
M60-266	7	12	9	11	11	7	10	9	12	5	13	10
M60-405	7	10	3	3	9	7	6	5	8	11	3	11
M60-406	11	11	1	10	14	5	5	10	5	6	10	7
M60-411	5	8	2	14	12	10	14	3	6	3	8	6
Dunn	12	7	6	4	5	12	9	6	9	13	9	12

Table 35. Maturity dates, Uniform Test I, 1969.

Strain	Mean of 14 Tests	Ontario		Ohio			Mich.	Indiana		Wisc.	Ill.
		Ridge-town	Har-row	Hoyt-ville	Woos-ter	Co-lum-bus	Dun-dee	Knox	Lafa-yette	Madi-son	De-Kalb
				*	*	*	*				
Chippewa 64	0	0	0	0	0	0	0	0	0	0	0
Hark	+4.8	+4	+8	+6	+ 4	0	-1	+3	+ 4	+5	+5
Rampage	+3.1	+1	+7	+6	+ 4	+ 2	-1	0	+ 3	+4	+1
Wirth	-0.6	0	0	0	+ 1	+ 1	0	+1	- 2	-1	-1
L65-1342	+3.9	+2	+6	+1	+10	+ 3	+5	+5	+ 6	+5	+4
Anoka	+0.9	+3	0	0	+ 1	0	-1	+4	+ 1	+2	-1
M59-120	+5.7	+1	+9	+8	+11	+ 6	0	+4	+10	+8	+8
M59-213	+1.0	+1	0	-2	+ 3	+ 5	-1	+2	+ 1	+5	-1
M60-222	+4.6	+6	+8	+5	+ 8	+ 6	-1	+3	+ 4	+8	+3
M60-266	+4.6	+4	+8	+4	+12	+ 8	-1	+6	+ 8	+3	+6
M60-405	+1.1	+2	+2	-1	+ 3	+ 1	-2	+3	+ 2	+3	-1
M60-406	+0.6	+1	0	0	+ 4	+ 4	-2	+4	+ 1	+2	-1
M60-411	+1.5	+2	+1	0	+ 4	+ 4	-1	+4	+ 4	+3	0
Dunn	+0.8	+1	0	-1	+ 1	- 1	-2	+4	+ 2	-1	-1
Traverse (0)		-3	--	-9	--	--	--	--	--	-3	-2
Corsoy (II)		+9	+8	+8	+12	+11	+2	+4	+12	+7	+7
Date planted	5-26	5-26	6-10	6-4	5-16	5-24	5-19	6-6	5-26	5-20	5-23
Chip. 64 mat.	9-20	10-3	9-16	9-20	9-16	9-10	9-27	9-21	9-12	9-18	9-15
Days to mature	117	130	98	108	113	109	131	107	109	121	115

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

Table 35. (Continued)

Strain	Illinois		Minnesota			Iowa		Mo.	S. Dakota		Nebr.	Calif.
	Pontiac	Urbana	St. Paul	Lamberton	Waseca	Sutherland	Kanawha	Spickard	Milbank	Brookings	Concord	Davis[1]
						*		*	*			*
Chippewa 64	0	0	0	0	0		0		0	0	0	0
Hark	+2	+ 7	+8	+4	+6		+ 4		0	+4	+3	+ 1
Rampage	+1	+ 5	+3	+5	+6		+ 3		0	+2	+2	+ 2
Wirth	0	+ 1	0	-2	+2		- 2		-2	-1	-3	+ 3
L65-1342	+1	+ 4	+2	+5	+6		+ 4		+2	+3	+1	+ 7
Anoka	-2	+ 2	0	+2	+4		- 1		-1	0	-1	+ 3
M59-120	+3	+ 6	+7	+5	+6		+ 5		+4	+5	+3	+ 4
M59-213	0	0	+3	+3	+2		- 2		0	+2	-2	0
M60-222	+1	+ 4	+3	+5	+6		+ 4		+1	+6	+3	+ 3
M60-266	+2	+ 5	+2	+3	+7		+ 4		+2	+5	+2	0
M60-405	-1	+ 1	+1	0	+4		- 3		0	+2	0	+ 1
M60-406	-1	- 1	+1	-1	+4		- 2		+3	+2	-1	+ 4
M60-411	0	+ 1	+1	0	+2		- 2		+2	+3	+2	+ 3
Dunn	0	0	+1	-1	+3		- 1		-2	+3	+1	+ 3
Traverse (0)	-2	- 3	-1	-1	-5		--		0	--	--	- 8
Corsoy (II)	+6	+10	--	+9	+6		+10		--	+3	+4	+10
Date planted	5-26	5-16	5-8	5-26	5-30	5-27	5-28	5-28	5-26	5-22	6-3	6-5
Chip. 64 mat.	9-10	9-2	9-15	9-21	9-26	--	9-21	--	10-5	10-13	9-24	9-18
Days to mature	107	109	130	118	119	--	116	--	132	144	113	105

Table 36. Lodging scores and plant height, Uniform Test I, 1969.

Strain	Mean of 15 Tests	Ontario		Ohio			Mich.	Indiana		Wisc.	Ill.
		Ridge-town	Har-row	Hoyt-ville	Woos-ter	Co-lum-bus	Dun-dee	Knox	Lafa-yette	Madi-son	De-Kalb
				*	*	*	*				
Chippewa 64	1.7	1.5	1.0	1.0	1.0	1.0	2.0	1.0	2.1	2.1	1.0
Hark	2.0	3.0	1.0	1.0	1.0	1.0	2.0	1.5	1.9	2.5	1.0
Rampage	2.0	1.8	1.2	1.0	1.0	1.0	2.0	1.4	2.3	2.5	1.0
Wirth	1.6	1.9	1.2	1.0	1.0	1.0	1.0	1.3	1.6	2.0	1.0
L65-1342	2.3	1.6	2.0	1.0	1.0	1.0	4.0	1.9	2.1	3.0	1.7
Anoka	2.2	2.3	1.2	1.0	1.0	1.0	3.0	2.1	3.0	2.8	1.0
M59-120	2.8	2.9	1.0	1.0	1.0	1.0	5.0	2.4	4.0	2.9	2.0
M59-213	2.1	2.1	1.2	1.0	1.0	1.0	3.0	1.3	2.0	3.8	1.3
M60-222	2.5	3.4	1.5	1.0	1.0	1.0	3.0	1.9	2.5	3.5	2.0
M60-266	2.0	1.5	1.2	1.0	1.0	1.0	2.0	1.4	2.4	2.6	1.0
M60-405	2.2	2.5	1.8	1.0	1.0	1.0	2.0	1.6	2.3	3.4	1.3
M60-406	1.9	1.6	1.2	1.0	1.0	1.0	2.0	1.6	2.3	3.0	1.3
M60-411	2.0	2.1	1.2	1.0	1.0	1.0	3.0	1.3	2.8	3.1	1.3
Dunn	2.2	2.0	1.2	1.0	1.0	1.0	2.0	2.4	2.4	3.0	1.7

	Mean of 16 Tests	Plant Height									
				*	*	*	*				
Chippewa 64	37	39	29	27	26	33	36	38	42	39	35
Hark	39	43	34	29	26	35	37	41	46	40	38
Rampage	36	41	28	27	20	34	35	37	40	38	36
Wirth	35	36	28	27	26	34	35	37	39	38	35
L65-1342	38	44	30	28	28	34	37	39	45	40	37
Anoka	34	36	26	27	25	33	33	35	37	37	33
M59-120	38	43	30	28	27	37	36	41	42	39	37
M59-213	38	43	30	28	27	37	39	40	47	41	37
M60-222	39	45	30	26	26	37	37	39	46	41	37
M60-266	35	39	26	27	25	32	35	38	40	37	33
M60-405	37	43	29	27	27	37	35	40	43	38	34
M60-406	36	43	29	27	27	37	36	39	43	38	34
M60-411	39	45	31	28	26	34	36	42	47	39	36
Dunn	36	41	27	26	25	32	33	36	39	37	35

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

Table 36. (Continued)

Strain	Illinois		Minnesota			Iowa		Mo.	S. Dakota		Nebr.	Calif.
	Pon-tiac	Ur-bana	St. Paul	Lam-ber-ton	Wa-seca	Suth-er-land	Kana-wha	Spic-kard	Mil-bank	Brook-ings	Con-cord	Davis[1]
												*
Chippewa 64	2.0	1.2	2.8	2.5	2.0	2.4	2.4	1.1			1.0	1.0
Hark	2.3	1.1	3.0	2.5	2.2	2.7	2.4	1.1			1.2	2.0
Rampage	2.0	1.3	3.5	3.0	2.1	2.3	2.4	1.1			1.5	1.0
Wirth	1.7	1.2	3.0	1.2	2.2	2.2	1.8	1.0			1.0	1.0
L65-1342	2.3	1.4	4.0	3.5	2.9	3.0	2.8	1.2			1.8	2.0
Anoka	2.0	1.5	4.0	2.8	2.8	2.8	2.6	1.0			1.2	1.0
M59-120	3.7	1.4	4.0	4.0	3.0	3.3	3.6	1.6			2.5	2.0
M59-213	2.3	1.3	3.8	2.8	2.2	2.6	2.4	1.0			1.0	1.0
M60-222	3.0	1.4	3.8	3.0	2.6	2.9	2.9	1.5			1.5	1.0
M60-266	2.0	1.4	3.0	2.5	2.2	2.5	2.4	1.0			1.5	2.0
M60-405	2.1	1.2	3.8	2.5	2.4	2.8	2.8	1.0			1.0	2.0
M60-406	2.0	1.2	3.8	2.0	2.4	2.4	2.2	1.0			1.0	2.0
M60-411	2.0	1.2	3.2	2.5	2.1	2.8	2.2	1.0			1.0	2.0
Dunn	2.3	1.5	4.2	2.2	2.6	2.7	2.7	1.2			1.2	2.0
						Plant Height						
									*			*
Chippewa 64	39	32	42	38	34	38	39	35	29	35	32	41
Hark	43	34	42	40	34	45	41	36	31	37	33	42
Rampage	38	31	41	36	32	40	38	33	26	35	31	40
Wirth	38	30	41	35	33	37	40	33	26	35	31	41
L65-1342	40	34	40	38	35	40	40	34	29	36	34	41
Anoka	36	30	40	35	29	37	37	31	29	32	31	40
M59-120	45	33	44	39	33	41	40	36	29	37	34	43
M59-213	42	32	44	37	34	42	40	34	31	37	35	40
M60-222	41	33	43	40	34	42	42	34	28	37	32	43
M60-266	38	30	41	36	30	36	39	32	26	32	30	43
M60-405	40	31	41	41	34	38	39	34	28	35	32	42
M60-406	41	29	42	36	31	38	40	32	31	35	31	41
M60-411	43	32	44	39	36	42	41	36	33	39	36	44
Dunn	37	30	40	38	32	39	38	34	27	37	32	45

Table 37. Seed quality scores and seed weight, Uniform Test I, 1969.

Strain	Mean of 14 Tests	Ontario		Ohio			Mich.	Indiana		Wisc.	Ill.
		Ridge-town	Har-row	Hoyt-ville	Woos-ter	Co-lum-bus	Dun-dee	Knox	Lafa-yette	Madi-son	De-Kalb
				*	*	*	*				
Chippewa 64	1.9	2.0	2.0	1.5	2.0	2.0	2.0	1.5	1.5	2.0	2.0
Hark	1.6	2.0	1.5	1.5	1.0	2.7	1.0	1.5	1.0	2.0	1.0
Rampage	1.9	3.0	1.5	2.0	2.2	2.2	2.0	2.0	2.0	2.0	1.0
Wirth	1.8	2.0	1.5	1.2	2.0	2.0	1.5	1.5	1.5	2.0	1.3
L65-1342	1.8	2.0	1.2	1.7	2.2	2.0	1.5	2.0	2.0	3.0	1.0
Anoka	1.8	3.0	1.0	1.5	2.2	2.0	2.0	2.0	2.0	2.0	1.3
M59-120	2.1	3.0	1.0	2.0	2.2	2.2	2.0	2.0	2.0	2.0	1.0
M59-213	1.7	2.0	1.2	1.7	1.2	2.2	2.0	1.5	2.0	2.0	1.0
M60-222	1.5	3.0	1.2	1.5	2.0	2.0	1.0	1.5	1.5	1.0	1.0
M60-266	1.7	2.0	1.0	1.5	1.5	2.2	3.0	1.5	1.5	2.0	1.7
M60-405	1.7	2.0	1.2	2.0	1.0	2.0	1.5	1.0	1.5	2.0	1.0
M60-406	1.8	3.0	1.8	2.0	1.0	2.0	1.0	1.5	1.5	2.0	1.3
M60-411	1.6	3.0	1.8	1.7	1.0	1.7	1.0	1.5	1.5	1.0	1.3
Dunn	1.9	3.0	1.5	1.7	2.0	2.5	1.5	1.5	1.5	2.0	2.0

	Mean of 13 Tests	Seed Weight								
				*	*	*	*			
Chippewa 64	15.4	18.8	14.3	15.7	16.8	17.7	16.9	14.7	17.8	14.0
Hark	16.7	21.8	15.0	15.6	17.4	17.3	17.9	16.1	19.8	14.6
Rampage	17.0	20.8	15.7	16.7	18.9	19.1	18.7	16.5	19.9	14.7
Wirth	15.9	19.0	14.8	17.0	17.4	18.0	17.2	15.3	18.6	14.8
L65-1342	18.4	21.5	16.8	17.9	19.3	20.2	20.5	18.9	21.5	16.7
Anoka	19.0	22.5	16.8	15.6	21.2	20.9	20.1	19.4	21.6	17.3
M59-120	17.8	21.1	17.0	15.0	19.2	19.4	18.5	18.1	21.0	16.0
M59-213	16.9	21.3	14.3	17.2	17.3	20.4	18.3	15.8	20.1	14.5
M60-222	16.0	20.6	15.0	15.2	18.0	18.2	18.2	15.4	18.9	14.1
M60-266	18.1	20.5	16.6	17.1	19.8	19.7	18.8	18.2	20.2	17.3
M60-405	15.9	18.9	14.2	15.4	16.7	17.6	18.3	14.9	18.4	14.1
M60-406	16.3	19.7	14.1	16.1	16.6	18.0	18.1	16.0	18.7	14.3
M60-411	17.6	22.5	14.6	16.7	17.7	20.1	19.5	17.0	21.5	16.8
Dunn	16.6	18.4	15.3	15.9	17.8	17.8	18.9	16.1	17.1	16.2

* Not included in the mean.
1 Irrigated.

Table 37. Continued

Strain	Illinois		Minnesota			Iowa		Mo.	S. Dakota		Nebr.	Calif.
	Pontiac	Urbana	St. Paul	Lamberton	Waseca	Sutherland	Kamrar	Spickard	Milbank	Brookings	Concord	Davis
Chippewa 6-						*	*		*			*
Hark												
Rampage												
Wirth												
165-13-2												
Arcka												
M59-120												
M59-213												
M60-222												
M60-266												
M60--05												
M60--06												
M60--11												
Dunn												

Seed Weight

									*			*
Chippewa 6-												
Hark												
Rampage												
Wirth												
165-13-2												
Arcka												
M59-120												
M59-213												
M60-222												
M60-266												
M60--05												
M60--06												
M60--11												
Dunn												

Table 38. Percentages of protein and oil, Uniform Test I, 1969.

Strain	Mean of 10 Tests	Ontario Ridge-town	Ohio Colum-bus	Michigan Dundee	Indiana Knox	Wisconsin Madison
			*	*		
Chippewa 64	41.9	44.4	42.5	41.9	42.9	40.6
Hark	42.5	46.4	43.4	43.8	42.9	42.7
Rampage	41.7	44.8	42.2	42.7	42.4	40.6
Wirth	42.3	45.7	42.4	41.7	42.1	40.7
L65-1342	43.3	46.3	43.4	44.3	44.4	42.6
Anoka	41.2	44.3	40.7	42.5	42.3	41.4
M59-120	40.8	42.0	40.3	41.9	41.6	44.0
M59-213	41.1	43.8	41.5	41.8	42.9	40.8
M60-222	40.6	43.3	41.5	43.1	42.6	39.2
M60-266	43.6	45.0	42.9	43.1	44.9	44.0
M60-405	41.7	43.5	40.9	42.4	43.2	40.9
M60-406	41.2	43.1	41.0	41.5	43.4	40.4
M60-411	42.7	45.7	43.2	43.4	43.0	42.5
Dunn	42.3	44.7	42.4	42.1	43.2	41.0

	Mean of 10 Tests	Percentage of oil				
			*	*		
Chippewa 64	21.6	19.9	21.6	21.8	21.3	21.8
Hark	21.7	19.3	21.9	21.3	21.9	22.5
Rampage	21.9	20.0	21.9	22.3	22.2	21.3
Wirth	21.7	20.9	21.6	22.1	21.9	21.5
L65-1342	21.6	20.3	21.3	21.8	21.3	21.4
Anoka	23.4	22.0	23.9	23.6	23.2	21.0
M59-120	22.3	21.2	22.2	22.7	22.2	21.0
M59-213	21.6	20.3	22.0	21.8	21.6	20.4
M60-222	22.3	20.3	23.1	21.8	22.2	20.4
M60-266	21.6	20.6	21.3	22.0	21.6	21.1
M60-405	22.5	20.7	23.0	22.4	21.9	21.7
M60-406	22.4	21.1	22.1	22.3	21.9	23.4
M60-411	22.1	20.3	21.7	21.8	21.9	24.1
Dunn	21.8	20.4	21.5	21.8	21.1	21.1

* Not included in the mean.

Table 38. (Continued)

Strain	Illinois		Minnesota	Iowa	Missouri	S. Dakota	Nebraska
	De-Kalb	Urbana	Waseca	Kanawha	Spickard	Brookings	Concord
Chippewa 64	42.3	41.9	40.3	42.0	41.4	42.1	40.6
Hark	41.8	42.0	41.3	43.0	40.0	43.5	41.2
Rampage	41.0	41.6	40.4	42.4	41.3	42.1	40.4
Wirth	42.8	41.4	40.5	43.4	41.7	43.2	41.8
L65-1342	42.6	42.8	42.2	44.0	42.1	43.6	42.0
Anoka	41.2	40.0	39.8	40.9	40.3	41.7	40.2
M59-120	40.5	40.1	39.0	40.6	40.0	41.1	39.4
M59-213	40.9	40.4	38.1	41.5	40.7	41.5	40.2
M60-222	41.2	40.5	36.0	41.1	40.7	41.5	40.3
M60-266	43.7	43.3	41.9	44.1	43.4	43.7	42.3
M60-405	41.2	43.6	39.5	42.1	40.7	41.8	40.2
M60-406	41.0	40.4	41.1	41.5	40.4	41.3	39.7
M60-411	43.3	39.6	41.0	43.9	41.5	43.7	42.4
Dunn	43.4	40.8	41.3	43.4	41.9	42.3	40.7
	Percentage of Oil						
Chippewa 64	21.7	23.0	21.4	21.3	23.7	20.7	21.4
Hark	22.3	22.9	21.1	21.3	23.5	19.8	22.5
Rampage	22.0	23.6	21.8	21.2	23.8	20.8	22.3
Wirth	21.7	23.3	20.8	21.1	23.3	20.0	22.1
L65-1342	21.4	23.2	21.4	20.7	23.6	20.3	22.0
Anoka	24.1	25.4	23.0	23.3	25.7	22.2	23.8
M59-120	22.6	24.5	22.4	21.8	24.1	20.3	23.1
M59-213	20.0	23.9	21.6	21.4	23.8	20.2	22.7
M60-222	22.9	24.5	22.2	21.9	24.3	21.4	22.4
M60-266	22.0	23.2	21.4	20.5	23.3	20.3	21.9
M60-405	22.9	24.2	22.4	21.9	24.3	21.4	23.1
M60-406	22.1	24.8	21.4	21.6	24.2	20.8	22.9
M60-411	21.7	23.9	21.7	20.7	23.6	20.8	22.3
Dunn	21.7	24.1	22.9	21.2	23.2	20.4	22.3

Table 39. Four-year summary of data, Uniform Test I, 1966-1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	80	80	71	62	77	64	60	40	40
Chippewa 64	35.7	6	0	1.6	33	1.9	15.9	41.2	20.8
Hark	39.2	2	+4.4	1.6	35	1.7	16.6	42.0	20.7
Rampage	40.3	1	+4.1	1.8	33	1.8	17.3	41.0	21.2
Wirth	37.2	4	+0.3	1.6	33	1.8	16.3	41.6	20.9
Anoka	37.1	5	+0.6	2.1	30	1.9	19.4	40.2	22.6
Dunn	37.3	3	+0.1	2.0	32	1.8	17.0	41.5	20.8

[1] Days earlier (-) or later (+) than Chippewa 64 which matured September 18, 116 days after planting.

Table 40. Four-year summary of yield and yield rank, Uniform Test I, 1966-1969.

Strain	Mean of 80 Tests	Ontario		Ohio			Michigan		Indiana	
		Ridge-town	Har-row	Hoyt-ville	Woos-ter	Co-lum-bus	East Lan-sing	Dun-dee	Knox	Lafa-yette
Years Tested		1966-1969	1966-1969	1966-1969	1966-1969	1966-1969	1966-1968	1966-1969	1967-1969	1966-1969
Chippewa 64	35.7	49.3	32.1	28.3	22.2	26.0	37.5	37.3	32.9	42.6
Hark	39.2	54.5	38.1	30.0	21.8	25.1	39.5	42.6	37.9	46.5
Rampage	40.3	54.7	38.4	32.8	26.1	29.9	41.6	41.7	38.2	48.0
Wirth	37.2	49.3	34.6	29.3	23.8	23.4	39.0	40.0	33.3	43.8
Anoka	37.1	50.9	33.6	28.6	24.0	25.7	40.3	40.1	32.8	40.4
Dunn	37.3	54.5	35.1	30.1	22.9	20.7	40.8	39.6	33.2	43.7
	Yield Rank									
Chippewa 64	6	5	6	6	5	2	6	6	5	5
Hark	2	2	2	3	6	4	4	1	2	2
Rampage	1	1	1	1	1	1	1	2	1	1
Wirth	4	5	4	4	3	5	5	4	3	3
Anoka	5	4	5	5	2	3	3	3	6	6
Dunn	3	3	3	2	4	6	2	5	4	4

[1] Revillo, 1967-68.
[2] Irrigated.

Table 40. (Continued).

Strain	Wisconsin		Illinois			Minnesota		
	Du-rand	Madi-son	De-Kalb	Pon-tiac	Ur-bana	St. Paul	Lam-ber-ton	Wa-seca
Years Tested	1966-1968	1966-1969	1966-1969	1966-1969	1966-1969	1966, 1968-69	1966-1969	1966-1969
Chippewa 64	22.8	39.7	43.4	38.4	39.4	31.6	35.0	37.8
Hark	24.5	41.6	46.7	40.6	44.5	30.6	38.2	40.3
Rampage	25.7	45.6	45.8	42.6	43.9	36.6	42.1	43.3
Wirth	24.6	43.2	44.7	38.6	41.3	36.5	34.8	40.8
Anoka	24.4	42.7	45.3	38.1	41.0	35.6	36.4	40.1
Dunn	22.8	44.1	44.8	38.3	41.1	35.5	37.2	40.2
	Yield Rank							
Chippewa 64	5	6	6	4	6	5	5	6
Hark	3	5	1	2	1	6	2	3
Rampage	1	1	2	1	2	1	1	1
Wirth	2	3	5	3	3	2	6	2
Anoka	4	4	3	6	5	3	4	5
Dunn	5	2	4	5	4	4	3	4

Table 40. (Continued).

Strain	Iowa		Mo.	South Dakota		Nebr.	Calif.
	Suth-er-land	Kana-wha	Spic-kard	Mil-bank[1]	Brook-ings	Con-cord[2]	Davis[2]
Years Tested	1967-1969	1966-67, 1969	1968-1969	1967-1969	1966-1969	1966-1969	1966, 1968-69
Chippewa 64	29.4	33.9	40.5	26.7	28.5	38.5	17.7
Hark	33.7	39.5	45.9	28.1	30.2	43.6	20.1
Rampage	31.7	38.6	42.1	28.6	30.5	44.0	18.2
Wirth	30.9	36.7	44.5	25.7	30.1	39.2	19.2
Anoka	29.8	35.3	42.4	26.8	30.6	41.3	18.7
Dunn	31.2	35.8	42.3	25.1	29.6	39.0	15.8
	Yield Rank						
Chippewa 64	6	6	6	4	6	6	5
Hark	1	1	1	2	3	2	1
Rampage	2	2	5	1	2	1	4
Wirth	4	3	2	5	4	4	2
Anoka	5	5	3	3	1	3	3
Dunn	3	4	4	6	5	5	6

PRELIMINARY TEST 2, 1962

Strain	Parentage	Generation Completed
1. Chippewa 6-		
2. Hark		
3. M61-193	Merit x Hartsoy	F5
4. M61-189	Hartsoy x M319	F5
5. M62-19	M319 x W-36	F5
6. M62-21	M319 x W-36	F5
7. M62-56	Chippewa x W-36	F5
8. M62-151	M319[4] x Comet	F5
9. M62-155	M319[4] x Comet	F5
10. M62-162	M319[4] x Comet	F5
11. W6-3394	C1121 x M319	F5
12. W6-3445	C1121 x M319	F5
13. W6-3487	C1121 x Merit	F5
14. W6-3500	C1121 x Merit	F5
15. W6-3523	C1121 x Merit	F5
16. W6-4108	Merit x W5-1912-22	F5

Hark outyielded all the strains in this test, however it was also the latest variety. M62-19, M62-162, and W6-3--5 yielded fairly well and were up to two days earlier than Hark. M62-56 and W6--108 were earlier, just one to two days later than Chippewa 6-, and averaged one to two bushels above Chippewa 6- in yield. W6--108 is also phytophthora resistant.

Table 41. Descriptive data and scattering scores, Preliminary Test D, 1969

Strain	Flower color	Pistillate color	Pod color	Seed coat luster	Seed coat color	Pollen color	Scattering: Resistant reaction	Scattering: Resistant reaction
							+ WSS.	- WSS.
[illegible]	P	P	Dk	S	Y	Bl	+	+
[illegible]	P	P	Dk	I	Y	Y	+	S
[illegible]	W	P	Dk	I	Y	Y	+	+
[illegible]	P	P	Dk	S	Y	Y	S	S
[illegible]	P	P	Dk	I	Y	Y	+	S-R
[illegible]	W	P	Dk	I	Y	Y	+	+
[illegible]	P	P	Dk	I	Y	Y	+	+
[illegible]	W	P	Dk	S	Y	Y	+	+
[illegible]	W	P	Dk	S	Y	Y	+	+
[illegible]	W	P	Tan	S	Y	Bl	+	+
[illegible]	W	P	Tan	S	Y	Bl	+	+
[illegible]	W	P	Dk	I	Y	Bl	+	+
[illegible]	W	P	Tan	S	Y	Bl	+	S
[illegible]	W	P	Dk	I	Y	Bl	+	+
[illegible]	W	P	Dk	I	Y	Bl	+	+

Table 42. Summary of data, Preliminary Test I, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	10	10	8	9	10	8	7	8	8
Chippewa 64	38.9	10	0	1.9	36	1.9	15.2	41.5	21.5
Hark	43.0	1	+4.3	1.9	39	1.8	16.8	43.0	21.2
M61-153	39.5	8	+1.9	2.0	37	1.6	14.4	40.7	22.1
M61-189	40.2	7	+3.1	1.6	37	1.8	18.4	41.4	21.8
M62-19	42.3	2	+2.3	2.0	38	1.7	18.0	40.4	22.2
M62-21	38.1	13	+0.8	1.3	32	1.6	16.9	41.4	22.1
M62-56	40.6	5	+1.6	1.8	33	1.7	17.6	40.9	22.3
M62-151	38.1	13	+3.3	1.9	35	1.6	15.5	40.2	22.2
M62-155	37.3	15	+1.6	1.3	31	2.2	17.9	40.9	21.9
M62-162	41.2	4	+3.6	1.4	36	1.7	17.7	41.4	21.5
W6-3394	39.0	9	+3.1	2.2	38	1.8	16.6	40.9	22.0
W6-3445	41.5	3	+3.6	2.2	38	2.0	17.6	41.0	22.1
W6-3487	38.8	11	+2.6	2.3	41	1.9	17.2	41.0	21.9
W6-3500	35.1	16	+2.5	2.5	38	1.7	14.7	41.3	21.6
W6-3523	38.8	11	+3.6	2.3	41	2.0	17.1	41.2	21.9
W6-4108	40.3	6	+2.0	2.8	39	1.9	18.5	41.1	21.8

[1] Days earlier (-) or later (+) than Chippewa 64 which matured September 23, 122 days after planting.

Table 43. Disease data, Preliminary Test I, 1969.

Strain	BB Ames Iowa n	BP Ill. a	BSR Urbana Ill. n	DM Worthington Ind. n	FE_2 Ind. a	PR Ind. a
Chippewa 64	4	4	2	4	4	R
Hark	4	4	2	4	5	S
M61-153	4	4	2	3	4	R
M61-189	3	4	3	5	5	S
M62-19	3	4	3	4	5	S
M62-21	3	4	2	3	4	S
M62-56	3	3	3	4	5	S
M62-151	3	4	2	5	5	S
M62-155	3	5	3	5	5	S
M62-162	3	4	2	5	5	S
W6-3394	3	4	3	5	5	S
W6-3445	3	4	3	4	4	S
W6-3487	3	3	3	4	4	R
W6-3500	3	4	3	4	5	S
W6-3523	2	4	2	5	4	R
W6-4108	3	3	3	3	4	R

Table 44. Yield and yield rank, Preliminary Test I, 1969.

Strain	Mean of 10 Tests	Ontario		Ohio			Michigan	Wisconsin	Illinois
		Ridge-town	Har-row	Hoyt-ville *	Woos-ter *	Colum-bus *	Dundee	Madison	DeKalb
Chippewa 64	38.9	41.4	32.9	22.9	34.9	49.5	36.8	45.7	37.5
Hark	43.0	46.8	37.0	18.3	30.8	41.7	40.5	44.0	40.1
M61-153	39.5	48.8	29.0	17.5	27.4	38.0	38.2	43.4	37.0
M61-189	40.2	45.5	33.7	22.3	25.1	53.2	47.1	44.2	37.6
M62-19	42.3	50.3	33.1	20.5	33.5	48.1	36.9	53.5	42.2
M62-21	38.1	38.7	27.2	15.6	22.4	38.9	40.3	44.0	36.9
M62-56	40.6	41.9	39.6	19.6	28.3	41.6	41.7	43.2	38.3
M62-151	38.1	38.2	30.2	23.7	29.5	51.2	32.1	46.1	36.1
M62-155	37.3	39.9	27.7	16.6	26.1	34.4	36.2	43.7	36.6
M62-162	41.2	44.4	34.5	20.1	32.2	56.4	42.5	47.5	40.2
W6-3394	39.0	47.6	37.5	22.7	42.2	47.7	32.7	40.6	36.5
W6-3445	41.5	49.1	36.6	24.3	37.8	46.3	44.6	44.3	40.9
W6-3487	38.8	42.7	34.9	23.8	29.3	39.8	41.7	43.9	38.1
W6-3500	35.1	39.1	30.4	21.9	27.7	25.9	27.1	39.1	34.1
W6-3523	38.8	46.1	35.9	25.1	34.4	46.3	38.1	42.7	38.0
W6-4108	40.3	54.0	34.1	24.3	33.6	31.9	31.6	42.3	40.7
Coef. of Var. (%)		6.6	4.5	--	--	--	15.8	5.7	4.2
L.S.D. (5%)		6.2	3.3	--	--	--	12.2	5.3	2.7
Row Spacing (In.)		24	40	32	32	28	28	36	30

	Yield Rank								
Chippewa 64	10	12	11	6	3	4	11	4	10
Hark	1	6	3	13	8	9	6	7	5
M61-153	8	4	14	14	13	13	8	11	11
M61-189	7	8	9	8	15	2	1	6	9
M62-19	2	2	10	10	6	5	10	1	1
M62-21	13	15	16	16	16	12	7	7	12
M62-56	5	11	1	12	11	10	4	12	6
M62-151	13	16	13	5	9	3	14	3	15
M62-155	15	13	15	15	14	14	12	10	13
M62-162	4	9	7	11	7	1	3	2	4
W6-3394	9	5	2	7	1	6	13	15	14
W6-3445	3	3	4	2	2	7	2	5	2
W6-3487	11	10	6	4	10	11	4	9	7
W6-3500	16	14	12	9	12	16	16	16	16
W6-3523	11	7	5	1	4	7	9	13	8
W6-4108	6	1	8	2	5	15	15	14	3

* Not included in the mean.

Table 44. (Continued)

Strain	Minnesota	Iowa		Missouri	South Dakota		California
	Waseca	Sutherland	Kanawha	Spickard	Milbank	Brookings	Davis
					*		*
Chippewa 64	37.1	38.3	39.3	39.1	13.3	41.2	21.5
Hark	41.0	46.1	47.7	45.2	13.9	41.6	15.9
M61-153	35.5	40.2	37.4	43.1	24.3	42.2	17.2
M61-189	42.1	41.0	37.0	40.2	16.3	34.0	18.9
M62-19	40.3	44.6	37.0	41.7	15.9	43.5	26.6
M62-21	37.8	39.9	38.9	41.1	13.2	35.9	16.6
M62-56	38.2	40.9	43.4	38.3	17.6	40.5	20.9
M62-151	39.9	38.2	40.0	41.9	19.6	38.6	16.5
M62-155	38.6	38.3	38.7	39.9	12.9	33.3	19.0
M62-162	42.4	42.8	40.0	38.3	17.3	39.6	21.1
W6-3394	33.9	39.9	40.2	36.6	16.0	44.8	23.1
W6-3445	40.1	42.3	38.2	43.3	15.5	35.9	16.6
W6-3487	35.2	35.8	38.3	42.1	11.5	34.9	21.6
W6-3500	32.6	34.5	36.1	39.5	12.7	38.8	20.4
W6-3523	36.6	38.9	35.9	39.3	17.0	36.6	--
W6-4108	40.1	43.4	37.9	36.1	19.0	42.9	--
Coef. of Var. (%)	6.4	2.3	5.2	7.6	21.7	7.7	--
L.S.D. (5%)	5.0	0.9	4.4	5.4	N.S.	6.4	--
Row Spacing (In.)	30	40	40	15	36	30	30

	Yield Rank					
Chippewa 64	11	12	6	12	12	6
Hark	3	1	1	1	11	5
M61-153	13	8	12	3	1	4
M61-189	2	6	13	8	7	15
M62-19	4	2	13	6	9	2
M62-21	10	9	7	7	13	12
M62-56	9	7	2	13	4	7
M62-151	7	14	4	5	2	10
M62-155	8	12	8	9	14	16
M62-162	1	4	4	13	5	8
W6-3394	15	9	3	15	8	1
W6-3445	5	5	10	2	10	12
W6-3487	14	15	9	4	16	14
W6-3500	16	16	15	10	15	9
W6-3523	12	11	16	11	6	11
W6-4108	5	3	11	16	3	3

* Not included in the mean

Table 45. Maturity dates, Preliminary Test I, 1969.

Strain	Mean of 8 Tests	Ontario		Ohio			Michigan	Wisconsin	Illinois
		Ridge-town	Har-row	Hoyt-ville	Woos-ter	Colum-bus	Dundee	Madison	DeKalb
			*	*	*				
Chippewa 64	0	0	0	0	0	0	0	0	0
Hark	+4.3	+3	+6	+ 5	-2	+ 2	0	+4	+6
M61-153	+1.9	+3	+4	+ 3	-4	+ 1	-1	+3	+1
M61-189	+3.1	0	+6	+ 4	-3	+ 3	0	+3	+3
M62-19	+2.3	+1	+2	+ 2	-1	+ 1	-1	+3	+2
M62-21	+0.8	+2	+3	+ 5	-4	0	-1	0	0
M62-56	+1.6	+2	+2	+ 6	-2	- 1	-1	+2	+1
M62-151	+3.3	+5	+6	+ 7	-4	+ 2	-1	+1	+1
M62-155	+1.6	+1	0	+ 4	-3	+ 1	-1	+1	0
M62-162	+3.6	+4	+8	+ 5	-1	+ 2	0	+3	+1
W6-3394	+3.1	+2	+5	+ 8	+1	+ 3	0	+2	+2
W6-3445	+3.6	+2	+4	+ 8	+2	+ 3	0	+2	+5
W6-3487	+2.6	+4	+3	+ 6	-1	+ 1	0	+1	+1
W6-3500	+2.5	+3	+6	+ 6	+1	0	-1	+1	+2
W6-3523	+3.6	+5	+8	+ 4	-3	0	-1	+2	+2
W6-4108	+2.0	+1	+3	+ 6	-1	+ 1	-1	+2	+2
Traverse (0)		-3	--	0	--	--	--	-3	0
Corsoy (II)		+9	+6	+17	+6	+12	+2	+7	+9
Date planted	5-24	5-26	6-10	6-4	5-16	5-24	5-19	5-20	5-23
Chippewa 64 mat.	9-23	10-3	9-18	9-11	9-12	9-9	9-27	9-18	9-13
Days to mature	122	130	100	99	119	108	131	121	113

* Not included in the mean.

Table 45. (Continued)

Strain	Minnesota	Iowa		Missouri	South Dakota		California
	Waseca	Sutherland	Kanawha	Spickard	Milbank	Brookings	Davis
		*		*	*		*
Chippewa 64	0		0		0	0	0
Hark	+7		+ 8		-2	+4	+1
M61-153	+3		+ 3		+4	+2	+4
M61-189	+7		+ 7		0	+2	+1
M62-19	+5		+ 5		-2	+2	+2
M62-21	+5		- 1		-3	+1	+1
M62-56	+5		+ 3		-2	+2	+5
M62-151	+7		+ 7		+3	+4	+3
M62-155	+5		+ 1		-3	+5	+2
M62-162	+7		+ 7		+2	+5	0
W6-3394	+7		+ 5		+1	+4	+1
W6-3445	+8		+ 5		+1	+4	+1
W6-3487	+6		+ 4		+3	+4	0
W6-3500	+7		+ 7		+2	+1	+3
W6-3523	+7		+ 7		+3	+7	--
W6-4108	+5		+ 2		+3	+4	--
Traverse (0)	-4		--		0	--	-9
Corsoy (II)	+7		+14		--	+3	+7
Date planted	5-30	5-27	5-28	5-28	5-26	5-22	6-5
Chippewa 64 mat.	9-25	--	9-17	--	10-5	10-13	9-21
Days to mature	118	--	112	--	132	144	108

UNIFORM TEST II, 1969

Strain	Parentage	Generation Composited	Previous Testing (years)
1. Amsoy	Adams x Harosoy	F_8	6
2. CX407BC7-50	Amsoy^8 x C1253	F_3	0
3. CX407BC7-53	Amsoy^8 x C1253	F_3	0
4. CX407BC7-310	Amsoy^8 x C1253	F_3	0
5. CX407BC7-326	Amsoy^8 x C1253	F_3	0
6. Beeson	C1253 x Kent	F_7	2
7. Corsoy	Harosoy x Capital	F_9	5
8. C1426	C1253 x Kent	F_7	2
9. C1453	C1266R x C1253	F_7	1
10. C1470	C1266R x C1253	F_6	P.T. II
11. C1479	(C1264^6 x Wayne) x (C1264^8 x C1253)	4 F_3 lines	0
12. L65-1354	Wayne^2 x L62-1926	F_3	P.T. II

C1426 has been in this test for three years, and its performance is summarized in Tables 54 and 55 along with the three check varieties. C1426 averaged highest in yield, only .6 bushel greater than Beeson, slightly better in seed composition, and similar in other respects. Corsoy averaged slightly higher (.7 bushel) than Amsoy and almost equalled Beeson. Since some phytophthora-affected data are included, Corsoy and Amsoy mean yields would be slightly higher in the absence of phytophthora rot.

The four CX strains from the Amsoy backcross did not differ significantly from each other. They averaged above Amsoy in yield, and this is true even if the Greenfield and Edgewood yields, which are affected by phytophthora, are excluded.

C1453 and C1470 yielded well for their early maturity in 1969, and C1453 averaged very good in seed quality. All four of the C strains showed tendencies to shattering under stress.

PROTANA

Origin and development of Protana is as follows:

1957 - Cross CX335 [CX291-42-1 (Mukden x C1069) x CX258-2-3-2 (PI 65.338 x C1079)] made by A. H. Probst at the Purdue Agricultural Experiment Station, Lafayette, Indiana. C1069 and C1079 are selections from Lincoln x Ogden originating from the same F_2 plant as Kent. Mukden is phytophthora root-rot resistant and is about three percent higher in protein content than currently grown varieties.

1958, F_1 - One F_1 plant grown in the field at Lafayette.

1959, F_2 - Approximately 1000 F_2 plants grown at Lafayette.

1960, F_3 - Twenty-one F_2 plant selections advanced to F_3 plant rows. Up to five single plant selections were made in each of five plant rows. Ten plant selections were saved from three of the above five plant rows. Seven of these were homozygous resistant to phytophthora root rot and three were segregating.

1961, F_4 - Ten plant rows grown at Lafayette. Six retained for yield testing.

1962, F_5 - Six lines tested. Three, Group II, at Walkerton and Bluffton; two, Group III, at Lafayette and Worthington; and one, Group IV, at Worthington and Evansville. Four plant selections retained from line CX335-17-2.

1963, F_6 - Plant selections CX335-17-2-1, -2, -3, and -4 grown in plant rows at Lafayette. Parent strain CX335-17-2 also yield tested at Walkerton and Lafayette. Highest in protein content in test of 18 entries.

1964, F_7 - CX335-17-2-1 (phytophthora root-rot resistant) assigned C1376 and tested in Indiana Preliminary Test II at Walkerton and Lafayette. Highest in protein content in test of 14 entries.

1965, F_8 - C1376 entered in Uniform Preliminary Test II and tested at 16 locations. High in protein content. Between Amsoy and Harosoy 63 in yield.

1966, F_9 - Entered in Uniform Test II and tested at 31 locations. Slightly above Harosoy 63 in yield and 2% higher in protein content. Produced 17 pounds of seed in rogued seed plot at Lafayette for 1967 breeders seed production. Retained 48 single plants for elite seed production.

1967, F_{10} - Continued in Uniform Test II. Yielded somewhat low, but protein content was high. Planted 1.66 acres at Lafayette from 17 pounds of seed. Produced 54 bushels and 21 pounds of cleaned seed. Grew 48 plant rows for elite seed production. Harvested individually and checked seed prior compositing. Placed in cold storage.

1968, - All multiplied seed held in storage. Not entered in Uniform Test II. Tested as one of ten entries in a Seed Source Study at Lafayette, Indiana and two locations in Iowa.

1969, F_{11} - Seed was divided among interested states in spring of 1969 as follows: Illinois, 15 bu.; Indiana, 21 bu. and 51 pounds; Iowa, 15 bu.; Ohio, 1 1/2 bu.; and South Dakota, 1 bu. Indiana has 1033, Illinois 835, and Iowa 764 bushels of cleaned seed available for release to qualified growers for 1970 production. C1376 was officially released and named August 20, 1969.

PROVAR

Provar was developed by the United States Department of Agriculture - Iowa Agricultural Experiment Station soybean breeding project. The cross and selection were made by C. R. Weber. An outline of the origin follows:

1952 - Cross AX58 (Harosoy x Clark) was made in the field at Ames, Iowa.

1953 - F_1's were grown in the field at Ames.

1954 - Not grown.

1955 - F_2 seed was space planted three inches apart at Ames. Seventy-five F_2 plants were selected for use in a Ph.D. thesis by R. L. Voigt. Seed of each planted was divided in three lots. Each lot was used as the base of selection for evaluating the bulk, pedigree, and family method of breeding. See Voigt, R. L., and C. R. Weber. 1960. Effectiveness of selection methods for yield in soybean crosses. Agron. J. 52: 527-530. Provar was selected by the family method which is described below.

1956 - A F_3 progeny row was grown at Ames for each selected F_2 plant. Three agronomically desirable F_3 plants with the maturity of Hawkeye were selected.

1957 - Each of the three F_3-derived plants from a 1958 progeny row was used as a "replicate" in an F_4 test at Ames. The 20 highest yielding F_3 families were selected with maturity approximating Hawkeye. One F_4 plant selection was made from each replicate in each F_3 family, but only the plant selected from the highest yielding replicate of each selected family was utilized for evaluation in a F_5 test.

1958 - The 20 F_4 plants selected in 1967 were grown at Ames in three replications as part of Voigt's thesis.

1959 - The highest yielding F_4-derived lines in 1958 were grown in a preliminary F_6 yield test at Ames. The progenitor of Provar (AX58F22-2) was selected for further testing.

1960 - AX58F22-2 was evaluated in a preliminary F_7 yield test at Ames and Independence, Iowa. Five F_7 plants were selected.

1961 - A F_8 progeny row of each F_7-derived line was grown at Ames. Two rows were selected. In the same year AX58F22-2 was evaluated in a preliminary F_8 test at Ames.

1962 - The two selected rows from AX58F22-2 (AX58F22-2-7 as A1-1050 and AX58F22-2-8 as A1-1051) were grown as F_7-derived lines F_9 in a preliminary test at Sutherland and Ames.

1963 - A1-1051 (F_7-derived line in F_{10}) was evaluated in Uniform Preliminary Test II.

1964-67 - A1-1051 was evaluated in Uniform Test II.

1966 - Yield test seed from 1965, rogued to remove off-type hila, was used to plant the initial increase in 1966. The increase field was rogued for white flowers and other off-type characteristics.

1967 - A1-1051 was approved for increase by the Iowa Agricultural Experiment Station. The Committee for Agricultural Development at Ames planted 18 bushels of seed on 46 acres and obtained 1207 bushels. The decision to release A1-1051 as a high-protein variety was delayed until some indication could be obtained from the soybean industry that a premium could be paid to the producer to offset the lower yield of A1-1051.

1968 - Industry was contacted by many individuals. The Japanese processors indicated the variety could have value to them as a speciality variety. Based on that information, the variety was released to interested states.

1969 - Foundation seed was distributed to interested states for redistribution to certified growers for planting in 1969. The amount of seed received and 1969 certified acreage by states is as follows:

	Bushels	Acreage
Iowa	545	736
Illinois	545	508
Minnesota	50	40
South Dakota	60	69
	1200	1353

Only certified acreage is listed, and additional acres may have been produced that were not certified.

Table 46. Descriptive data and shattering scores, Uniform Test II, 1969.

Strain	Flower Color	Pubescence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering Manhattan Kans. 2 wks.	Shattering Manhattan Kans. 4 wks.	Shattering Carbondale Ill. 7 wks.	Minn. Iron Chlorosis	Hypocotyl Length mm
Amsoy	P	G	Tan	S	Y	Y	3	3.8	1	2	118
CX407BC7-50	P	G	Tan	S	Y	Y	3	3.8	1	2.5	107
CX407BC7-53	P	G	Tan	S	Y	Y	3	4.2	1	3	104
CX407BC7-310	P	G	Tan	S	Y	Y	3	4.2	1	2.5	109
CX407BC7-326	P	G	Tan	S	Y	Y	1	4.2	1	2.5	115
Beeson	P	G	Br	S	Y	Ib	1	3.8	5	1.5	158
Corsoy	P	G	Br	D	Y	Y	1	1	1	2.5	249
C1426	P	G	Br	S	Y	Ib	1	3	5	2	105
C1453	P	G	Br	D+S	Y	Ib	3	3.8	2	1	160
C1470	P	G	Br	D	Y	Ib	3	4.2	2	1.5	156
C1479	P	G	Br	D	Y	Y	3.2	3.8	2	1.5	192
L65-1354	W	T	Br	S	Y	Bl	1	1	2	3.5	246

Table 47. Summary of data, Uniform Test II, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	29	29	23	27	29	25	24	16	16
Amsoy	44.9	7	+2.3	2.6	44	2.1	17.1	40.0	22.7
CX407BC7-50	46.5	2	+2.8	2.7	45	2.1	17.0	39.7	22.5
CX407BC7-53	45.7	4	+2.0	2.6	45	2.1	17.1	40.0	22.4
CX407BC7-310	46.2	3	+2.9	2.5	45	2.2	16.7	39.7	22.4
CX407BC7-326	45.7	4	+2.2	2.6	45	2.0	16.7	39.9	22.5
Beeson	46.6	1	+1.7	2.1	41	2.0	19.1	40.6	22.0
Corsoy	43.6	10	0	2.7	41	1.8	15.4	40.8	21.8
C1426	45.6	6	+3.4	2.2	43	1.8	19.0	41.1	22.2
C1453	43.1	11	-3.4	2.2	41	1.7	14.9	41.9	22.2
C1470	44.4	8	-1.5	1.8	40	2.3	16.3	41.6	22.0
C1479	44.4	8	+1.9	2.2	42	2.0	17.1	41.4	22.2
L65-1354	41.6	12	-2.2	2.0	38	1.9	18.0	42.9	21.6

[1]Days earlier (-) or later (+) than Corsoy which matured September 21, 118 days after planting.

Table 48. Disease data, Uniform Test II, 1969.

Strain	BB		BP		BSR			DM					PR			SMV	
	Ames Ia.		Ill.	Ia.	Urbana Ill.	Kanawha Ia.		Worthington Ind.	Bluffton Ind.	Urbana Ill.	Eldorado Ill.	FE_2 Ind.	Stoneville Miss.			Iowa	
	n	a	a	a	n	n 1	n 2	n	n	n	n	a	a	n	vigor	3	4
Amsoy	3	3	3	5	2	18	70	1.9	2.3	2.5	1.0	5	S	S	4	25	20
CX407BC7-50	2	4	4	4.5	2	15	60	1.9	2.3	2.8	1.3	5	R	R	1.5	15	10
CX407BC7-53	3	4.5	4	3.5	3	11	63	1.7	2.3	2.7	1.0	5	R	R	1.5	0	0
CX407BC7-310	3	4	2	4	3	17	43	1.8	2.0	2.8	1.0	5	R	R	1	20	0
CX407BC7-326	3	4	3	4	2	19	68	1.9	2.3	2.6	1.0	5	R	R	1	10	0
Beeson	2	5	4	3	3	17	80	1.9	3.3	3.2	1.7	1	R	R	2	55	55
Corsoy	3	3.5	4	4	2	14	68	1.9	2.5	3.2	1.0	5	S	S	3.5	35	35
C1426	4	4.5	3	3.5	2	17	65	1.7	4.3	3.5	2.3	5	R	R	1.5	65	40
C1453	3	3.5	3	4.5	3	18	83	--	4.3	4.0	2.7	3	R	R	2	60	30
C1470	4	4.5	3	3.5	3	20	100	1.9	3.3	3.6	2.3	1	R	R	1.5	40	15
C1479	3	4.5	2	1.5	3	19	83	2.3	3.5	3.7	1.7	1	R	R	1	25	10
L65-1354	4	2.5	3	1	3	23	90	2.0	3.8	4.2	4.0	1	S	MR	3	20	15

[1]Mean height of browning in diseased stems
[2]Percent of plants with browning
[3,4]Percent of plants infected, measured serologically (3) and by transmission to beans (4)

Table 49. Yield and yield rank, Uniform Test II, 1969.

Strain	Mean of 29 Tests	Ontario		New Jersey	Ohio			Michigan	Indiana		
		Ridgetown	Harrow	Vail	Hoytville *	Wooster *	Columbus *	Dundee	Knox	Bluffton	Lafayette
Amsoy	44.9	55.6	38.2	38.9	34.3	45.5	54.4	46.4	44.7	44.9	59.8
CX407BC7-50	46.5	56.8	39.3	45.0	26.8	40.3	48.0	44.2	47.8	43.3	61.4
CX407BC7-53	45.7	58.9	37.6	42.9	26.4	47.5	42.3	43.1	45.2	44.1	59.0
CX407BC7-310	46.2	60.6	37.1	38.6	24.8	48.3	57.4	42.1	46.0	44.4	62.3
CX407BC7-326	45.7	59.2	39.7	37.4	28.2	45.6	42.9	42.1	45.4	45.2	60.4
Beeson	46.6	51.8	38.7	43.3	27.8	51.8	46.2	49.4	48.7	47.4	60.0
Corsoy	43.6	53.8	35.0	32.4	23.9	41.8	41.2	49.6	42.7	39.3	55.8
C1426	45.6	51.9	38.0	40.5	26.9	48.6	49.3	37.8	41.9	43.6	58.4
C1453	43.1	54.2	34.8	37.7	23.8	40.7	54.5	49.2	40.3	42.5	54.8
C1470	44.4	53.6	34.9	35.5	26.9	43.6	48.3	40.0	42.1	46.3	61.1
C1479	44.4	53.5	37.8	43.6	24.7	49.8	60.4	42.7	43.6	46.0	57.2
L65-1354	41.6	51.3	35.0	31.0	29.3	40.7	48.5	41.4	38.1	43.6	56.9
Coef. of Var.(%)		9.8	5.4	9.9	--	--	--	15.6	10.0	9.5	6.9
L.S.D.(5%)		N.S.	2.9	7.8	--	--	--	9.7	N.S.	N.S.	N.S.
Row Spacing(In.)		24	40	30	32	32	28	28	38	30	38

	Yield Rank										
Amsoy	7	5	4	6	1	7	4	4	6	5	6
CX407BC7-50	2	4	2	1	7	12	8	5	2	10	2
CX407BC7-53	4	3	7	4	8	5	11	6	5	7	7
CX407BC7-310	3	1	8	7	9	4	2	8	3	6	1
CX407BC7-326	4	2	1	9	3	6	10	8	4	4	4
Beeson	1	11	3	3	4	1	9	2	1	1	5
Corsoy	10	7	9	11	11	9	12	1	8	12	11
C1426	6	10	5	5	5	3	5	12	10	8	8
C1453	11	6	12	8	12	10	3	3	11	11	12
C1470	8	8	11	10	5	8	7	11	9	2	3
C1479	8	9	6	2	10	2	1	7	7	3	9
L65-1354	12	12	9	12	2	10	6	10	12	8	10

*Not included in the mean
[1]Irrigated

Table 49. (Continued)

Strain	Indiana		Wisconsin	Illinois								Minnesota	
	Greenfield	Worthington	Madison	DeKalb	Pontiac	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Lamberton	Waseca
Amsoy	36.8	55.5	51.0	44.8	45.4	43.2	51.5	33.3	47.8	54.0	42.0	45.8	36.1
CX407BC7-50	51.7	56.2	46.4	46.6	45.3	42.8	47.1	44.0	46.2	55.9	44.7	44.3	37.0
CX407BC7-53	48.6	53.4	48.1	48.6	43.6	41.5	45.9	41.9	46.2	57.2	41.2	42.7	35.4
CX407BC7-310	52.2	55.4	49.6	48.0	45.5	42.0	47.1	42.6	46.8	54.4	44.6	43.2	36.1
CX407BC7-326	49.6	52.4	44.2	47.2	43.6	43.3	47.6	40.7	46.5	52.3	42.4	43.6	37.7
Beeson	51.4	57.2	51.4	44.5	44.5	41.9	46.6	40.7	46.5	54.7	41.1	43.7	40.4
Corsoy	37.2	48.7	46.8	46.5	44.9	45.6	51.2	33.1	50.4	47.0	43.6	45.7	38.4
C1426	52.6	57.0	45.6	46.2	43.4	40.2	52.4	42.2	47.7	52.2	45.0	48.7	39.2
C1453	47.3	40.2	44.4	43.0	43.4	43.8	46.4	38.0	38.5	53.2	42.0	43.1	38.0
C1470	45.0	51.5	50.9	45.9	45.2	44.6	47.2	42.1	49.4	54.9	42.0	47.2	41.0
C1479	50.7	54.4	46.8	45.3	39.9	40.0	45.3	40.9	47.0	49.4	41.0	45.2	37.9
L65-1354	38.8	44.9	45.7	45.2	44.0	40.8	48.6	33.5	46.8	50.5	37.7	45.4	39.4
C.V. (%)	8.3	6.3	6.0	4.2	5.7	3.7	4.9	8.6	7.5	4.5	6.1	8.3	16.8
L.S.D. (5%)	5.6	4.7	4.1	N.S.	N.S.	2.6	3.4	5.8	N.S.	4.1	4.4	5.3	9.1
Row Sp. (In.)	38	38	36	30	38	30	30	38	36	36	40	30	30
	Yield Rank												
Amsoy	12	4	2	10	2	5	2	11	3	6	6	3	10
CX407BC7-50	3	3	8	4	3	6	7	1	10	2	2	7	9
CX407BC7-53	7	7	5	1	8	9	11	5	10	1	9	12	12
CX407BC7-310	2	5	4	2	1	7	7	2	6	5	3	10	10
CX407BC7-326	6	8	12	3	8	4	5	7	8	8	5	9	8
Beeson	4	1	1	11	6	8	9	7	8	4	10	8	2
Corsoy	11	10	6	5	5	1	3	12	1	12	4	4	5
C1426	1	2	10	6	10	11	1	3	4	9	1	1	4
C1453	8	12	11	12	10	3	10	9	12	7	6	11	6
C1470	9	9	3	7	4	2	6	4	2	3	6	2	1
C1479	5	6	6	8	12	12	12	6	5	11	11	6	7
L65-1354	10	11	9	9	7	10	4	10	6	10	12	5	3

Table 49. (Continued)

Strain	Iowa				Missouri		South Dakota	Nebraska	Kansas	California[1]	
	Sutherland	Kanawha	Clarence	Ames	Spickard	Mt. Vernon	Brookings	Concord	Powhattan	Davis	Five Points
										*	*
Amsoy	43.4	43.0	46.8	42.5	43.3	37.4	40.6	47.0	42.1	21.3	19.8
CX407BC7-50	47.4	43.0	51.0	43.2	48.1	34.0	39.8	47.4	47.6	16.9	28.7
CX407BC7-53	46.6	44.3	51.7	40.5	45.9	35.3	43.8	46.7	46.4	16.8	28.7
CX407BC7-310	48.8	44.5	51.3	41.6	46.6	37.8	34.5	48.6	46.2	16.2	24.8
CX407BC7-326	46.8	43.4	54.5	42.6	41.6	38.0	40.8	49.1	48.0	19.4	27.6
Beeson	44.5	44.0	52.3	46.0	49.1	37.3	40.9	46.4	46.8	23.0	30.3
Corsoy	46.2	43.7	47.0	39.9	42.5	32.1	47.0	40.5	37.2	34.2	28.5
C1426	45.7	44.8	49.1	40.8	46.6	35.7	43.6	47.3	43.0	19.0	22.3
C1453	44.4	39.2	43.4	44.4	46.1	31.8	42.5	44.4	39.3	23.2	27.2
C1470	43.2	45.5	45.1	39.2	41.9	28.5	42.8	42.2	39.8	20.3	30.4
C1479	45.4	41.6	52.5	41.0	41.5	34.9	37.6	43.2	41.3	18.1	36.3
L65-1354	40.3	40.2	42.6	37.4	43.8	29.4	38.4	36.9	37.6	29.9	27.0
C.V. (%)	6.2	5.2	7.6	6.4	10.2	13.4	10.0	5.5	7.3	--	23.0
L.S.D. (5%)	4.0	3.2	5.2	1.8	6.6	N.S.	5.8	3.5	4.5	--	N.S.
Row Sp.(In.)	40	40	40	40	15	15	30	30	28	30	30
	Yield Rank										
Amsoy	10	8	9	5	8	3	8	5	7	5	12
CX407BC7-50	2	8	6	3	2	8	9	3	2	10	4
CX407BC7-53	4	4	4	9	6	6	2	6	4	11	4
CX407BC7-310	1	3	5	6	3	2	12	2	5	12	10
CX407BC7-326	3	7	1	4	11	1	7	1	1	7	7
Beeson	8	5	3	1	1	4	6	7	3	4	3
Corsoy	5	6	8	10	9	9	1	11	12	1	6
C1426	6	2	7	8	3	5	3	4	6	8	11
C1453	9	12	11	2	5	10	5	8	10	3	8
C1470	11	1	10	11	10	12	4	10	9	6	2
C1479	7	10	2	7	12	7	11	9	8	9	1
L65-1354	12	11	12	12	6	11	10	12	11	2	9

Table 50. Maturity dates, Uniform Test II, 1969.

Strain	Mean of 23 Tests	Ontario		New Jersey	Ohio			Michigan	Indiana		
		Ridge-town	Harrow	Vail	Hoytville	Wooster	Columbus	Dundee	Knox	Bluffton	Lafayette
				*	*	*	*				
Amsoy	+2.3	0	+ 3		+ 2	+11	- 2	+5	+7	+1	0
CX407BC7-50	+2.8	0	+ 4		+ 1	+ 6	- 3	+5	+6	+2	0
CX407BC7-53	+2.0	+1	+ 2		+ 1	+ 2	0	+5	+6	0	0
CX407BC7-310	+2.9	+1	+ 4		+ 1	+ 6	- 1	+5	+6	+1	+1
CX407BC7-326	+2.2	+1	+ 3		+ 1	+ 3	- 1	+5	+5	+1	+1
Beeson	+1.7	0	+ 5		+ 3	+ 1	+ 3	+5	+5	-1	-1
Corsoy	0	0	0		0	0	0	0	0	0	0
C1426	+3.4	+2	+ 8		+ 2	+ 1	+ 1	+5	+6	+3	+3
C1453	-3.4	-3	- 1		0	- 3	- 3	-1	0	-4	-8
C1470	-1.5	-2	0		- 1	- 1	- 3	0	0	-4	-6
C1479	+1.9	+1	+ 5		+ 2	+ 4	+ 1	+3	+4	+1	+4
L65-1354	-2.2	-2	0		- 4	+ 1	- 1	-1	+2	-6	-5
Hark (I)		-5	0		- 2	- 8	-11	-2	-1	--	-8
Wayne (III)		--	+10		+12	+16	+ 7	--	--	+7	+9
Date planted	5-26	5-26	6-10	6-13	6-4	5-16	5-24	5-19	6-6	5-26	5-26
Corsoy matured	9-21	10-12	9-24	--	9-28	9-18	9-21	9-29	9-25	9-21	9-24
Days to mature	118	139	106	--	116	125	120	133	111	118	121

*Not included in the mean
[1]Irrigated

Table 50. Maturity dates, Uniform Test II, 1969 (Continued)

Strain	Indiana		Wisconsin	Illinois								Minnesota	
	Greenfield *	Worthington	Madison	DeKalb	Pontiac	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Lamberton	Waseca
Amsoy		+ 3	+4	+3	+1	-1	+ 4	+ 4	+ 1	-1	+ 3	+2	+1
CX407BC7-50		+ 4	+6	+4	+2	-2	+ 2	+ 5	+ 2	0	+ 2	+3	+5
CX407BC7-53		+ 2	+5	+4	+1	-2	+ 1	+ 3	+ 1	-1	+ 2	+2	+3
CX407BC7-310		+ 3	+5	+4	+2	-1	+ 2	+ 5	+ 2	-1	+ 3	+2	+4
CX407BC7-326		+ 3	+6	+4	+2	-2	+ 1	+ 3	+ 1	-2	+ 2	+2	+5
Beeson		+ 3	+3	+1	+1	-1	- 1	+ 5	0	-3	+ 2	+2	+5
Corsoy		0	0	0	0	0	0	0	0	0	0	0	0
C1426		+ 2	+4	+2	+2	+3	+ 3	+ 7	+ 2	-1	+ 3	+2	+6
C1453		- 3	0	-4	-6	-7	- 6	- 4	- 4	-6	- 5	-4	+1
C1470		- 1	0	-2	-2	-4	- 3	- 1	+ 2	-4	- 1	0	0
C1479		+ 2	+2	+4	+1	+1	+ 2	+ 3	0	-3	+ 1	+1	+1
L65-1354		0	-1	0	-4	-5	- 3	- 3	- 2	-5	- 4	-2	+1
Hark (I)		--	-2	-2	-4	-3	- 4	--	- 2	-7	--	-5	0
Wayne (III)		+11	--	+8	+6	+8	+14	+10	+34	+6	+16	--	--
Date planted	5-28	5-13	5-20	5-23	5-26	5-16	5-20	5-28	5-17	5-28	6-4	5-26	5-30
Corsoy mat.	--	9-2	9-25	9-22	9-16	9-12	9-7	9-7	9-3	9-8	9-6	9-30	10-2
Days to mat.	--	112	128	122	113	119	110	102	109	103	94	127	125

Table 50. (Continued)

Strain	Iowa				Missouri		South Dakota	Nebraska	Kansas	California[1]	
	Sutherland	Kanawha	Clarence	Ames	Spickard	Mt. Vernon	Brookings	Concord	Powhattan	Davis	Five Points
	*		*		*	*				*	*
Amsoy		+2		+ 2			+8	+ 2	0	0	-5
CX407BC7-50		+2		+ 3			+8	+ 3	-1	+1	-3
CX407BC7-53		+2		+ 2			+5	+ 2	-1	0	-5
CX407BC7-310		+2		+ 3			+8	+ 5	+1	+2	-6
CX407BC7-326		+2		+ 2			+6	+ 2	-2	0	-5
Beeson		+2		+ 3			+3	+ 3	-2	0	-4
Corsoy		0		0			0	0	0	0	0
C1426		+1		+ 3			+6	+ 3	+3	+2	+1
C1453		-5		- 2			+3	- 2	-8	+2	-3
C1470		-4		- 2			+2	- 2	-1	0	+1
C1479		-1		+ 2			+7	+ 3	0	+1	0
L65-1354		-5		- 2			+4	- 2	-6	0	-6
Hark (I)		-6		--			+1	- 1	-7	-6	--
Wayne (III)		--		+10			--	+10	+4	--	+1
Date planted	5-27	5-28	5-23	5-15	5-28	5-19	5-22	6-3	6-4	6-5	6-18
Corsoy mat.	--	10-1	--	9-22	--	--	10-16	9-28	9-26	9-28	10-14
Days to mat.	--	126	--	130	--	--	147	117	114	115	118

Table 51. Lodging scores and plant height, Uniform Test II, 1969.

Strain	Mean of 27 Tests	Ontario		New Jersey	Ohio			Michigan	Indiana		
		Ridgetown	Harrow	Vail	Hoytville *	Wooster *	Columbus *	Dundee	Knox	Bluffton	Lafayette
Amsoy	2.6	3.1	1.8	2.2	1.0	1.0	1.0	4.0	2.8	2.4	3.0
CX407BC7-50	2.7	2.9	2.0	2.5	1.0	1.0	1.0	3.0	2.1	3.0	3.0
CX407BC7-53	2.6	2.9	2.0	1.7	1.0	1.0	1.0	3.0	2.3	3.5	2.8
CX407BC7-310	2.5	2.5	1.8	1.7	1.0	1.0	1.0	3.0	2.3	3.4	2.6
CX407BC7-326	2.6	2.5	1.8	1.7	1.0	1.0	1.0	3.0	2.4	3.5	2.5
Beeson	2.1	2.3	2.0	1.5	1.0	1.0	1.0	3.0	1.8	2.1	2.3
Corsoy	2.7	3.1	1.2	1.7	1.0	1.0	1.0	4.0	2.5	3.1	2.5
C1426	2.2	2.1	2.5	2.0	1.0	1.0	1.0	3.0	2.1	2.6	2.1
C1453	2.2	1.8	1.0	1.7	1.0	1.0	1.0	3.0	1.4	2.4	1.9
C1470	1.8	1.4	1.0	1.2	1.0	1.0	1.0	4.0	1.6	1.9	1.9
C1479	2.2	2.1	2.0	1.5	1.0	1.0	1.0	4.0	2.1	2.3	2.4
L65-1354	2.0	1.4	1.8	2.0	1.0	1.0	1.0	2.0	1.6	2.1	1.9
	Mean of 29 Tests	Plant Height									
Amsoy	44	49	36	42	33	33	39	45	46	48	53
CX407BC7-50	45	52	38	43	34	35	39	46	48	52	53
CX407BC7-53	45	50	36	43	34	35	37	43	47	56	56
CX407BC7-310	45	51	36	43	31	34	42	42	46	55	55
CX407BC7-326	45	51	37	45	32	35	44	42	49	53	55
Beeson	41	46	34	40	31	33	38	41	44	46	48
Corsoy	41	48	32	39	32	33	38	43	44	49	51
C1426	43	48	38	42	31	35	41	42	45	51	50
C1453	41	46	32	39	30	31	40	40	43	50	49
C1470	40	44	33	38	29	32	38	40	41	47	46
C1479	42	48	37	42	33	36	42	40	43	49	51
L65-1354	38	44	31	39	34	33	37	38	41	46	46

*Not included in the mean
[1]Irrigated

Table 51. (Continued)

Strain	Indiana		Wisconsin	Illinois								Minnesota	
	Greenfield	Worthington	Madison	DeKalb	Pontiac	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Lamberton	Waseca
Amsoy	1.9	2.9	2.6	2.0	4.0	1.4	4.1	1.4	3.8	3.9	2.0	4.0	3.0
CX407BC7-50	1.8	2.9	3.0	2.3	4.0	1.4	3.7	1.7	3.3	3.8	3.0	3.8	2.8
CX407BC7-53	1.8	2.6	3.0	2.0	4.0	1.3	3.9	1.6	3.5	3.8	2.0	4.2	2.9
CX407BC7-310	1.9	2.4	2.4	2.0	4.0	1.3	3.5	1.9	3.6	3.8	3.0	4.0	2.8
CX407BC7-326	1.8	2.8	2.8	2.0	4.0	1.5	3.8	1.6	3.6	3.8	3.0	3.8	2.9
Beeson	1.5	2.1	1.7	1.2	3.0	1.3	3.0	1.2	4.1	2.3	1.0	3.8	2.8
Corsoy	1.6	3.0	2.5	3.0	3.7	2.0	3.8	1.6	3.5	3.6	3.0	4.0	2.8
C1426	1.4	2.1	2.6	2.0	3.0	1.3	2.2	1.5	2.5	2.3	2.0	4.0	2.9
C1453	1.3	2.1	2.5	1.3	3.0	1.1	3.3	1.7	3.7	3.5	2.0	3.2	2.9
C1470	1.1	1.9	1.4	1.0	2.3	1.2	3.2	1.1	1.7	2.3	1.0	3.2	2.2
C1479	1.1	1.8	2.0	1.7	3.0	1.3	2.9	1.2	1.8	2.8	2.0	3.8	2.9
L65-1354	1.1	2.2	2.3	1.3	2.7	1.3	2.7	1.3	2.2	3.2	1.0	3.8	3.0
				Plant Height									
Amsoy	41	52	45	45	48	39	52	33	46	53	34	44	41
CX407BC7-50	48	53	45	45	48	39	51	37	52	56	43	47	40
CX407BC7-53	46	52	45	45	46	38	52	36	49	56	38	46	37
CX407BC7-310	44	52	45	44	49	39	52	38	50	56	39	48	40
CX407BC7-326	46	53	46	44	48	38	52	37	50	56	43	45	40
Beeson	43	48	43	40	41	36	46	30	44	49	36	44	38
Corsoy	37	44	42	38	45	38	45	30	44	49	41	44	36
C1426	44	47	45	38	46	39	49	37	49	51	41	43	39
C1453	42	46	43	39	42	36	45	32	45	47	40	42	38
C1470	41	46	43	38	44	33	46	33	46	51	39	44	37
C1479	44	50	45	43	43	38	49	36	47	51	39	44	38
L65-1354	35	44	40	37	41	36	44	29	43	45	32	42	37

Table 51. Lodging scores and plant height, Uniform Test II, 1969 (Continued)

Strain	Iowa				Missouri		South Dakota	Nebraska	Kansas	California[1]	
	Sutherland	Kanawha	Clarence	Ames	Spickard	Mt. Vernon	Brookings	Concord	Powhattan	Davis	Five Points
									*	*	*
Amsoy	2.9	2.4	2.6	2.6	2.2	1.0		1.0	1.0	2.0	3.0
CX407BC7-50	3.1	2.6	2.4	2.6	2.4	1.3		1.2	1.0	2.0	5.0
CX407BC7-53	3.0	3.0	2.4	2.8	2.2	1.3		1.0	1.0	1.0	4.0
CX407BC7-310	2.9	2.5	2.4	2.5	2.1	1.0		1.2	1.0	1.0	4.0
CX407BC7-326	2.8	2.9	2.5	2.4	2.1	1.0		1.0	1.0	2.0	4.0
Beeson	2.8	2.2	2.0	2.2	1.2	1.0		1.0	1.0	1.0	3.0
Corsoy	3.0	3.1	2.7	2.9	2.5	1.8		1.5	1.0	1.0	3.0
C1426	3.0	2.7	2.1	2.3	1.9	1.3		1.2	1.0	2.0	3.0
C1453	2.7	2.2	2.2	2.0	1.5	2.0		1.0	1.0	2.0	3.0
C1470	2.7	2.0	1.6	1.8	1.1	1.0		1.0	1.0	1.0	3.0
C1479	2.8	2.8	2.1	2.2	1.6	1.0		1.0	1.0	2.0	3.0
L65-1354	2.8	2.2	2.5	2.5	1.0	2.0		1.0	1.0	1.0	3.0
	Plant Height										
										*	*
Amsoy	48	49	41	42	42	34	42	41	36	51	38
CX407BC7-50	47	49	42	44	45	33	42	43	34	49	42
CX407BC7-53	48	48	41	40	42	35	43	42	35	50	41
CX407BC7-310	47	46	41	42	42	36	43	42	34	51	40
CX407BC7-326	47	49	42	41	41	36	43	40	35	47	40
Beeson	44	44	36	39	40	32	38	36	29	48	40
Corsoy	44	44	35	40	40	32	41	38	32	49	35
C1426	46	47	41	40	41	34	44	40	35	48	39
C1453	44	44	38	38	40	29	42	36	31	48	40
C1470	46	44	37	35	38	30	44	36	28	49	39
C1479	47	46	38	40	40	33	41	37	32	50	41
L65-1354	41	42	34	34	37	31	41	35	30	50	38

Table 52. Seed quality scores and seed weight, Uniform Test II, 1969.

Strain	Mean of 25 Tests	Ontario		New Jersey	Ohio			Michigan	Indiana		
		Ridgetown	Harrow	Vail	Hoytville *	Wooster *	Columbus	Dundee	Knox	Bluffton	Lafayette
Amsoy	2.1	2.0	1.8	1.7	1.0	1.5		2.5	2.0	1.0	2.5
CX407BC7-50	2.1	2.0	1.5	2.0	1.2	1.2		2.5	2.0	1.0	2.5
CX407BC7-53	2.1	2.0	1.2	2.0	1.0	1.5		2.0	2.0	1.5	2.5
CX407BC7-310	2.2	3.0	1.8	2.0	1.0	1.2		2.0	2.0	1.5	2.5
CX407BC7-326	2.0	2.0	1.2	2.2	1.0	1.5		2.0	2.0	1.5	2.5
Beeson	2.0	2.0	1.0	1.7	1.2	2.0		2.0	1.5	1.5	3.0
Corsoy	1.8	3.0	1.8	2.0	1.0	1.0		1.0	1.0	1.0	1.5
C1426	1.8	2.0	1.0	1.5	1.2	1.7		1.5	1.5	1.0	2.0
C1453	1.7	2.0	1.2	1.2	1.7	1.7		1.5	1.0	1.0	1.5
C1470	2.3	3.0	1.0	2.7	2.0	2.0		3.0	1.5	1.5	2.5
C1479	2.0	3.0	1.2	3.0	1.7	1.5		2.0	1.5	1.5	3.0
L65-1354	1.9	2.0	1.2	2.0	2.0	2.5		1.5	1.5	1.5	3.0
	Mean of 24 Tests	**Seed Weight**									
					*	*	*				
Amsoy	17.1	21.1	15.2	18.5	16.6	18.9	18.6	20.2	16.6	17.7	20.5
CX407BC7-50	17.0	21.8	15.1	18.0	16.1	16.4	18.4	19.1	16.9	17.4	21.1
CX407BC7-53	17.1	22.4	15.2	18.3	16.5	18.4	18.7	19.5	17.5	17.0	21.8
CX407BC7-310	16.7	22.1	15.2	18.2	16.1	18.3	18.1	19.2	17.0	15.8	20.9
CX407BC7-326	16.7	22.5	15.4	18.5	15.9	18.6	18.3	20.1	16.1	16.6	21.5
Beeson	19.1	22.9	16.9	20.1	18.5	23.3	20.7	20.4	19.6	19.2	24.8
Corsoy	15.4	18.7	13.3	15.6	14.4	16.1	17.7	16.3	19.7	14.7	18.0
C1426	19.0	21.4	15.6	19.9	19.1	22.8	18.8	19.8	19.5	18.7	21.9
C1453	14.9	20.1	12.5	14.6	13.5	18.3	19.0	16.0	19.1	14.5	18.3
C1470	16.3	19.7	13.9	15.2	15.5	18.0	18.4	19.1	15.2	16.8	20.0
C1479	17.1	22.2	16.0	18.7	17.4	19.3	17.8	20.0	16.9	17.8	22.1
L65-1354	18.0	21.1	16.3	18.1	16.4	19.4	19.3	19.8	17.9	17.1	20.6

*Not included in the mean
[1]Irrigated

Table 52. Seed quality scores and seed weight, Uniform Test II, 1969 (Continued)

Strain	Indiana		Wisconsin	Illinois								Minnesota	
	Greenfield	Worthington	Madison	DeKalb	Pontiac	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Lamberton	Waseca
Amsoy	2.0	2.0	3.0	1.8	2.3	1.7	3.0	2.0	2.3	2.7	1.0	1.5	1.8
CX407BC7-50	2.0	1.5	2.0	1.5	2.3	2.0	2.8	2.2	2.3	2.7	2.0	2.0	1.8
CX407BC7-53	1.5	1.5	3.0	1.8	2.5	1.5	2.5	2.0	2.2	2.8	1.0	1.8	2.0
CX407BC7-310	2.0	1.5	2.0	1.3	2.0	2.0	2.8	2.2	2.5	2.8	2.0	2.0	2.2
CX407BC7-326	2.0	1.5	2.0	1.2	2.3	1.8	2.9	2.3	2.2	2.7	2.0	1.5	1.8
Beeson	1.5	1.5	2.0	2.3	2.7	1.8	2.6	2.0	3.2	3.2	1.0	1.8	2.0
Corsoy	1.5	1.5	2.0	2.7	2.2	1.7	2.3	2.0	2.3	2.7	2.0	1.5	1.5
C1426	1.5	1.5	2.0	1.5	2.3	2.3	3.0	2.5	2.3	3.0	2.0	1.5	2.0
C1453	1.0	1.5	2.0	1.5	2.5	2.0	2.3	2.0	2.5	2.8	1.0	1.8	2.0
C1470	2.0	2.0	3.0	1.8	2.8	1.8	2.8	2.5	2.7	3.7	2.0	2.0	2.2
C1479	1.5	1.5	2.0	1.3	1.8	1.8	2.8	2.2	2.2	3.2	1.0	1.5	1.8
L65-1354	2.5	1.5	2.0	2.0	3.0	1.7	1.8	1.7	2.5	3.2	1.0	1.5	1.5
	Seed Weight												
Amsoy	17.3	16.9		14.8	15.4	15.8	16.7	14.2	13.9	16.2	14.5	19.6	16.7
CX407BC7-50	17.9	16.8		15.0	15.5	15.6	15.7	14.2	13.2	16.6	14.7	19.4	16.5
CX407BC7-53	17.5	17.5		14.9	15.5	16.0	15.7	14.6	13.2	16.0	13.6	19.4	16.7
CX407BC7-310	17.1	16.5		14.7	15.3	15.6	15.0	14.3	13.2	15.2	14.3	18.1	17.5
CX407BC7-326	16.8	15.5		14.8	15.3	15.7	15.0	13.5	13.1	14.8	13.9	18.9	16.8
Beeson	19.7	19.5		16.7	16.9	18.4	17.8	17.8	15.9	17.9	15.9	21.6	19.0
Corsoy	16.3	14.3		13.8	14.7	15.6	14.2	12.7	12.6	14.7	13.5	17.1	16.2
C1426	20.4	18.5		17.5	18.2	19.9	18.6	17.0	15.7	18.2	16.9	20.5	19.1
C1453	14.9	14.5		12.9	14.5	14.6	12.2	12.7	11.9	14.0	12.3	15.4	14.4
C1470	17.0	15.5		14.0	15.9	16.0	15.1	14.2	14.0	15.1	13.2	17.9	16.3
C1479	17.7	17.7		14.9	15.4	17.2	15.5	14.3	14.6	15.5	14.4	18.3	16.0
L65-1354	18.5	18.2		16.5	17.8	17.9	17.0	14.9	16.2	17.0	16.7	20.5	17.5

Table 52. (Continued)

Strain	Iowa				Missouri		South Dakota	Nebraska	Kansas	California[1]	
	Sutherland	Kanawha	Clarence	Ames	Spickard	Mt. Vernon	Brookings	Concord	Powhatan	Davis	Five Points
	*	*	*	*						*	*
Amsoy	1.0	1.0	1.0	1.0	1.4	3.5	4.0	1.5	1.7	3.0	3.0
CX407BC7-50	1.0	1.0	1.0	1.0	1.5	3.0	3.5	1.5	1.5	3.0	4.0
CX407BC7-53	1.0	1.0	1.0	1.0	1.2	3.5	3.5	2.0	1.8	3.0	3.0
CX407BC7-310	1.0	1.0	1.0	1.0	1.7	2.8	4.0	2.0	2.2	2.0	4.0
CX407BC7-326	1.0	1.0	1.0	1.0	1.1	2.8	3.5	1.5	1.9	1.0	4.0
Beeson	1.0	1.0	1.0	1.0	1.2	2.6	3.0	1.5	2.2	3.0	4.0
Corsoy	1.0	1.0	1.0	1.0	1.1	2.0	2.5	1.5	1.5	3.0	4.0
C1426	1.0	1.0	1.0	1.0	1.0	2.0	2.0	1.5	1.6	3.0	4.0
C1453	1.0	1.0	1.0	1.0	1.3	2.3	2.5	1.5	1.5	2.0	4.0
C1470	1.0	1.0	1.0	1.0	1.7	2.8	3.0	1.5	2.5	2.0	5.0
C1479	1.0	1.0	1.0	1.0	1.0	2.5	2.5	2.0	1.7	2.0	4.0
L65-1354	1.0	1.0	1.0	1.0	1.0	2.5	2.0	1.0	1.5	2.0	4.0

	Seed Weight							
							*	*
Amsoy	17.7	16.7	17.4	18.2	18.5	21.4	14.2	
CX407BC7-50	17.4	17.4	17.2	18.9	17.2	12.2	15.0	
CX407BC7-53	17.8	17.3	16.4	17.8	17.6	13.6	14.6	
CX407BC7-310	17.3	16.3	16.4	17.9	17.3	14.7	13.6	
CX407BC7-326	17.6	17.1	16.2	17.9	17.5	16.4	14.1	
Beeson	19.7	19.5	17.9	20.1	21.2	12.1	17.4	
Corsoy	15.5	15.4	15.1	15.4	15.8	12.6	14.7	
C1426	19.6	18.9	18.5	21.3	20.3	16.7	16.8	
C1453	15.3	15.6	14.1	15.2	17.4	21.0	15.5	
C1470	16.4	16.8	15.1	21.6	18.2	21.3	15.2	
C1479	17.1	17.0	15.2	17.7	17.5	21.4	16.8	
L65-1354	18.5	19.4	17.8	17.6	18.4	17.5	16.6	

Table 53. Percentages of protein and oil, Uniform Test II, 1969.

Strain	Mean of 16 Tests	Ontario Harrow	New Jersey Vail	Ohio Columbus	Michigan Dundee	Indiana Knox	Indiana Lafayette	Wisconsin Madison	Illinois DeKalb
				*					
Amsoy	40.0	39.7	41.0	39.4	40.8	40.9	41.3	39.1	38.4
CX407BC7-50	39.7	40.0	41.1	39.4	40.2	41.1	40.0	39.8	38.0
CX407BC7-53	40.0	40.3	41.8	40.1	40.2	40.3	40.0	39.2	38.3
CX407BC7-310	39.7	40.8	40.0	40.0	40.8	40.5	39.7	39.0	38.6
CX407BC7-326	39.9	40.3	40.8	39.7	41.5	40.6	40.5	38.7	38.0
Beeson	40.6	42.3	42.2	40.6	41.6	42.5	41.7	39.2	40.0
Corsoy	40.8	41.3	41.5	41.0	41.1	42.7	41.5	39.1	40.0
C1426	41.1	42.4	41.5	41.6	42.2	42.9	41.4	39.2	40.4
C1453	41.9	42.2	42.3	42.1	43.4	44.2	42.8	39.7	40.4
C1470	41.6	41.8	41.0	40.5	44.0	43.8	42.2	41.2	40.8
C1479	41.4	42.3	42.4	41.0	42.7	42.9	41.8	39.7	42.9
L65-1354	42.9	43.3	44.6	43.1	44.2	44.8	43.8	40.9	41.7

	Mean of 16 Tests	Percentage of Oil							
				*					
Amsoy	22.7	22.0	21.7	23.1	21.9	22.8	23.4	23.6	22.8
CX407BC7-50	22.5	21.2	21.3	22.7	22.4	22.8	23.3	23.2	22.4
CX407BC7-53	22.4	21.6	21.3	22.6	22.1	22.5	22.9	23.3	22.9
CX407BC7-310	22.4	21.5	21.3	23.4	22.4	22.8	23.0	23.2	22.4
CX407BC7-326	22.5	22.2	21.3	22.8	21.9	22.6	22.8	23.2	23.2
Beeson	22.0	20.4	20.9	21.8	21.9	22.0	22.5	23.2	21.7
Corsoy	21.8	20.8	20.4	21.8	21.5	21.6	22.5	23.2	21.6
C1426	22.2	20.5	21.6	22.5	21.9	22.3	22.8	23.1	22.3
C1453	22.2	21.2	21.9	22.8	21.9	21.8	23.0	23.7	22.3
C1470	22.0	20.8	21.6	22.8	22.2	21.6	22.7	23.3	21.5
C1479	22.2	20.7	21.2	22.2	21.6	21.9	23.3	23.2	22.2
L65-1354	21.6	21.2	20.9	21.8	21.9	21.3	21.8	22.7	21.7

*Not included in the mean

Table 53. (Continued)

Strain	Illinois			Minnesota	Iowa		Missouri	South Dakota	Nebraska
	Urbana	Girard	Eldorado	Lamberton	Kanawha	Ames	Spickard	Brookings	Concord
Amsoy	41.0	39.7	40.6	38.9	40.0	40.8	38.9	40.9	38.7
CX407BC7-50	40.6	40.1	40.8	36.9	39.2	40.5	38.0	40.3	38.6
CX407BC7-53	40.9	40.9	40.6	41.5	39.9	40.4	38.0	40.4	37.8
CX407BC7-310	41.4	39.0	40.9	37.6	39.0	40.4	38.6	40.5	38.6
CX407BC7-326	41.5	40.4	41.1	38.4	38.8	40.5	38.7	39.8	38.8
Beeson	40.7	39.7	41.5	38.8	40.7	41.4	38.4	40.5	39.0
Corsoy	42.4	40.5	41.5	40.1	41.2	40.5	39.6	41.1	38.6
C1426	41.4	41.1	42.1	39.3	41.3	41.5	39.0	41.4	40.4
C1453	41.6	41.4	43.7	40.7	42.5	42.9	40.6	42.1	39.9
C1470	42.2	41.8	42.0	40.0	41.7	41.4	39.9	42.0	39.7
C1479	42.5	41.2	42.5	39.2	40.9	41.2	38.7	41.2	39.7
L65-1354	42.6	42.1	44.7	41.9	43.2	44.4	40.4	43.3	40.5
	Percentage of Oil								
Amsoy	22.8	23.8	23.2	21.7	22.1	22.0	24.9	20.5	23.3
CX407BC7-50	23.1	22.8	23.1	22.0	22.2	21.8	25.0	20.1	23.0
CX407BC7-53	22.8	22.5	22.9	21.7	21.9	21.4	24.5	20.7	22.9
CX407BC7-310	22.8	23.3	22.6	22.0	22.3	21.6	24.3	20.1	22.9
CX407BC7-326	23.1	22.8	23.2	21.8	22.2	21.9	24.3	20.8	22.9
Beeson	22.4	22.2	22.3	21.7	21.6	21.3	23.9	20.7	22.9
Corsoy	22.7	22.4	22.3	21.2	21.5	21.7	23.6	20.7	21.8
C1426	23.3	23.6	23.2	22.2	20.7	21.6	24.9	20.4	21.3
C1453	23.3	22.1	22.1	22.0	21.6	21.8	23.9	21.3	21.2
C1470	23.5	22.4	21.7	21.7	21.9	21.8	23.9	20.2	20.9
C1479	22.6	22.8	23.5	22.1	21.6	21.8	24.6	20.7	21.5
L65-1354	22.6	22.3	21.5	21.5	20.7	20.9	23.9	19.7	21.5

Table 54. Three-year summary of data, Uniform Test II, 1967-1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	91	91	79	78	90	70	67	45	45
Amsoy	42.5	4	+2.6	2.3	40	2.2	17.2	39.1	22.2
Beeson	43.4	2	+3.4	1.9	38	2.1	18.8	40.1	21.5
Corsoy	43.2	3	0	2.4	38	1.9	15.9	40.0	21.6
C1426	44.0	1	+4.3	2.1	40	2.0	19.1	40.6	21.7

[1]Days earlier (-) or later (+) than Corsoy which matured September 21, 118 days after planting.

Table 55. Three-year summary of yield and yield rank, Uniform Test II, 1967-1969.

Strain	Mean of 91 Tests	Ontario		Ohio			Michigan		Indiana			
		Ridgetown	Harrow	Hoytville	Wooster	Columbus	East Lansing	Dundee	Knox	Bluffton	Lafayette	Greenfield
Years Tested		1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1968	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969
Amsoy	42.5	57.5	34.4	32.1	28.3	30.5	37.7	43.7	42.2	38.6	52.8	33.2
Beeson	43.4	57.5	35.5	28.2	31.5	32.7	39.6	45.7	43.7	43.2	52.5	41.7
Corsoy	43.2	60.1	33.4	26.1	27.7	27.1	43.3	43.3	40.7	37.0	50.3	31.3
C1426	44.0	61.2	35.5	25.6	32.4	27.9	41.4	41.2	39.2	40.8	52.8	39.3
		Yield Rank										
Amsoy	4	3	3	1	3	2	4	2	2	3	1	3
Beeson	2	3	1	2	2	1	3	1	1	1	3	1
Corsoy	3	2	4	3	4	4	1	3	3	4	4	4
C1426	1	1	1	4	1	3	2	4	4	2	1	2

[1]Lincoln, 1967

*Irrigated

Table 55. (Continued)

Strain	Indiana		Illinois								Minnesota	
	Worthington	Wisconsin Madison	DeKalb	Pontiac	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Lamberton	Waseca
Years Tested	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1968-1969	1968-1969	1967-1969	1967-1969
Amsoy	52.5	43.2	50.0	43.1	50.3	51.3	41.4	50.4	51.0	41.0	39.0	38.0
Beeson	54.2	46.1	49.4	42.3	48.0	46.1	43.9	48.4	50.5	38.2	36.8	39.9
Corsoy	45.8	47.2	54.8	45.4	53.3	51.8	41.5	51.3	48.2	40.1	40.6	44.1
C1426	53.3	46.8	50.6	44.9	49.7	52.4	46.8	48.5	50.1	41.8	41.9	43.0
	Yield Rank											
Amsoy	3	4	3	3	2	3	4	2	1	2	3	4
Beeson	1	3	4	4	4	4	2	4	2	4	4	3
Corsoy	4	1	1	1	1	2	3	1	4	3	2	1
C1426	2	2	2	2	3	1	1	3	3	1	1	2

Table 55. Three-year summary of yield and yield rank, Uniform Test II, 1967-1969 (Continued)

Strain	Iowa				Missouri			South Dakota		Nebraska		California	
	Sutherland	Kanawha	Clarence	Ames	Spickard	Columbia	Mt. Vernon	Brookings	Centerville	Concord	Mead[1]	Davis*	Five Points*
Years Tested	1967-1969	1967, 1969	1968-1969	1967-1969	1968-1969	1967-1968	1968-1969	1967-1969	1967-1968	1967-1969	1967-1968	1968-1969	1968-1969
Amsoy	34.8	38.0	51.1	43.7	47.2	35.8	36.3	31.3	35.7	43.5	51.8	23.9	20.1
Beeson	34.9	38.9	56.8	46.3	50.0	36.1	38.2	29.5	37.0	44.5	51.0	22.6	26.0
Corsoy	34.6	39.5	53.3	43.7	48.3	37.6	31.9	34.7	43.3	44.8	53.5	28.8	26.2
C1426	36.0	40.0	56.9	46.7	46.3	39.8	35.6	31.1	39.8	44.1	54.3	21.0	20.7
	Yield Rank												
Amsoy	3	4	4	3	3	4	2	2	4	4	3	2	4
Beeson	2	3	2	2	1	3	1	4	3	2	4	3	2
Corsoy	4	2	3	3	2	2	4	1	1	1	2	1	1
C1426	1	1	1	1	4	1	3	3	2	3	1	4	3

UNIFORM TEST III, 1969

Strain	Parentage	Generation Composited	Previous Testing (years)
1. Calland	C1253 x Kent	F_7	2
2. Wayne	L49-4091 x Clark	F_5	8
3. C1471	C1266R x C1253	F_6	P.T. III
4. L66L-108	Wayne x L57-0034	F_6	P.T. III
5. L66L-140	Wayne x L57-0034	F_6	P.T. III
6. L66L-154	Wayne x L57-0034	F_6	P.T. III
7. L66L-177	Wayne x L57-9819	F_6	P.T. III

Calland has been in the test three years and its performance in comparison with Wayne is given in Tables 62 and 63. Yields for the 3-year period are similar, with a slight advantage for Calland in mean yield. Each variety ranked first at exactly half of the 36 locations. Calland showed a slight lodging advantage and Wayne slightly better seed quality and composition.

C1471 yielded below the checks in 1969 but fairly well for its early maturity. It has a seed quality problem with a tendency toward defective seed coat. The four L strains are similar in having good seed quality and shattering resistance. These strains were selected in early generations for resistance to the rotten seed quality problem often prevalent in southern Illinois. The first three, all from Wayne x L57-0034, averaged a bushel or more above the checks in yield. L66L-108 and L66L-154 showed improved lodging resistance. The average yield of L66L-108 of 48 bushels over 30 locations is a record high for a Uniform Test strain regional mean, reflecting both improved varieties and improved cultural practices.

Table 56. Descriptive data and shattering scores, Uniform Test III, 1969.

Strain	Flower Color	Pubescence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering: Manhattan Kans. 2 wks.	Shattering: Manhattan Kans. 4 wks.	Shattering: Stoneville Miss. Loam	Shattering: Stoneville Miss. Clay	Hypocotyl Length mm
Calland	P	T	Br	D	Y	Bl	1	3.8	3	3.5	229
Wayne	W	T	Br	S	Y	Bl	1	3	5	5	251
C1471	P	G	Br	S	Y	Ib	3	3.2	3	5	81
L66L-108	W	T	Tan	S	Y	Lbl	1	1	1	2	217
L66L-140	W	T	Tan	D	Y	Bl	1	1	2	2	256
L66L-154	W	T	Tan	S	Y	Lbl	1	1	1	4	160
L66L-177	P	T	Tan	D	Y	Bl	1	1	2	2	193

Table 57. Summary of data, Uniform Test III, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	30	30	24	25	28	26	26	15	15
Calland	46.3	5	+1.3	2.3	42	2.0	17.4	40.1	21.7
Wayne	46.6	4	0	2.6	41	1.9	17.0	41.7	22.4
C1471	45.1	7	-3.8	2.0	44	2.7	17.9	41.6	23.0
L66L-108	48.0	1	+2.8	1.9	41	1.7	17.6	40.9	22.9
L66L-140	47.6	3	+3.8	2.5	41	1.8	17.9	39.4	23.4
L66L-154	47.7	2	+2.7	2.0	39	1.7	16.5	40.5	22.7
L66L-177	45.3	6	+1.5	2.3	42	1.7	14.8	39.8	22.9

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

Table 58. Disease data, Uniform Test III, 1969.

Strain	BB		BP		BSR			DM			FE[2]	PR			PS	PSB	SMV	
	Ames Ia.		Ill.	Ia.	Urbana Ill.	Kanawha Ia.		Worthington Ind.		Urbana Ill.	Eldorado Ill.	Ind.	Ind.	Stoneville Miss.		Georgetown Del.	Georgetown Del.	Ia.	
	n	a	a	a	n	n		n		n	n	a	a	n		n	n	a	
						1	2							vigor				3	4
Calland	4	3	1	4	3	15	78	4.0		3.6	2.7	5	R	MR	2	2.4	3.2	15	30
Wayne	2	2.5	1	1	3	18	73	3.9		4.5	4.0	4	S	MR	2	2.5	4.0	45	45
C1471	2	4	1	3.5	2	12	30	3.3		3.7	1.3	4	H	R	1	2.8	3.4	65	20
L66L-108	3	3.5	2	1	3	10	25	3.4		3.9	4.0	5	S	MR	1.5	1.6	1.8	60	25
L66L-140	3	2.0	1	1	3	15	80	3.3		3.3	2.9	5	S	MR	1.5	1.7	2.6	85	10
L66L-154	2	3	2	1.5	3	11	63	3.3		3.8	2.9	5	S	S	2	3.6	2.7	40	45
L66L-177	2	3.5	2	1.5	3	9	55	3.8		3.8	4.0	5	S	MR	1	2.5	3.9	75	70

[1]Mean height of browning in diseased stems
[2]Percent of plants with browning
[3,4]Percent of plants infected, measured serologically (3) and by transmission to beans (4)

Table 59. Yield, yield rank, and maturity dates, Uniform Test III, 1969.

Strain	Mean of 30 Tests	Ontario	New Jersey	Maryland		Ohio			Indiana		
		Harrow	Adelphia	Taneytown	Clarksville	Hoytville *	Wooster *	Columbus *	Bluffton	Lafayette	Greenfield
Calland	46.3	29.6	43.7	28.3	47.6	32.3	46.0	45.7	42.0	47.8	51.9
Wayne	46.6	32.2	47.3	23.5	49.0	33.9	50.0	47.8	46.8	54.6	47.8
C1471	45.1	37.0	44.5	25.8	52.2	39.8	46.6	57.5	46.2	50.7	48.8
L66L-108	48.0	35.5	55.3	28.6	50.4	33.0	51.6	49.8	45.5	65.7	47.8
L66L-140	47.6	34.3	43.1	27.8	53.3	32.9	51.2	55.2	41.8	55.4	48.5
L66L-154	47.7	36.6	53.4	25.2	49.9	31.2	46.4	45.2	47.9	60.4	46.8
L66L-177	45.3	34.8	50.6	26.5	45.9	42.3	51.4	50.8	38.9	53.9	48.2
C.V. (%)		6.5	13.1	8.9	5.8	--	--	--	8.2	6.5	8.3
L.S.D. (5%)		3.3	10.9	3.5	5.1	--	--	--	5.1	5.2	N.S.
Row Spacing (In.)		40	31	38	30	32	32	28	30	38	38
	Yield Rank										
Calland	5	7	6	2	6	6	7	6	5	7	1
Wayne	4	6	4	7	5	3	4	5	2	4	5
C1471	7	1	5	5	2	2	5	1	3	6	2
L66L-108	1	3	1	1	3	4	1	4	4	1	5
L66L-140	3	5	7	3	1	5	3	2	6	3	3
L66L-154	2	2	2	6	4	7	6	7	1	2	7
L66L-177	6	4	3	4	7	1	2	3	7	5	4
	Mean of 24 Tests					Maturity					
						*	*	*			*
Calland	+1.3	+2	+2	+2	+4	0	+2	+ 4	+1	-1	
Wayne	0	0	0	0	0	0	0	0	0	0	
C1471	-3.8	-3	-4	+1	+2	+ 2	+6	+ 1	-2	-4	
L66L-108	+2.8	+4	+3	+1	+5	+ 3	+5	+ 4	+1	0	
L66L-140	+3.8	+4	+6	0	+5	+ 1	+6	+11	0	+1	
L66L-154	+2.7	+5	+5	+1	+4	+ 4	+5	+ 9	0	+1	
L66L-177	+1.5	+4	+3	+2	+1	+ 1	+3	+10	-1	-1	
Amsoy (II)		-7	-5	--	--	-10	-5	- 9	-6	-9	
Clark 63 (IV)		--	+6	--	+8	--	--	+14	+3	+1	
Date planted	5-26	6-10	5-29	7-3	5-27	6-4	5-16	5-24	5-26	5-26	5-28
Wayne matured	9-25	10-4	9-25	11-1	9-25	10-10	10-4	9-28	9-28	10-3	--
Days to mature	122	116	119	121	121	128	141	127	125	130	--

*Not included in the mean
[1]Irrigated

Table 59. Yield, yield rank, and maturity dates, Uniform Test III, 1969 (Continued)

Strain	Indiana		Kentucky		Illinois						Iowa		
	Worthington	Evansville	Lexington	Henderson	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Ames	Ottumwa	Red Oak
Calland	44.5	47.3	55.9	53.1	42.0	57.5	46.8	48.8	52.4	42.7	39.4	46.3	51.1
Wayne	55.9	48.8	50.2	51.1	46.5	57.7	40.3	55.5	57.4	45.3	41.8	45.2	50.8
C1471	56.7	45.6	38.6	49.5	47.9	53.1	46.7	53.9	54.3	43.2	44.3	44.3	48.0
L66L-108	56.0	46.1	45.7	52.0	44.5	56.3	44.3	52.7	55.9	47.5	39.4	49.3	55.5
L66L-140	54.1	50.1	50.6	47.8	47.4	59.9	40.9	55.1	60.9	50.3	41.6	46.1	57.2
L66L-154	60.5	48.2	40.0	49.7	46.9	59.7	45.2	55.3	59.6	47.4	41.8	47.6	52.2
L66L-177	48.7	45.8	38.4	50.9	42.0	55.1	44.1	50.9	52.6	40.8	39.1	44.5	54.2
C.V. (%)	12.2	12.9	17.0	9.5	6.3	5.4	8.7	5.3	3.3	5.9	6.7	5.5	5.7
L.S.D. (5%)	9.6	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	3.3	4.7	4.1	3.8	4.4
Row Sp. (In.)	38	36	30	30	30	30	38	36	36	40	40	40	40
	Yield Rank												
Calland	7	4	1	1	6	4	1	7	7	6	5	3	5
Wayne	4	2	3	3	4	3	7	1	3	4	2	5	6
C1471	2	7	6	6	1	7	2	4	5	5	1	7	7
L66L-108	3	5	4	2	5	5	4	5	4	2	5	1	2
L66L-140	5	1	2	7	2	1	6	3	1	1	4	4	1
L66L-154	1	3	5	5	3	2	3	2	2	3	2	2	4
L66L-177	6	6	7	4	6	6	5	6	6	7	7	6	3
	Maturity												
												*	*
Calland	-3	+3	+1	- 1	+2	+3	+ 6	- 3	0	- 1	+1		
Wayne	0	0	0	0	0	0	0	0	0	0	0		
C1471	-4	-3	+1	- 8	-4	-2	- 2	- 6	- 3	- 8	-2		
L66L-108	0	+3	+5	- 1	+4	+4	+ 6	+ 2	+ 4	+ 4	+2		
L66L-140	+1	+4	+7	0	+2	+6	+ 8	+ 5	+11	+ 3	+3		
L66L-154	0	+5	+4	- 1	+3	+3	+ 5	0	+ 6	+ 2	+2		
L66L-177	-1	+2	+2	0	+4	+3	+ 6	0	+ 2	0	+2		
Amsoy (II)	-7	--	--	-22	-9	-9	- 6	-13	- 7	-13	-8		
Clark 63 (IV)	+3	+4	+4	0	+4	+6	+11	+ 3	+ 9	+ 3	--		
Date planted	5-13	5-29	5-16	5-13	5-16	5-20	5-28	5-17	5-28	6-4	5-15	5-26	5-14
Wayne matured	9-13	9-19	9-14	9-17	9-20	9-20	9-17	9-17	9-14	9-22	10-2	--	--
Days to mature	123	113	121	127	127	123	112	123	109	110	140	--	--

Table 59. (Continued)

Strain	Missouri		South Dakota	Nebraska	Kansas						California[1]
	Spickard	Mt. Vernon	Elk Point	Concord	Powhattan	Manhattan	Manhattan[1]	Ottawa	Newton	Columbus	Five Points
											*
Calland	46.6	47.6	32.8	51.4	50.6	46.5	68.0	59.8	31.4	34.7	25.5
Wayne	39.9	46.1	42.4	48.5	45.9	45.4	64.0	56.8	28.7	32.2	26.2
C1471	45.0	40.8	35.3	49.5	46.3	38.2	49.9	59.1	28.6	30.3	29.5
L66L-108	47.2	47.6	38.8	50.8	51.6	44.0	57.2	62.9	30.0	35.5	30.6
L66L-140	46.4	42.1	34.9	54.3	50.2	43.8	61.4	61.1	31.2	35.8	24.0
L66L-154	47.7	43.7	42.3	52.8	49.8	43.6	54.4	62.8	27.0	31.4	27.1
L66L-177	45.6	43.8	35.9	50.8	47.8	48.3	59.2	60.2	26.8	35.2	28.4
C.V. (%)	8.1	10.9	14.2	6.0	6.3	9.9	8.9	5.8	9.6	13.1	12.0
L.S.D. (5%)	5.5	N.S.	N.S.	N.S.	N.S.	N.S.	7.8	N.S.	N.S.	3.2	N.S.
Row Spacing (In.)	15	15	30	30	28	28	36	30	28	30	30
	Yield Rank										
Calland	3	1	7	3	2	2	1	5	1	4	6
Wayne	7	3	1	7	7	3	2	7	4	5	5
C1471	6	7	5	6	6	7	7	6	5	7	2
L66L-108	2	1	3	4	1	4	5	1	3	2	1
L66L-140	4	6	6	1	3	5	3	3	2	1	7
L66L-154	1	5	2	2	4	6	6	2	6	6	4
L66L-177	5	4	4	4	5	1	4	4	7	3	3
	Maturity										
Calland	*	*	-1	* --	+3	+ 1	+ 3	+ 1	+ 1	+4	* + 5
Wayne			0	0	0	0	0	0	0	0	0
C1471			-2	-2	0	-16	- 6	- 7	-15	+5	+ 4
L66L-108			+4	--	+2	+ 1	+ 5	+ 3	+ 4	0	0
L66L-140			+4	--	+3	+ 3	+ 5	+ 4	+ 4	+1	+ 1
L66L-154			+3	+2	+3	+ 2	+ 4	+ 3	+ 1	+4	0
L66L-177			+2	--	+2	- 1	+ 2	+ 1	0	+3	0
Amsoy (II)			--	-8	-4	-19	-10	-10	-17	--	- 6
Clark 63 (IV)			--	--	+6	+ 8	+11	+ 8	+ 6	0	+10
Date planted	5-28	5-19	5-28	6-3	6-4	5-27	5-20	5-14	5-29	6-6	6-18
Wayne matured	--	--	10-15	10-8	9-30	9-30	9-25	9-17	9-26	9-21	10-15
Days to mature	--	--	140	127	118	126	128	126	120	107	119

Table 60. Lodging scores, plant height, and seed quality scores, Uniform Test III, 1969.

Strain	Mean of 25 Tests	On-tario	New Jersey	Maryland		Ohio			Indiana		
		Har-row	Adel-phia	Taney-town	Clarks-ville	Hoyt-ville	Woos-ter	Co-lum-bus	Bluff-ton	Lafa-yette	Green-field
				*		*	*	*			
Calland	2.3	3.0	1.7	1.0	3.0	1.0	1.0	1.2	2.4	2.9	1.6
Wayne	2.6	3.0	1.7	1.0	3.0	1.0	1.0	1.2	3.3	3.3	1.4
C1471	2.0	1.0	1.9	1.0	2.0	1.0	1.0	1.5	2.0	2.0	1.3
L66L-108	1.9	2.0	1.9	1.0	2.0	1.0	1.0	2.0	1.4	2.1	1.1
L66L-140	2.5	2.8	2.2	1.0	2.7	1.0	1.0	1.2	2.3	3.3	1.3
L66L-154	2.0	1.8	1.7	1.0	2.0	1.0	1.0	1.5	1.8	2.3	1.1
L66L-177	2.3	2.5	1.7	1.0	2.7	1.0	1.0	1.0	1.9	2.6	1.3
	Mean of 28 Tests	Plant Height									
						*	*	*			
Calland	42	36		20	51	33	36	42	51	50	44
Wayne	41	36		18	44	34	36	42	51	47	41
C1471	44	39		18	44	37	38	46	54	52	47
L66L-108	41	37		18	41	32	34	43	45	48	41
L66L-140	41	38		19	42	32	35	42	46	50	43
L66L-154	39	34		17	41	30	31	41	45	46	38
L66L-177	42	37		19	44	36	35	45	49	49	41
	Mean of 26 Tests	Seed Quality Score									
					*	*	*	*			
Calland	2.0	1.2	2.2	3.0	1.0	1.7	1.7	2.5	1.0	1.5	1.5
Wayne	1.9	1.8	2.7	2.0	1.0	1.5	2.0	2.2	1.0	1.5	1.5
C1471	2.7	2.5	2.5	2.0	1.0	1.5	2.0	2.5	2.0	3.0	1.5
L66L-108	1.7	1.2	2.0	2.0	1.0	1.5	2.0	2.5	1.0	1.0	1.0
L66L-140	1.8	1.2	1.7	2.0	1.0	1.5	2.0	2.5	1.0	1.5	1.0
L66L-154	1.7	1.5	2.2	2.0	1.0	1.0	2.0	1.7	1.0	1.5	1.5
L66L-177	1.7	1.5	1.7	3.0	1.0	1.2	1.7	2.0	1.0	1.5	1.5

*Not included in the mean
[1]Irrigated

Table 60. (Continued)

Strain	Indiana		Kentucky		Illinois						Iowa		
	Worthington	Evansville	Lexington	Henderson	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Ames	Ottumwa	Red Oak
Calland	2.0	3.3	2.0	2.3	1.4	2.2	1.5	3.3	2.5	2.0	2.6	2.4	2.0
Wayne	2.4	3.5	2.7	2.3	1.4	2.5	1.4	2.7	2.9	2.0	3.1	3.0	2.4
C1471	1.6	3.8	2.8	2.0	1.2	2.5	1.2	2.2	3.2	1.0	2.0	2.2	1.9
L66L-108	2.4	1.5	3.5	2.5	1.4	2.1	1.2	1.9	1.8	2.0	2.4	2.2	1.6
L66L-140	2.6	3.0	3.2	2.5	1.4	3.2	1.2	2.3	3.5	2.0	3.1	2.4	2.2
L66L-154	1.9	2.3	3.5	2.2	1.4	2.7	1.3	1.9	2.4	1.0	2.2	2.3	2.0
L66L-177	2.5	2.2	3.2	1.8	1.6	2.2	1.4	2.2	3.0	1.0	2.9	2.4	2.2
	Plant Height												
Calland	52	44	51	50	41	50	35	49	53	43	44	39	50
Wayne	48	44	48	48	41	49	36	51	51	43	44	39	49
C1471	54	47	52	50	39	51	38	54	53	47	46	40	54
L66L-108	48	44	46	48	39	48	35	51	52	44	44	40	48
L66L-140	48	44	46	50	39	50	34	49	51	42	46	39	50
L66L-154	46	42	47	47	38	47	32	47	49	41	43	37	47
L66L-177	49	44	49	50	43	50	37	53	52	45	46	40	51
	Seed Quality Score												
Calland	1.5	2.5	2.3	2.8	2.7	2.9	2.8	1.5	3.0	1.0	1.0	1.0	1.0
Wayne	1.5	2.5	2.2	3.5	2.5	2.3	2.2	1.5	3.0	1.0	1.0	1.0	1.0
C1471	3.0	3.0	3.2	4.7	3.5	4.0	2.8	2.3	3.8	2.0	1.0	1.0	1.0
L66L-108	2.0	2.0	2.0	3.0	1.7	2.4	2.2	1.3	1.8	1.0	1.0	1.0	1.0
L66L-140	2.0	2.0	2.0	2.8	1.7	2.5	1.5	2.0	2.5	1.0	1.0	1.0	1.0
L66L-154	2.0	2.5	2.0	2.3	1.2	2.5	1.7	1.2	1.8	2.0	1.0	1.0	1.0
L66L-177	2.0	2.0	2.2	2.7	1.2	1.8	1.5	1.3	2.0	1.0	1.0	1.0	1.0

* Ames Seed Quality Score

Table 60. Lodging scores, plant height, and seed quality scores, Uniform Test III, 1969 (Continued)

Strain	Missouri		South Dakota	Nebraska	Kansas						California[1]
	Spickard	Mt. Vernon	Elk Point	Concord	Pow-hattan	Man-hattan	Man-hattan[1]	Ottawa	Newton	Columbus	Five Points
				*	*				*		*
Calland	--	2.3	3.0	1.0	1.0	1.8	1.6	2.3	1.0	1.3	3.0
Wayne	--	1.8	4.0	1.0	1.0	3.1	2.8	4.2	1.0	1.4	4.0
C1471	--	1.3	2.5	1.0	1.0	2.1	1.2	4.1	1.0	1.2	3.0
L66L-108	--	1.0	3.5	1.0	1.0	1.0	1.5	3.1	1.0	1.3	3.0
L66L-140	--	1.3	4.0	1.0	1.0	2.2	2.5	4.1	1.0	1.4	3.0
L66L-154	--	1.0	3.0	1.0	1.0	1.2	1.8	4.1	1.0	1.3	4.0
L66L-177	--	1.0	4.0	1.0	1.0	1.4	1.8	3.8	1.0	1.2	3.0

Plant Height

			*								*
Calland	43	37	45	37	34	37	44	42	29	27	46
Wayne	42	39	45	38	32	36	42	41	30	29	43
C1471	44	36	45	40	34	40	47	43	29	28	43
L66L-108	42	40	45	35	33	36	46	41	27	27	41
L66L-140	41	41	45	36	33	35	45	41	28	28	41
L66L-154	39	39	45	35	30	36	43	40	29	27	42
L66L-177	41	40	45	36	32	36	47	41	29	30	43

Seed Quality Score

											*
Calland	1.2	2.3	2.5	1.0	1.7	2.7	1.9	1.5	2.8	1.5	3.0
Wayne	1.1	2.3	2.5	1.0	1.6	2.0	1.8	1.7	2.3	1.3	3.0
C1471	1.6	2.6	3.5	1.5	2.6	3.2	3.2	2.9	2.1	1.8	4.0
L66L-108	1.1	2.0	2.0	1.0	1.4	2.0	1.4	1.7	2.1	1.4	3.0
L66L-140	1.1	2.0	2.5	1.0	1.2	2.0	2.3	1.5	2.8	1.4	3.0
L66L-154	1.0	2.2	2.0	1.0	1.3	1.8	1.5	1.6	2.0	1.3	3.0
L66L-177	1.0	2.0	2.0	1.0	1.4	1.5	1.5	1.4	1.8	1.4	3.0

Table 61. Seed weight and percentages of protein and oil, Uniform Test III, 1969.

Strain	Mean of 26 Tests	Ontario	New Jersey	Maryland		Ohio			Indiana		
		Harrow	Adelphia	Taney-town	Clarksville	Hoytville*	Wooster*	Columbus*	Bluffton	Lafayette	Greenfield
Calland	17.4	14.6	14.7	21.7	18.1	19.4	19.1	19.6	16.6	19.6	16.8
Wayne	17.0	14.8	14.6	18.1	18.4	17.5	19.3	20.6	16.4	19.5	16.7
C1471	17.9	16.0	14.9	19.2	19.7	18.1	21.2	21.4	18.1	21.9	18.3
L66L-108	17.6	16.2	15.6	19.9	18.5	19.1	18.8	19.5	16.8	21.4	17.9
L66L-140	17.9	15.3	15.0	19.9	19.7	18.5	18.8	19.9	16.4	21.1	18.4
L66L-154	16.5	14.8	14.7	18.4	17.7	17.0	17.6	19.4	15.9	19.8	17.2
L66L-177	14.8	13.6	13.2	17.9	15.3	16.2	16.4	17.2	14.1	17.9	15.6

	Mean of 15 Tests	Percentage of Protein			
				Columbus*	
Calland	40.1	40.7	40.5	40.3	41.2
Wayne	41.7	42.3	41.6	42.7	43.4
C1471	41.6	42.0	42.3	41.2	43.1
L66L-108	40.9	40.5	40.6	41.9	42.2
L66L-140	39.4	40.4	39.2	41.1	39.6
L66L-154	40.5	41.4	39.8	41.7	41.6
L66L-177	39.8	40.4	40.4	41.3	40.4

	Mean of 15 Tests	Percentage of Oil			
				Columbus*	
Calland	21.7	21.4	21.2	21.2	21.5
Wayne	22.4	22.3	22.1	21.7	21.8
C1471	23.0	22.5	22.8	23.1	22.5
L66L-108	22.9	23.2	22.9	21.8	22.8
L66L-140	23.4	22.9	23.4	21.5	22.9
L66L-154	22.7	22.9	22.9	21.9	21.8
L66L-177	22.9	23.2	22.4	22.0	23.1

*Not included in the mean
[1]Irrigated

Table 61. Seed weight and percentages of protein and oil, Uniform Test III, 1969 (Continued)

Strain	Indiana		Kentucky		Illinois						Iowa
	Worthington	Evansville	Lexington	Henderson	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Ames
Calland	16.2	15.5	19.6	17.5	16.3	18.5	16.5	15.3	16.3	15.9	18.1
Wayne	17.5	16.1	18.0	17.6	16.1	18.1	14.1	17.0	16.0	16.4	16.9
C1471	18.5	15.2	21.6	16.9	17.3	20.0	16.0	15.5	17.0	17.2	19.3
L66L-108	17.0	17.3	19.5	18.0	15.5	19.4	15.0	15.5	16.0	17.5	18.3
L66L-140	18.9	17.1	19.6	17.9	15.5	19.4	14.5	16.7	17.2	17.1	19.3
L66L-154	16.6	17.1	18.8	17.0	15.2	18.7	14.4	14.6	15.7	16.9	16.8
L66L-177	14.9	14.3	16.7	15.3	12.6	15.6	12.5	12.9	13.9	14.7	15.0

	Percentage of Protein					
Calland	39.9	41.5	41.2	39.5	41.0	40.3
Wayne	41.0	42.5	42.8	41.2	42.9	41.7
C1471	40.6	42.1	41.6	42.0	43.6	42.0
L66L-108	40.3	42.4	41.6	41.1	42.7	40.8
L66L-140	39.2	40.5	40.5	38.9	40.3	38.8
L66L-154	39.9	41.6	42.0	41.7	41.5	40.2
L66L-177	39.4	40.8	41.9	39.9	41.5	39.5

	Percentage of Oil					
Calland	22.3	21.9	20.9	22.0	21.3	20.9
Wayne	23.4	22.5	21.7	23.2	21.9	21.7
C1471	24.0	23.0	23.6	23.5	22.5	22.9
L66L-108	24.0	22.7	22.6	23.2	22.8	22.5
L66L-140	24.8	24.2	22.8	23.9	23.5	23.1
L66L-154	23.8	22.6	22.6	22.7	22.6	22.9
L66L-177	24.1	23.2	21.5	23.0	22.2	23.0

Table 61. (Continued)

Strain	Missouri Spickard	South Dakota Elk Point	Nebraska Concord	Kansas Powhattan	Kansas Manhattan	Kansas Manhattan[1]	Kansas Ottawa	Kansas Newton	Kansas Columbus	California[1] Five Points *
Calland		16.5	20.4	17.9	16.1	18.9	16.4	15.8	22.0	15.0
Wayne		18.5	18.1	16.3	15.2	19.2	16.8	14.3	20.0	15.9
C1471		19.5	19.2	20.1	14.2	19.1	17.1	12.9	21.1	16.7
L66L-108		18.3	19.5	16.7	17.4	18.3	16.9	16.1	20.0	15.8
L66L-140		16.6	18.5	17.8	16.2	21.5	17.9	16.7	20.0	16.4
L66L-154		17.2	17.9	16.1	14.5	16.6	15.2	13.0	18.7	14.1
L66L-177		15.0	15.9	13.6	14.3	15.7	15.1	13.5	16.8	13.6
				Percentage of Protein						
Calland	38.5	39.9	39.4	38.7		39.8	39.5			
Wayne	39.5	40.6	41.2	41.8		41.5	41.1			
C1471	39.3	40.9	41.0	43.0		40.9	39.0			
L66L-108	38.4	40.2	40.5	41.1		39.1	41.3			
L66L-140	37.4	38.3	38.7	40.0		38.8	40.0			
L66L-154	38.4	39.3	39.3	41.0		38.7	41.5			
L66L-177	37.8	38.5	38.3	40.2		38.3	40.4			
				Percentage of Oil						
Calland	23.0	21.0	21.7	22.1		22.5	22.4			
Wayne	23.1	21.6	21.4	22.1		23.2	23.3			
C1471	24.8	22.2	20.3	22.8		24.0	24.0			
L66L-108	24.2	21.6	21.1	22.8		23.8	23.4			
L66L-140	24.6	22.5	20.2	23.2		24.7	24.1			
L66L-154	23.9	21.9	20.3	22.8		23.8	23.3			
L66L-177	23.8	21.9	22.4	21.7		24.1	23.2			

Table 62. Three-year summary of data, Uniform Test III, 1967-1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	96	96	78	79	92	81	75	43	43
Calland	44.0	1	+1.2	2.1	41	2.1	17.4	39.3	21.4
Wayne	43.5	2	0	2.4	40	1.9	16.6	40.9	21.7

[1]Days earlier (-) or later (+) than Wayne which matured September 24, 121 days after planting.

Table 63. Three-year summary of yield and yield rank, Uniform Test III, 1967-1969.

Strain	Mean of 96 Tests	Ontario	New Jersey	Maryland	Ohio			Indiana				
		Harrow	Adelphia	Clarksville	Hoytville	Wooster	Columbus	Bluffton	Lafayette	Greenfield	Worthington	Evansville
Years Tested		1967-1969	1967-1969	1968-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969
Calland	44.0	30.3	49.9	60.3	33.1	32.3	38.3	43.3	46.1	38.4	54.2	50.1
Wayne	43.5	32.8	45.6	53.7	36.9	33.3	38.6	42.9	50.2	38.6	56.2	47.9
	Yield Rank											
Calland	1	2	1	1	2	2	2	1	2	2	2	1
Wayne	2	1	2	2	1	1	1	2	1	1	1	2

[1]Irrigated
[2]Lincoln, 1967

Table 63. (Continued)

Strain	Kentucky		Illinois						Iowa			Missouri		
	Lexington	Henderson	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Ames	Ottumwa	Red Oak	Spickard	Columbia	Mt. Vernon
Years Tested	1968-1969	1968-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1968-1969	1967-1968	1968-1969
Calland	48.2	45.8	48.0	48.4	45.9	48.7	48.8	43.1	42.3	47.8	45.8	44.5	37.5	45.4
Wayne	47.1	48.0	49.3	50.0	44.7	50.5	51.6	44.7	42.9	45.3	43.6	41.2	37.1	44.0
	Yield Rank													
Calland	1	2	2	2	1	2	2	2	2	1	1	1	1	1
Wayne	2	1	1	1	2	1	1	1	1	2	2	2	2	2

Table 63. Three-year summary of yield and yield rank, Uniform Test III, 1967-1969 (Continued)

Strain	Missouri	South Dakota	Nebraska		Kansas						California[1]
	Portageville[1]	Centerville	Concord	Mead[2]	Powhattan	Manhattan	Manhattan[1]	Ottawa	Newton	Columbus	Five Points
Years Tested	1967-1968	1967-1968	1967-1969	1967-1968	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1967-1969	1968-1969
Calland	30.3	35.6	39.0	52.5	46.5	44.0	67.0	53.2	31.6	32.3	24.9
Wayne	31.2	36.4	40.4	54.3	41.1	41.7	61.0	52.3	25.9	28.2	22.0
	Yield Rank										
Calland	2	2	2	2	1	1	1	1	1	1	1
Wayne	1	1	1	1	2	2	2	2	2	2	2

PRELIMINARY TEST III, 1969

Strain	Parentage	Generation Composited
1. Calland		
2. Wayne		
3. L67-3542	Wayne-Rps^5 x Clark-Ir	F_3
4. L67-3544	Wayne-Rps^5 x Clark-Ir	F_3
5. L67-3550	Wayne-Rps^5 x Clark-Ir	F_3
6. L66-1420	Wayne x L57-9819	F_6
7. L66L-137	Wayne x L57-0034	F_6
8. L66L-172	Wayne x L57-0034	F_6
9. L66L-263	Clark 63 x L57-9819	F_6
10. L66L-299	Clark 63 x L57-9819	F_6

The first three strains in this test are Wayne backcross lines combining genes for phytophthora resistance (Rps from Clark 63) with those for yellow hilum (Ir from Richland and T145 via the backcross line Clark-Ir). L67-3544 was the best of the three in mean yield but was slightly later in maturity. All three averaged below Wayne in yield, but relative yields were extremely variable from location to location and at one place (Elk Point, South Dakota) there was a 20 bushel advantage for Wayne.

Of the remaining strains, the two from Wayne x L57-0034 showed good yield, good lodging resistance, and high oil content. L66-1420 compared favorably with Calland in performance and had superior seed composition but showed shattering tendencies. L66L-263 and -299 were rather consistently low in yield.

Table 64. Descriptive data and shattering scores, Preliminary Test III, 1969.

Strain	Flower Color	Pubescence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering			
							Manhattan Kans.		Stoneville Miss.	
							2 wks.	4 wks.	Loam	Clay
Calland	P	T	Br	D	Y	Bl	1	3	3	3.5
Wayne	W	T	Br	S	Y	Bl	3	3	5	5
L67-3542	W	T	Br	D	Y	Y	3	4.2	4	4.5
L67-3544	W	T	Br	D	Y	Y	3	3.5	4	5
L67-3550	W	T	Br	D	Y	Y	3	3	3	4.5
L66-1420	P	G	Br	D	Y	Ib	1	3.5	4	5
L66L-137	W	T	Tan	D	Y	Bl	1	1	3	4
L66L-172	W	T	Tan	D	Y	Bl	1	3.5	2	5
L66L-263	P	G	Br	D	Y	Ib	1	1	1	1
L66L-299	P	G	Br	D	Y	Ib	3	3.8	1	2

Table 65. Summary of data, Preliminary Test III, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	18	18	14	15	17	15	12	9	9
Calland	48.0	5	+1.9	2.1	44	1.8	17.5	39.9	21.8
Wayne	50.4	2	0	2.4	43	1.7	17.4	41.6	22.0
L67-3542	47.8	7	-0.1	2.6	44	2.0	16.5	41.0	21.9
L67-3544	48.8	4	+1.4	2.4	45	1.9	16.8	41.0	21.9
L67-3550	47.5	8	+1.4	2.6	44	1.9	17.3	41.6	21.9
L66-1420	48.0	5	+2.2	2.4	45	1.6	15.0	41.5	22.5
L66L-137	51.4	1	+2.4	2.1	42	1.8	17.9	39.1	23.2
L66L-172	50.1	3	+0.3	1.9	42	1.6	15.5	39.8	22.6
L66L-263	44.7	10	+0.3	2.3	42	1.6	15.2	41.2	21.9
L66L-299	45.4	9	+3.3	2.4	44	1.6	15.6	41.5	22.2

[1]Days earlier (-) or later (+) than Wayne which matured September 24, 123 days after planting.

Table 66. Disease data, Preliminary Test III, 1969.

Strain	BB		BP	BSR	DM			FE2	PS	PSB	PR		
	Ames Ia.	n	Ill.	Urbana Ill.	Worthington Ind.	Urbana Ill.	Eldorado Ill.	Ind.	Georgetown Del.	Georgetown Del.	Ind.	Stoneville Miss.	
			a	n	n	n	n	a	n	n	a	n	vigor
Calland	3	3	4	3	3.5	1.5	5	2.4	3.2	R	MR	2	
Wayne	3	1	3	4	5.0	4.0	4	2.5	4.0	S	MR	2	
L67-3542	3	1	3	4	5.0	4.0	4	3.2	4.5	R	R	1	
L67-3544	3	1	3	4	5.0	4.0	4	2.7	4.7	R	R	1	
L67-3550	3	1	3	4	5.0	4.0	5	2.0	4.5	R	R	1	
L66-1420	3	1	3	3.5	4.8	4.0	3	1.5	2.3	S	MR	2	
L66L-137	3	1	3	4	3.8	2.8	5	1.6	2.7	S	MR	2	
L66L-172	3	1	3	3	4.0	3.4	5	3.7	4.5	S	S	3	
L66L-263	3	1	3	4	4.8	4.0	5	2.3	3.0	R	R	1	
L66L-299	3	1	3	3	4.5	4.0	5	1.3	2.0	R	R	1	

Table 67. Yield and yield rank, Preliminary Test III, 1969.

Strain	Mean of 18 Tests	Maryland	Ohio			Indiana		Illinois			
		Clarksville	Hoytville	Wooster	Columbus	Lafayette	Worthington	Urbana	Edgewood	Trenton	Eldorado
			*	*	*						
Calland	48.0	47.3	30.7	50.6	50.9	59.2	45.2	50.3	50.5	44.9	59.6
Wayne	50.4	54.8	34.6	45.2	55.0	55.4	52.0	45.0	43.6	52.5	59.2
L67-3542	47.8	61.1	33.5	51.3	31.8	56.2	60.7	41.7	44.2	57.9	51.3
L67-3544	48.8	55.8	32.3	--	53.8	57.7	51.3	43.0	47.8	56.6	56.0
L67-3550	47.5	57.2	31.0	--	49.7	56.2	47.2	46.2	48.0	51.7	53.6
L66-1420	48.0	50.3	34.2	44.1	44.3	59.4	56.9	45.1	44.9	53.5	49.8
L66L-137	51.4	52.7	31.6	56.9	46.2	65.1	58.5	51.9	49.3	52.8	53.8
L66L-172	50.1	55.0	25.7	46.2	54.1	57.0	58.4	45.9	48.8	56.2	60.0
L66L-263	44.7	43.7	26.9	40.8	32.0	53.3	59.6	41.3	41.5	55.9	47.0
L66L-299	45.4	47.8	30.1	44.4	43.6	54.3	49.6	40.6	51.2	51.4	49.9
Coef. of Var.(%)		8.6	--	--	--	4.3	14.2	3.5	7.2	10.0	6.0
L.S.D.(5%)		7.8	--	--	--	6.3	N.S.	3.6	N.S.	N.S.	7.3
Row Spacing (In.)		30	32	32	28	38	38	30	38	36	36

	Yield Rank										
Calland	5	9	7	3	4	3	10	2	2	10	2
Wayne	2	5	1	5	1	8	6	6	9	7	3
L67-3542	7	1	3	2	10	6	1	8	8	1	7
L67-3544	4	3	4	--	3	4	7	7	6	2	4
L67-3550	8	2	6	--	5	6	9	3	5	8	6
L66-4120	5	7	2	7	7	2	5	5	7	5	9
L66L-137	1	6	5	1	6	1	3	1	3	6	5
L66L-172	3	4	10	4	2	5	4	4	4	3	1
L66L-263	10	10	9	8	9	10	2	9	10	4	10
L66L-299	9	8	8	6	8	9	8	10	1	9	8

*Not included in the mean
[1]Irrigated

Table 67. (Continued)

Strain	Illinois	Iowa			Missouri		South Dakota	Kansas			
	Carbon-dale	Ames	Ot-tum-wa	Red Oak	Spick-ard	Mt. Vernon	Elk Point	Pow-hat-tan	Man-hat-tan	Man-hat-tan[1]	Ot-tawa
Calland	46.0	42.8	45.2	50.7	41.0	33.2	35.1	45.4	48.8	57.4	60.6
Wayne	42.8	41.2	48.6	52.0	40.5	38.5	53.9	48.6	49.4	67.5	61.1
L67-3542	41.7	40.7	43.8	47.3	41.3	35.1	32.9	44.8	44.7	55.6	60.2
L67-3544	41.8	40.6	44.4	50.8	41.2	35.9	33.3	45.2	46.5	66.8	64.2
L67-3550	39.1	38.9	46.9	47.3	43.9	34.0	33.4	46.8	50.3	55.0	60.0
L66-1420	41.0	41.0	43.9	46.5	42.7	37.1	38.5	45.1	43.7	61.5	62.4
L66L-137	50.2	42.6	46.9	56.6	44.1	34.0	45.4	44.2	48.1	70.8	58.8
L66L-172	43.3	39.4	48.1	54.8	40.5	28.3	43.2	44.2	41.5	66.0	70.8
L66L-263	39.7	34.5	39.8	47.8	38.2	32.3	36.2	44.8	46.4	53.6	49.0
L66L-299	36.3	37.0	38.4	47.8	41.3	30.6	39.9	40.6	45.3	59.5	55.9
C. V. (%)	7.2	8.2	4.2	5.7	7.9	17.5	15.8	5.4	6.2	9.3	3.4
L.S.D. (5%)	6.8	7.4	4.3	6.5	7.4	N.S.	N.S.	N.S.	N.S.	N.S.	4.6
Row Sp. (In.)	40	40	40	40	15	15	30	28	28	36	30
	Yield Rank										
Calland	2	1	5	5	7	7	7	3	3	7	5
Wayne	4	3	1	3	8	1	1	1	2	2	4
L67-3542	6	5	8	8	4	4	10	6	8	8	6
L67-3544	5	6	6	4	6	3	9	4	5	3	2
L67-3550	9	8	3	8	2	5	8	2	1	9	7
L66-1420	7	4	7	10	3	2	5	5	9	5	3
L66L-137	1	2	3	1	1	5	2	8	4	1	8
L66L-172	3	7	2	2	8	10	3	8	10	4	1
L66L-263	8	10	9	6	10	8	6	6	6	10	10
L66L-299	10	9	10	6	4	9	4	10	7	6	9

Table 68. Maturity dates, Preliminary Test III, 1969.

Strain	Mean of 14 Tests	Maryland	Ohio			Indiana		Illinois			
		Clarksville	Hoytville	Wooster	Columbus	Lafayette	Worthington	Urbana	Edgewood	Trenton	Eldorado
			*	*	*						
Calland	+1.9	+5	- 1	+ 1	+ 1	0	-2	+ 7	+ 3	0	+1
Wayne	0	0	0	0	0	0	0	0	0	0	0
L67-3542	-0.1	0	- 3	+ 1	+ 1	-1	-1	- 1	0	+ 1	0
L67-3544	+1.4	+1	- 2	--	+ 1	0	-1	0	+ 1	+ 1	+2
L67-3550	+1.4	+1	- 3	--	+ 2	0	0	0	+ 2	+ 1	+2
L66-1420	+2.2	+2	0	- 1	+ 5	-1	0	+ 2	+ 1	+ 2	+1
L66L-137	+2.4	+2	+ 1	+ 1	+ 1	-1	0	+ 3	+ 4	+ 3	+5
L66L-172	+0.3	+1	+ 1	- 1	+ 1	-2	0	+ 2	+ 1	- 1	0
L66L-263	+0.3	+1	+ 2	- 1	+ 1	-3	-1	+ 1	+ 1	+ 1	0
L66L-299	+3.3	+4	+ 1	- 2	+ 4	+1	0	+ 5	+ 3	+ 3	+4
Amsoy (II)		--	-11	-10	-19	-8	-8	-11	- 6	-13	-8
Clark 63 (IV)		+8	--	--	+ 4	+2	+2	+ 2	+11	+ 3	+8
Date planted	5-24	5-27	6-4	5-16	5-24	5-27	5-13	5-16	5-28	5-17	5-28
Wayne matured	9-24	9-25	10-11	10-9	10-8	10-2	9-14	9-22	9-17	9-17	9-15
Days to mature	123	121	129	146	137	128	124	129	112	123	110

*Not included in the mean
[1]Irrigated

Table 68. (Continued)

Strain	Illinois	Iowa			Missouri		South Dakota	Kansas			
	Carbondale	Ames	Ottumwa	Red Oak	Spickard	Mt. Vernon	Elk Point	Powhattan	Manhattan	Manhattan[1]	Ottawa
Calland	+ 5	+2					+3	+1	+ 1	+ 2	- 2
Wayne	0	0					0	0	0	0	0
L67-3542	0	0					+3	-1	- 2	+ 4	- 4
L67-3544	+ 4	+2					+6	+1	0	+ 5	- 2
L67-3550	+ 4	0					+3	+1	+ 1	+ 6	- 2
L66-1420	+ 8	+2					+6	+1	+ 1	+ 6	0
L66L-137	+ 5	+1					+5	+2	+ 1	+ 4	0
L66L-172	0	0					+4	+1	- 1	+ 3	- 4
L66L-263	+ 5	0					-3	+1	0	+ 7	- 6
L66L-299	+ 9	+2					+6	+2	+ 3	+ 8	- 4
Amsoy (II)	-13	-8					--	-4	-19	-10	-10
Clark 63 (IV)	+ 3	--					--	+6	+ 8	+11	+ 8
Date planted	6-4	5-15	5-26	5-14	5-28	5-19	5-28	6-4	5-27	5-20	5-14
Wayne matured	9-16	10-2	--	--	--	--	10-16	9-30	9-30	9-25	9-17
Days to mature	104	140	--	--	--	--	141	118	126	128	126

UNIFORM TEST IV, 1969

Strain	Parentage	Generation Composited	Previous Testing (years)
1. Clark 63	(Clark[5] x L49-4091) x (Clark[6] x Blackhawk)	13 F_3 lines	7
2. Cutler	C1069 x Clark	F_7	6
3. C1481	Cutler[4] x Kent-Rps rxp-SL5	6 F_3 lines	0
4. Kent	Lincoln x Ogden	F_7	15
5. C1456	C1266R x C1253	F_7	1
6. C1473	C1266R x C1253	F_6	P.T. IV
7. C1474	C1266R x C1253	F_6	P.T. IV
8. C1475	C1266R x C1253	F_6	P.T. IV
9. C1476	C1266R x C1253	F_6	P.T. IV
10. C1480	(C1266R[7] x Wayne) x (C1266R[8] x C1253)	4 F_3 lines	0
11. D66-4505	D53-3542 x D54-2437	F_7	U.T. IVS
12. Md63-3303-3	(9 Protein sources x Dunfield) x Clark	F_7	P.T. IV

The three named variety checks have been in this test seven years or more, and a 7-year summary is presented in Tables 77 and 78. Cutler has shown rather consistent yield superiority over Clark 63 and has averaged slightly above Kent regionally despite its earlier maturity.

C1481 is a phytophthora-resistant Cutler backcross and despite favorable yields at Edgewood, Illinois, and Portageville, Missouri (clay), where phytophthora rot was a factor, it averaged about a bushel below Cutler in regional yield. This yield loss is similar to that found previously with most other phytophthora-resistant backcross varieties.

Of the C strains, C1474 showed the best regional performance, being much earlier than the top-yielding C1476 and essentially equal in yield. C1474 also has excellent seed composition, being higher in protein and equal in oil to the check varieties, but was prone to shattering in both Kansas and Mississippi tests.

D66-4505 had very good lodging resistance and excellent seed quality, perhaps related to its small seed size. However, it was very variable in relative yield and averaged with the poorest, although over-all range in yield was not very great in this test. It showed evidence of good field resistance to phytophthora although susceptible to artificial inoculation.

Table 69. Descriptive data and shattering scores, Uniform Test IV, 1969.

Strain	Flower Color	Pubescence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering				Hypocotyl Length mm
							Manhattan Kans.		Stoneville Miss.		
							2 wks.	4 wks.	Loam	Clay	
Clark 63	P	T	Br	D	Y	Bl	1	1	1	1	114
Cutler	P	T	Br	S	Y	Bl	1	1	3	3.5	76
C1481	P	T	Br	S	Y	Bl	1	1	3	3	87
Kent	P	T	Br	I	Y	Bl	1	3	3	3	204
C1456	P	G	Br	D	Y	Ib	3	3.8	3	3	194
C1473	P	G	Br	S	Y	Ib	3	4.8	4	2	124
C1474	P	G	Br	D	Y	Ib	3.5	5	4	4.5	88
C1475	P	G	Br	S	Y	Ib	3	5	3	3.5	170
C1476	P	G	Br	S	Y	Bf	1	5	2	2.5	134
C1480	P	G	Br	D	Y	Bf	3.5	5	3	3.5	101
D66-4505	P	G	Tan	S	Y	Ib	1	3	1	1	168
Md63-3303-3	W	T	Br	S	Y	Dib	3	5	2	4.5	206

Table 70. Summary of data, Uniform Test IV, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	27	27	25	25	27	27	24	12	12
Clark 63	42.9	11	0	2.3	42	2.1	15.8	40.6	22.5
Cutler	45.4	3	+2.9	1.9	42	2.3	18.0	41.1	22.5
C1481	44.5	6	+2.9	1.9	43	2.2	17.9	40.7	22.4
Kent	44.2	9	+7.0	1.7	41	2.3	17.6	41.0	22.4
C1456	44.7	5	+0.8	2.9	46	2.4	15.7	40.7	22.8
C1473	45.4	3	+5.2	2.7	49	2.3	16.2	42.5	22.0
C1474	45.7	2	+0.4	2.3	46	2.2	17.0	43.2	22.5
C1475	44.3	7	+1.8	2.4	47	2.1	15.2	41.7	22.1
C1476	45.9	1	+8.7	2.5	48	2.6	16.9	41.2	22.0
C1480	44.3	7	+3.1	2.6	46	2.4	16.5	42.3	21.7
D66-4505	43.1	10	+6.3	1.6	40	1.7	13.1	40.5	21.8
Md63-3303-3	42.9	11	+5.4	1.8	37	2.2	16.1	40.0	23.5

[1]Days earlier (-) or later (+) than Clark 63 which matured September 25, 124 days after planting.

Table 71. Disease data, Uniform Test IV, 1969.

Strain	BB		BP		BSR			DM			FE[2]	PR			PS	PSB	SMV	
	Ames Ia.		Ill.	Ia.	Urbana Ill.	Kanawha Ia.		Worthington Ind.		Urbana Ill.	Eldorado Ill.	Ind.	Ind.	Stoneville Miss.		Georgetown Del.	Georgetown Del.	Ia.	
	n	a	a	a	n	1	2	n		n	n	a	a	n		n	n	a	
														vigor				3	4
Clark 63	4	3	1	1	3	17	75	4.3		3.9	4	5	R	R	1	3	4	80	55
Cutler	3	3.5	1	4	3	15	83	4		3.6	3.2	1	S	S	2.5	2.2	2.3	60	50
C1481	3	3.5	2	4.5	3	13	68	4		4	3.3	1	R	R	1	1.8	1.8	85	25
Kent	3	4	3	4	4	9	63	2.5		1	1.3	1	S	S	3	2.2	1.2	80	15
C1456	3	2.5	2	4	3	12	40	3.5		3.4	2.7	3H	R	R	1	2.4	2.9	85	30
C1473	3	4.5	1	3.5	4	7	25	3.5		4	2	3H	R	R	1.5	2.7	1.3	90	25
C1474	2	4	3	3	4	9	28	4		4.4	4.2	4	R	R	1.5	1.9	1.4	50	35
C1475	3	4	1	3.5	4	13	35	3.5		3.4	2.3	1	R	R	1	1.9	1.7	40	40
C1476	3	4	1	3	4	11	45	3.8		4	2.7	4	R	R	1	4	2.4	65	40
C1480	3	4	1	1.5	4	13	65	3.5		3	2.3	2	R	R	1	1.6	1.6	60	40
D66-4505	4	4.5	1	1	4	18	90	4		3.3	3.3	1	S	R	1	1.3	1.2	65	55
Md63-3303-3	3	4	1	3	4	9	63	3.5		2.9	1.7	1	S	S	3	1.8	1.6	80	40

[1]Mean height of browning in diseased stems
[2]Percent of plants with browning
[3,4]Percent of plants infected, measured serologically (3) and by transmission to beans (4)

Table 72. Yield and yield rank, Uniform Test IV, 1969.

Strain	Mean of 27 Tests	New Jersey	Delaware		Maryland					Ohio
		Center-ton	George-town[1] *	George-town *	Clarks-ville	Queens-town	Link-wood	Snow Hill	Snow Hill[2]	Colum-bus *
Clark 63	42.9	41.6	39.9	41.1	40.6	42.5	33.8	40.9	36.9	43.3
Cutler	45.4	46.8	41.7	39.1	50.3	48.9	37.7	49.5	32.3	57.7
C1481	44.5	36.5	31.3	35.0	48.2	46.3	36.0	45.8	40.9	45.9
Kent	44.2	49.0	46.1	41.9	44.6	41.9	35.1	42.3	39.6	41.8
C1456	44.7	44.4	41.7	36.4	53.6	42.4	31.5	40.9	35.4	39.1
C1473	45.4	46.2	47.2	41.7	46.1	44.3	40.0	38.0	42.3	45.9
C1474	45.7	46.6	41.3	37.9	45.8	44.1	36.0	45.6	39.7	57.7
C1475	44.3	43.9	39.1	38.0	43.3	42.8	31.7	38.7	38.5	38.2
C1476	45.9	43.1	46.5	43.2	45.3	45.7	42.3	37.8	40.6	39.0
C1480	44.3	43.2	39.8	37.8	44.4	42.5	31.1	39.0	37.1	58.9
D66-4505	43.1	37.0	43.3	36.2	41.5	41.8	38.8	42.4	32.6	40.1
Md63-3303-3	42.9	43.4	33.4	39.9	50.6	44.4	34.0	45.4	35.1	39.8
Coef. of Var. (%)		4.1	--	--	8.2	10.5	6.8	7.7	11.0	--
L.S.D. (5%)		3.2	N.S.	N.S.	6.0	7.9	4.1	5.5	7.1	--
Row Spacing (In.)		36	36	36	30	30	38	36	30	28
					Yield Rank					
Clark 63	11	10	8	4	12	8	9	7	8	6
Cutler	3	2	5	6	3	1	4	1	12	2
C1481	6	12	12	12	4	2	5	2	2	4
Kent	9	1	3	2	8	11	7	6	5	7
C1456	5	5	5	10	1	10	11	7	9	10
C1473	3	4	1	3	5	5	2	11	1	4
C1474	2	3	7	8	6	6	5	3	4	2
C1475	7	6	10	7	10	7	10	10	6	12
C1476	1	9	2	1	7	3	1	12	3	11
C1480	7	8	9	9	9	8	12	9	7	1
D66-4505	10	11	4	11	11	12	3	5	11	8
Md63-3303-3	11	7	11	5	2	4	8	4	10	9

*Not included in the mean
[1]Irrigated
[2]After barley
[3]Clay
[4]Loam

Table 72. (Continued)

Strain	Indiana			Kentucky		Illinois						
	Lafayette	Worthington	Evansville	Lexington	Henderson	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Miller City
Clark 63	48.4	44.6	51.5	48.8	44.1	34.9	48.5	45.2	48.5	55.0	40.1	38.9
Cutler	62.5	57.4	48.8	45.3	44.1	41.3	55.4	44.2	52.1	55.9	41.1	36.1
C1481	58.6	48.4	46.1	38.0	46.4	41.5	52.3	48.6	55.2	54.3	43.5	35.1
Kent	57.2	58.9	42.7	42.1	43.8	39.6	50.2	49.6	53.7	55.9	46.2	36.4
C1456	54.2	50.3	35.3	47.7	44.2	41.8	50.0	49.4	51.5	61.8	46.1	41.3
C1473	49.9	57.7	39.9	47.8	49.3	42.2	54.3	51.7	54.7	55.6	49.6	41.0
C1474	56.4	57.0	48.9	39.5	46.6	38.6	55.7	49.7	56.2	54.9	46.0	41.1
C1475	55.1	49.0	45.9	42.6	47.4	40.1	53.3	50.4	51.2	56.7	45.7	40.7
C1476	50.8	63.9	38.9	48.6	35.2	42.6	55.0	51.9	55.0	57.9	49.7	39.2
C1480	53.4	44.2	47.0	42.7	40.6	41.0	52.6	49.7	52.4	56.1	48.1	40.2
D66-4505	41.9	50.4	42.4	42.6	42.5	40.5	50.1	38.9	51.4	56.2	45.1	45.3
Md63-3303-3	47.0	41.8	36.9	40.9	37.2	38.9	50.7	41.4	53.6	57.3	44.5	40.4
Coef. of Var. (%)	12.6	13.4	16.1	11.6	6.9	9.1	8.3	5.1	5.3	2.5	8.6	7.9
L.S.D. (5%)	9.6	10.1	N.S.	N.S.	5.1	N.S.	N.S.	4.1	N.S.	2.4	6.6	5.3
Row Spacing (In.)	38	38	36	30	30	30	30	38	36	36	40	38
	Yield Rank											
Clark 63	10	10	1	1	6	12	12	9	12	10	12	9
Cutler	1	4	3	5	6	5	2	10	8	7	11	11
C1481	2	9	5	12	4	4	7	8	2	12	10	12
Kent	3	2	7	9	8	9	9	6	5	7	4	10
C1456	6	7	12	4	5	3	11	7	9	1	5	2
C1473	9	3	9	3	1	2	4	2	4	9	2	4
C1474	4	5	2	11	3	11	1	4	1	11	6	3
C1475	5	8	6	7	2	8	5	3	11	4	7	5
C1476	8	1	10	2	12	1	3	1	3	2	1	8
C1480	7	11	4	6	10	6	6	4	7	6	3	7
D66-4505	12	6	8	7	9	7	10	12	10	5	8	1
Md63-3303-3	11	12	11	10	11	10	8	11	6	3	9	6

Table 72. Yield and yield rank, Uniform Test IV, 1969 (Continued)

Strain	Missouri			Kansas						Texas[1]	California[1]
	Mt. Vernon	Portageville[3]	Portageville[1,4]	Powhattan	Manhattan	Manhattan[1]	Ottawa	Newton	Columbus	Lubbock *	Five Points *
Clark 63	39.3	35.9	33.4	43.4	45.3	60.4	57.2	29.7	29.7	54.1	21.2
Cutler	48.0	16.6	36.2	46.7	47.9	61.7	55.1	32.2	32.2	52.1	28.3
C1481	42.7	34.5	33.8	45.4	50.5	55.3	57.4	32.2	28.1	55.0	24.2
Kent	48.7	16.1	32.1	46.2	50.0	60.4	53.5	30.1	27.1	60.5	27.4
C1456	44.7	31.7	36.2	49.1	47.2	65.6	54.8	29.0	26.1	53.7	26.9
C1473	40.5	30.2	32.5	47.0	47.7	60.8	58.7	27.4	30.3	57.7	24.1
C1474	38.7	31.0	30.5	46.8	47.2	72.1	59.8	31.3	28.3	55.9	32.8
C1475	43.7	28.9	34.9	49.9	43.9	61.0	58.5	29.2	27.8	51.9	26.4
C1476	40.0	34.0	32.1	46.3	48.3	72.1	56.0	34.9	33.0	64.4	26.3
C1480	45.6	37.1	29.5	46.2	48.6	60.2	59.1	32.9	32.2	57.7	24.1
D66-4505	40.0	38.3	35.7	43.5	48.2	58.3	53.6	30.8	33.3	52.8	25.6
Md63-3303-3	46.5	18.7	33.5	49.6	48.7	60.2	55.0	31.4	30.5	55.3	26.9
Coef. of Var. (%)	10.9	15.7	18.9	9.1	6.8	8.5	6.0	8.7	11.8	8.3	15.0
L.S.D. (5%)	6.3	7.8	10.6	N.S.	N.S.	7.7	N.S.	3.9	3.2	4.9	N.S.
Row Spacing (In.)	15	38	38	28	28	36	30	28	30	40	30

	Yield Rank										
Clark 63	11	3	7	12	11	7	6	9	7	8	12
Cutler	2	11	1	6	7	4	8	3	3	11	2
C1481	7	4	5	10	1	12	5	3	9	7	9
Kent	1	12	9	8	2	7	12	8	11	2	3
C1456	5	6	1	3	9	3	10	11	12	9	4
C1473	8	8	8	4	8	6	3	12	6	3	10
C1474	12	7	11	5	9	1	1	6	8	5	1
C1475	6	9	4	1	12	5	4	10	10	12	6
C1476	9	5	9	7	5	1	7	1	2	1	7
C1480	4	2	12	8	4	9	2	2	3	3	10
D66-4505	9	1	3	11	6	11	11	7	1	10	8
Md63-3303-3	3	10	6	2	3	9	9	5	5	6	4

Table 73. Maturity dates, Uniform Test IV, 1969.

Strain	Mean of 25 Tests	New Jersey	Delaware		Maryland					Ohio
		Center-ton	George-town[1]	George-town	Clarks-ville	Queens-town	Link-wood	Snow Hill	Snow Hill[2]	Colum-bus
		*	*	*						*
Clark 63	0		0	0	0	0	0	0	0	0
Cutler	+2.9		-2	0	+3	+ 2	+ 1	0	+ 1	+ 4
C1481	+2.9		-3	-1	+2	+ 1	- 1	+3	+ 5	+ 8
Kent	+7.0		+3	+4	+5	+ 5	+ 7	+4	+ 6	+ 7
C1456	+0.8		-6	-4	+2	- 5	- 3	+1	+ 4	+ 9
C1473	+5.2		-1	+3	+8	+ 5	+ 9	+4	+ 9	+ 6
C1474	+0.4		-7	-3	+2	- 4	- 3	+2	+ 5	+ 7
C1475	+1.8		-4	-1	+3	- 3	- 3	+2	+ 6	+ 9
C1476	+8.7		+2	+4	+7	+ 5	+ 8	+3	+10	+10
C1480	+3.1		-4	0	+3	- 1	- 1	+2	+ 9	+11
D66-4505	+6.3		+3	+3	+4	+ 5	+ 7	+6	+ 5	+ 6
Md63-3303-3	+5.4		+4	+2	+6	+ 3	+ 1	+2	+ 2	+ 8
Wayne (III)			--	--	-9	--	--	--	--	-14
Hill (V)			--	--	--	+13	+27	--	--	--
Date planted	5-24	6-11	6-19	6-19	5-27	5-27	5-26	5-28	6-20	5-24
Clark 63 matured	9-25	--	10-7	9-30	10-3	9-25	9-21	9-24	10-6	10-12
Days to mature	124	--	110	103	129	121	118	119	108	141

*Not included in the mean
[1]Irrigated
[2]After barley
[3]Clay
[4]Loam

Table 73. Maturity dates, Uniform Test IV, 1969 (Continued)

Strain	Indiana			Kentucky		Illinois						
	Lafayette	Worthington	Evansville	Lexington	Henderson	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Miller City
Clark 63	0	0	0	0	0	0	0	0	0	0	0	0
Cutler	+ 3	+ 3	+ 3	+ 9	+ 3	+ 5	+4	+ 2	+ 4	+ 2	+3	+ 4
C1481	+ 3	+ 3	+ 2	+ 6	+ 8	+ 5	+3	+ 4	+ 2	+ 2	+3	+ 2
Kent	+ 8	+ 8	+ 7	+10	+ 4	+ 9	+7	+ 8	+10	+ 7	+8	+ 6
C1456	+ 5	+ 1	+ 3	+ 6	+ 6	- 2	+3	- 1	0	+ 2	+2	- 2
C1473	+ 7	+10	+ 6	+ 8	+ 6	+ 3	+4	+ 5	+ 9	+ 4	+7	+ 5
C1474	+ 1	+ 2	+ 3	0	0	0	+2	- 1	+ 2	0	+4	- 1
C1475	+ 5	+ 3	+ 2	+ 8	+ 9	+ 1	+3	+ 3	+ 2	+ 1	+4	0
C1476	+13	+10	+14	+12	+14	+12	+8	+ 9	+12	+11	+3	+10
C1480	+ 4	+ 4	+ 5	+ 5	+ 6	+ 4	+4	+ 5	+ 6	+ 4	+5	+ 3
D66-4505	+12	+ 8	+ 2	+20	+ 8	+ 8	+6	0	+ 7	+ 4	+7	+ 5
Md63-3303-3	+ 7	+ 8	+ 5	+10	+ 9	+ 3	+4	+ 1	+ 7	+ 5	+5	+ 3
Wayne (III)	- 1	- 3	- 4	- 4	0	- 4	-6	-11	- 3	- 9	-3	- 9
Hill (V)	--	--	--	--	+14	+27	--	+17	+17	+15	--	+19
Date planted	5-26	5-13	5-29	5-16	5-13	5-16	5-20	5-28	5-17	5-28	6-4	5-15
Clark 63 matured	10-4	9-16	9-23	9-18	9-17	9-24	9-26	9-28	9-20	9-23	9-25	9-12
Days to mature	131	126	117	125	127	131	129	123	126	118	113	120

Table 73. (Continued)

Strain	Missouri			Kansas						Texas[1]	California[1]
	Mt. Vernon	Portageville[3]	Portageville[1,4]	Powhattan	Manhattan	Manhattan[1]	Ottawa	Newton	Columbus	Lubbock	Five Points
	*									*	*
Clark 63		0	0	0	0	0	0	0	0	0	0
Cutler		+ 4	+ 5	+ 2	+2	+ 2	+ 2	0	+3	0	- 2
C1481		+ 3	+ 2	+ 2	+3	+ 2	+ 1	0	+6	+3	- 1
Kent		+11	+ 7	+ 8	+4	+ 5	+ 6	+ 7	+7	+6	+ 1
C1456		- 4	0	0	+3	- 2	- 3	- 2	+7	+2	- 4
C1473		+ 2	+ 5	+ 3	+5	+ 2	+ 1	- 1	+3	+4	0
C1474		- 4	- 1	+ 1	+3	0	- 2	- 4	+4	-2	- 4
C1475		- 4	- 1	0	+2	0	+ 1	- 4	+4	-2	- 2
C1476		+ 7	+ 9	+ 8	+4	+ 5	+ 9	+ 7	+8	+8	+ 1
C1480		+ 2	+ 2	+ 2	+2	0	+ 1	- 2	+3	-1	- 4
D66-4505		+ 4	+ 6	+ 8	+5	+ 4	+ 7	+ 9	0	+6	- 1
Md63-3303-3		+ 4	+ 7	+10	+6	+ 6	+ 6	+ 9	+7	+8	- 2
Wayne (III)		--	--	- 6	-8	-11	- 8	- 6	--	--	-10
Hill (V)		+10	+17	+14	+8	+10	+16	+14	--	--	--
Date planted	5-19	5-14	5-12	6-4	5-27	5-20	5-14	5-29	6-6	5-27	6-18
Clark 63 matured	--	9-17	9-12	10-6	10-8	10-6	9-25	10-2	9-21	9-21	10-25
Days to mature	--	126	123	124	134	139	134	126	107	117	129

Table 74. Lodging scores and plant height, Uniform Test IV, 1969.

Strain	Mean of 25 Tests	New Jersey	Delaware		Maryland					Ohio
		Center-ton	George-town[1]	George-town	Clarks-ville	Queens-town	Link-wood	Snow Hill	Snow Hill[2]	Colum-bus
			*	*						*
Clark 63	2.3	1.0	2.5	2.3	4.0	3.0	2.2	2.7	3.0	1.5
Cutler	1.9	1.0	2.0	2.1	3.3	2.5	1.8	1.7	2.0	1.7
C1481	1.9	1.0	2.9	2.3	3.0	2.5	1.7	2.3	1.3	1.0
Kent	1.7	1.0	1.9	2.0	3.3	1.8	1.3	1.3	2.3	2.2
C1456	2.9	1.5	2.4	1.8	4.0	3.0	2.5	2.7	2.3	2.0
C1473	2.7	1.2	2.1	2.3	4.0	3.3	2.0	3.0	3.0	1.0
C1474	2.3	1.2	1.9	1.9	3.7	2.3	1.7	2.3	1.7	1.2
C1475	2.4	1.0	1.9	2.0	3.3	2.5	2.0	2.7	2.0	1.2
C1476	2.5	1.5	1.6	1.9	4.0	2.3	1.7	1.7	2.3	1.2
C1480	2.6	1.2	2.0	2.0	4.0	3.2	1.8	2.3	2.7	1.0
D66-4505	1.6	1.0	1.8	1.9	2.7	1.8	1.7	1.7	2.0	1.0
Md63-3303-3	1.8	1.0	1.9	1.4	2.7	1.8	1.2	1.3	1.0	1.0

	Mean of 27 Tests	Plant Height								
			*	*						*
Clark 63	42	45	39	39	44	42	39	46	41	44
Cutler	42	43	36	38	48	42	40	43	38	45
C1481	43	44	36	40	51	43	41	45	42	49
Kent	41	44	39	37	46	39	40	44	39	44
C1456	46	51	40	42	48	44	41	50	46	45
C1473	49	54	44	44	55	50	46	52	49	50
C1474	46	51	37	41	51	42	40	49	44	48
C1475	47	53	38	41	52	41	42	51	48	49
C1476	48	53	41	44	54	43	46	50	47	46
C1480	46	49	39	41	47	46	40	47	45	48
D66-4505	40	45	34	38	43	40	40	44	37	44
Md63-3303-3	37	37	33	33	39	35	34	37	34	43

*Not included in the mean
[1]Irrigated
[2]After barley
[3]Clay
[4]Loam

Table 74. (Continued)

Strain	Indiana			Kentucky		Illinois						
	Lafayette	Worthington	Evansville	Lexington	Henderson	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Miller City
Clark 63	2.8	2.1	3.0	3.3	2.7	1.7	2.9	1.3	2.4	2.2	2.0	1.9
Cutler	2.3	1.2	1.8	3.7	2.3	1.4	2.5	1.5	1.8	1.6	2.0	1.3
C1481	2.3	1.6	2.3	3.3	2.0	1.4	2.4	1.5	1.9	1.7	2.0	1.5
Kent	2.3	1.1	1.2	2.5	2.2	1.6	1.9	1.8	2.0	1.6	1.0	2.1
C1456	3.4	2.6	2.8	4.7	3.3	1.5	4.3	1.7	3.2	3.9	3.0	2.7
C1473	3.3	2.6	2.8	3.0	2.2	1.6	3.6	2.2	3.3	3.3	3.0	3.3
C1474	2.6	2.4	2.7	4.0	1.8	1.5	3.0	1.5	2.4	3.2	2.0	1.6
C1475	2.8	2.5	3.0	4.0	2.2	1.3	3.6	1.6	3.1	3.1	2.0	2.6
C1476	3.3	1.6	2.2	4.2	3.0	1.8	3.6	1.8	2.7	3.3	3.0	1.5
C1480	3.3	3.1	2.8	4.2	2.2	1.9	3.6	2.1	3.1	2.4	2.0	2.4
D66-4505	2.6	1.6	1.8	2.8	1.3	1.2	1.9	1.2	1.8	1.8	1.0	1.5
Md63-3303-3	3.0	1.0	1.7	3.2	4.0	1.4	2.5	1.4	1.8	2.0	2.0	1.3
	Plant Height											
Clark 63	51	50	44	49	52	42	50	33	51	53	44	46
Cutler	50	50	44	46	50	40	49	33	48	53	41	45
C1481	53	50	46	55	48	43	51	36	47	55	43	47
Kent	49	50	44	44	50	39	46	33	47	51	45	45
C1456	55	54	48	58	55	44	54	41	55	58	44	51
C1473	58	56	52	57	60	47	56	47	58	61	50	55
C1474	56	56	50	53	56	45	56	41	56	59	52	50
C1475	55	55	52	61	57	45	55	41	53	59	46	49
C1476	54	59	53	60	53	46	57	39	58	60	49	52
C1480	53	52	50	51	55	43	56	44	52	56	48	49
D66-4505	48	49	43	45	46	37	48	30	48	49	41	48
Md63-3303-3	45	44	39	43	44	34	43	29	42	47	38	41

Table 74. Lodging scores and plant height, Uniform Test IV, 1969 (Continued)

Strain	Missouri			Kansas						Texas[1]	California[1]
	Mt. Vernon	Portageville[3]	Portageville[1,4]	Powhattan	Manhattan	Manhattan[1]	Ottawa	Newton	Columbus	Lubbock	Five Points
				*				*		*	*
Clark 63	2.3	2.0	3.0	1.0	1.6	1.2	2.8	1.0	1.3	2.0	4.0
Cutler	1.8	2.0	1.7	1.0	1.0	1.0	2.5	1.0	1.3	2.0	4.0
C1481	1.8	1.8	2.2	1.0	1.0	1.0	2.2	1.0	1.4	1.0	3.0
Kent	1.3	1.3	1.7	1.0	1.1	1.0	1.3	1.0	1.3	4.0	3.0
C1456	1.8	2.2	2.3	1.0	2.9	3.3	4.8	1.0	1.2	2.0	4.0
C1473	1.8	2.0	2.0	1.0	2.4	2.9	5.0	1.0	1.3	1.0	4.0
C1474	1.5	1.7	1.3	1.0	1.5	2.9	4.7	1.0	1.3	1.0	3.0
C1475	1.5	1.8	1.7	1.0	1.2	2.7	4.8	1.0	1.3	1.0	3.0
C1476	1.5	1.7	1.7	1.0	2.0	3.0	4.8	1.0	1.2	3.0	3.0
C1480	1.5	2.2	2.0	1.0	2.8	3.0	4.9	1.0	1.4	2.0	4.0
D66-4505	1.0	2.0	1.5	1.0	1.0	1.2	1.3	1.0	1.3	1.0	2.0
Md63-3303-3	1.3	2.0	2.0	1.0	1.0	1.2	2.3	1.0	1.3	1.0	3.0

	Plant Height										
										*	*
Clark 63	37	38	33	34	37	46	41	29	27	30	47
Cutler	38	32	32	34	34	44	41	28	27	30	43
C1481	36	38	31	34	37	44	40	29	28	30	46
Kent	38	30	29	33	35	42	39	28	29	31	45
C1456	39	39	30	37	41	53	45	33	32	33	53
C1473	42	39	35	38	45	57	47	33	33	38	50
C1474	39	36	29	36	42	53	48	32	31	33	52
C1475	38	38	34	36	42	51	48	30	29	36	51
C1476	41	40	35	37	41	53	47	32	32	39	51
C1480	39	39	28	36	40	51	47	34	32	37	52
D66-4505	35	36	32	31	32	45	40	26	26	34	42
Md62-3303-3	37	29	29	29	32	41	38	25	28	24	36

Table 75. Seed quality scores and seed weight, Uniform Test IV, 1969.

Strain	Mean of 27 Tests	New Jersey	Delaware		Maryland					Ohio
		Center-ton	George-town[1]	George-town	Clarks-ville	Queens-town	Link-wood	Snow Hill	Snow Hill[2]	Colum-bus
			*	*						*
Clark 63	2.1	2.0	3.6	3.3	2.0	3.0	2.0	1.0	2.0	2.0
Cutler	2.3	1.7	2.8	2.1	2.0	3.0	3.0	1.0	2.0	2.2
C1481	2.2	1.7	2.8	2.1	2.0	2.0	3.0	1.0	2.0	1.2
Kent	2.3	1.2	2.0	2.0	2.0	3.0	3.0	1.0	2.0	2.2
C1456	2.4	2.0	3.1	2.9	2.0	3.0	3.0	2.0	2.0	2.5
C1473	2.3	2.0	2.1	2.0	2.0	2.0	3.0	1.0	2.0	2.5
C1474	2.2	2.0	2.3	1.9	2.0	3.0	3.0	1.0	2.0	1.5
C1475	2.1	1.0	2.4	2.1	2.0	3.0	3.0	1.0	2.0	2.2
C1476	2.6	2.0	3.4	2.9	2.0	3.0	3.0	1.0	1.0	2.0
C1480	2.4	2.5	1.8	1.9	2.0	3.0	3.0	1.0	2.0	2.7
D66-4505	1.7	1.2	2.6	1.5	1.0	2.0	2.0	1.0	1.0	2.7
Md63-3303-3	2.2	2.0	1.3	1.6	2.0	3.0	2.0	1.0	1.0	1.5

	Mean of 24 Tests	Seed Weight							
			*	*					*
Clark 63	15.8	15.4	17.2	15.8	16.1	18.3	15.9	14.6	15.1	17.4
Cutler	18.0	17.4	19.5	17.8	20.0	21.2	17.2	18.1	16.1	20.2
C1481	17.9	17.0	17.6	16.7	19.0	20.6	17.5	18.0	17.6	18.3
Kent	17.6	18.0	17.0	16.7	18.5	18.7	15.9	16.5	17.5	19.6
C1456	15.7	14.4	16.0	14.1	16.5	17.4	14.8	14.9	14.9	16.6
C1473	16.2	15.1	16.3	15.8	16.3	17.6	16.0	14.0	17.3	17.7
C1474	17.0	15.5	18.1	16.2	17.2	19.1	16.6	17.2	15.5	17.3
C1475	15.2	13.6	15.8	14.7	15.7	17.3	14.4	13.6	14.6	15.9
C1476	16.9	16.0	18.4	17.7	16.9	18.1	15.6	14.3	18.5	19.1
C1480	16.5	14.1	15.5	15.0	15.4	17.3	15.1	14.1	16.5	17.8
D66-4505	13.1	11.0	15.5	14.6	13.8	14.8	14.0	12.6	12.4	15.2
Md63-3303-3	16.1	16.0	16.5	14.7	16.1	17.5	14.9	15.7	14.8	18.4

*Not included in the mean
[1]Irrigated
[2]After barley
[3]Clay
[4]Loam

Table 75. Seed quality scores and seed weight, Uniform Test IV, 1969 (Continued)

Strain	Indiana			Kentucky		Illinois						
	Lafayette	Worthington	Evansville	Lexington	Henderson	Urbana	Girard	Edgewood	Trenton	Eldorado	Carbondale	Miller City
Clark 63	1.0	1.5	3.5	3.2	3.2	2.0	1.6	2.3	1.5	3.3	2.0	1.8
Cutler	1.5	1.5	3.5	3.2	3.2	2.5	2.4	2.3	2.0	3.2	2.0	1.7
C1481	1.0	1.5	3.5	2.5	3.2	2.5	1.9	2.0	2.3	3.3	2.0	2.3
Kent	1.5	1.5	3.5	2.8	3.3	2.5	2.3	2.0	1.5	3.2	3.0	1.8
C1456	1.5	2.0	3.0	2.8	3.2	2.3	2.5	2.3	2.3	3.0	2.0	2.5
C1473	1.5	2.0	3.5	2.7	3.2	2.2	2.1	2.2	2.0	3.0	3.0	2.5
C1474	1.0	1.5	3.5	3.0	2.7	2.0	2.1	1.5	1.5	2.3	2.0	2.8
C1475	1.5	1.5	3.0	2.3	3.2	2.2	2.4	1.7	1.3	2.3	1.0	2.7
C1476	2.0	2.0	3.5	3.5	3.8	2.5	2.4	2.7	2.5	3.3	4.0	2.3
C1480	1.5	2.0	3.5	2.5	3.5	2.5	2.6	2.7	2.0	3.2	2.0	2.3
D66-4505	1.5	1.5	1.5	2.2	2.0	2.2	2.1	1.5	1.3	2.2	1.0	2.2
Md63-3303-3	2.0	1.5	2.0	3.0	2.8	2.3	2.6	1.8	1.5	2.8	2.0	2.2

	Seed Weight											
Clark 63	18.6	16.1	16.1	17.2	15.8	13.9	16.7	13.8	13.9	15.9	14.5	17.8
Cutler	20.7	18.4	17.0	19.0	19.3	17.1	19.8	15.8	16.8	18.6	17.8	15.7
C1481	20.8	18.5	16.4	19.5	18.6	17.1	19.0	16.6	16.3	17.8	16.7	14.6
Kent	21.2	18.0	15.8	18.6	18.4	17.0	19.5	17.2	16.0	17.7	18.3	14.1
C1456	18.2	15.2	14.5	17.8	16.3	14.7	17.3	14.8	14.3	16.1	16.4	13.2
C1473	19.0	15.9	15.1	16.8	17.6	15.2	17.3	15.7	16.8	16.9	16.8	13.5
C1474	19.1	16.5	15.7	17.8	17.1	15.8	17.8	15.5	16.5	17.3	17.4	14.9
C1475	16.6	15.6	13.7	15.7	16.1	13.8	17.5	13.8	14.9	15.8	14.6	12.7
C1476	18.9	17.0	16.2	18.0	16.6	15.8	17.6	15.4	16.7	17.9	18.2	13.2
C1480	19.4	16.2	15.8	17.2	18.0	16.5	17.5	15.2	15.7	17.5	18.4	12.9
D66-4505	15.1	13.1	12.9	13.8	13.4	12.2	14.7	11.2	12.6	13.4	14.5	11.0
Md63-3303-3	20.0	17.0	14.4	18.1	15.9	14.9	19.5	14.4	15.9	15.9	15.9	12.7

Table 75. (Continued)

Strain	Missouri			Kansas						Texas[1]	California[1]
	Mt. Vernon	Portageville[3]	Portageville[1,4]	Powhattan	Manhattan	Manhattan[1]	Ottawa	Newton	Columbus	Lubbock *	Five Points *
Clark 63	1.7	3.3	3.3	1.3	1.6	1.4	1.3	2.5	1.4	2.0	3.0
Cutler	1.8	3.5	3.3	1.4	2.4	1.5	1.3	3.0	1.5	2.0	2.0
C1481	2.0	2.5	3.3	1.5	2.6	1.5	1.3	2.9	1.3	2.0	3.0
Kent	2.0	4.1	3.2	1.4	2.6	1.6	1.8	2.9	1.5	2.0	2.0
C1456	2.3	3.3	2.5	1.7	3.0	2.0	2.0	2.9	1.7	3.0	3.0
C1473	2.0	2.7	2.8	1.6	3.0	2.0	2.2	3.1	1.3	1.0	3.0
C1474	2.0	3.2	3.0	1.4	2.7	2.1	1.7	2.8	1.4	2.0	3.0
C1475	1.8	3.2	3.2	1.7	2.5	2.1	1.9	2.3	1.4	3.0	3.0
C1476	2.3	3.0	3.2	2.0	3.2	1.9	2.9	3.3	1.5	3.0	4.0
C1480	1.8	3.3	3.2	1.6	2.5	2.3	2.3	2.8	1.3	3.0	3.0
D66-4505	1.8	1.3	2.0	1.1	1.8	1.9	2.5	1.9	1.2	1.0	4.0
Md63-3303-3	2.3	2.8	2.6	1.9	2.4	1.9	2.0	3.5	2.0	2.0	3.0

	Seed Weight							
							*	*
Clark 63	14.0	15.6	17.3	14.8	14.0	16.8	19.1	14.0
Cutler	17.4	16.2	19.8	16.3	16.7	20.5	19.8	16.0
C1481	16.8	17.6	18.9	16.7	17.2	20.0	19.8	15.1
Kent	16.8	17.8	19.5	16.2	18.0	17.5	20.2	16.0
C1456	15.7	15.5	16.5	15.7	12.5	18.5	17.4	14.2
C1473	15.2	17.3	17.6	16.1	14.7	15.5	18.4	14.7
C1474	17.0	16.7	19.5	16.4	16.0	20.3	18.9	16.1
C1475	16.1	14.6	16.8	15.0	13.3	18.3	16.8	14.6
C1476	16.1	17.1	18.1	16.0	17.0	21.0	19.3	15.0
C1480	16.7	16.6	18.8	15.8	15.5	19.0	18.8	15.5
D66-4505	11.7	13.4	15.0	13.1	12.9	12.5	17.3	12.3
Md63-3303-3	15.7	15.1	17.6	15.0	15.7	16.6	17.7	13.6

Table 76. Percentages of protein and oil, Uniform Test IV, 1969.

Strain	Mean of 12 Tests	New Jersey	Delaware	Maryland		Ohio	Indiana
		Centerton	George-town[1]	Clarks-ville	Link-wood	Colum-bus	Evans-ville
			*			*	
Clark 63	40.6	39.1	43.1	40.4	39.9	40.7	42.4
Cutler	41.1	39.1	42.0	40.6	40.7	41.8	43.5
C1481	40.7	38.2	42.0	39.4	40.6	40.5	43.4
Kent	41.0	40.2	42.8	40.8	40.5	40.5	42.7
C1456	40.7	38.1	42.1	39.4	40.8	41.6	42.8
C1473	42.5	40.2	43.0	42.1	42.2	43.3	44.5
C1474	43.2	40.4	43.0	42.8	41.8	43.6	46.4
C1475	41.7	39.6	44.5	41.2	40.7	42.8	43.1
C1476	41.2	38.0	43.3	39.8	40.4	40.8	43.4
C1480	42.3	39.6	42.7	40.9	41.1	41.7	44.7
D66-4505	40.5	36.1	42.7	40.5	41.2	41.0	42.5
Md63-3303-3	40.0	37.5	43.3	39.4	40.3	39.8	41.3
	Mean of 12 Tests	Percentage of Oil					
			*			*	
Clark 63	22.5	23.4	21.5	21.8	22.8	21.4	21.5
Cutler	22.5	23.5	21.9	21.7	22.8	21.2	21.4
C1481	22.4	22.9	22.3	22.3	22.2	21.4	21.5
Kent	22.4	22.9	21.9	22.1	22.2	21.4	22.2
C1456	22.8	23.5	22.7	22.8	23.2	21.4	21.5
C1473	22.0	23.2	22.3	20.9	22.2	20.8	21.4
C1474	22.5	23.3	22.3	22.1	23.4	21.1	21.3
C1475	22.1	22.8	22.1	21.7	22.8	21.0	21.4
C1476	22.0	23.4	22.8	22.3	22.2	21.4	21.3
C1480	21.7	22.6	21.7	21.3	22.7	21.1	20.5
D66-4505	21.8	23.2	22.3	20.6	21.9	21.1	21.3
Md63-3303-3	23.5	24.4	21.0	22.6	23.8	22.6	22.8

*Not included in the mean
[1]Irrigated
[2]Loam

Table 76. (Continued)

Strain	Kentucky	Illinois			Missouri	Kansas		
	Henderson	Urbana	Eldorado	Miller City	Portageville[1,2]	Powhattan	Manhattan[1]	Ottawa
Clark 63	42.2	41.6	41.3	38.2	41.2	40.8	39.0	40.9
Cutler	42.5	40.6	41.4	40.5	42.0	41.7	39.8	41.1
C1481	42.5	40.7	42.0	39.5	40.9	41.7	39.0	39.9
Kent	43.3	40.9	41.9	41.0	41.7	40.2	38.6	39.9
C1456	43.2	41.3	40.8	40.7	40.2	40.5	39.2	41.1
C1473	45.0	43.4	42.9	42.0	41.9	41.9	41.1	42.9
C1474	44.6	44.6	43.5	42.4	43.0	43.4	41.9	43.7
C1475	44.7	42.1	42.4	41.4	42.0	40.9	40.1	42.4
C1476	45.8	41.9	41.4	40.7	42.6	39.3	38.9	41.8
C1480	46.4	43.1	42.4	41.3	43.2	42.1	40.3	41.9
D66-4505	43.1	40.9	40.7	40.7	40.2	40.0	39.1	41.0
Md63-3303-3	42.8	40.2	41.7	39.1	40.8	38.6	38.9	39.5
	Percentage of Oil							
Clark 63	23.1	22.0	21.6	24.0	22.7	21.6	22.9	22.4
Cutler	23.9	22.0	21.9	22.8	22.3	21.9	22.9	22.4
C1481	22.7	22.1	21.9	23.2	22.5	21.4	23.4	23.0
Kent	22.0	22.0	21.5	22.3	22.3	22.8	23.7	23.1
C1456	22.1	22.4	22.9	23.3	22.9	22.3	23.6	22.6
C1473	21.7	21.4	21.9	21.8	21.9	22.4	23.2	21.4
C1474	22.5	21.6	22.1	23.6	23.1	22.0	23.1	22.2
C1475	21.7	21.7	21.7	22.6	22.5	22.5	22.5	21.5
C1476	20.0	21.7	22.0	22.6	21.3	22.4	23.3	21.6
C1480	20.6	21.0	21.7	22.1	21.8	21.7	22.9	21.7
D66-4505	21.7	21.3	21.9	22.0	22.5	21.5	22.6	21.5
Md63-3303-3	22.7	23.0	22.9	24.6	24.0	23.5	24.4	23.8

Table 77. Seven-year summary of data, Uniform Test IV, 1963-1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	149	149	139	132	147	139	116	77	77
Clark 63	38.5	3	0	2.1	39	2.1	15.9	40.1	21.8
Cutler	41.8	1	+2.4	1.7	39	2.2	18.0	40.5	21.7
Kent	40.9	2	+7.2	1.7	39	2.2	17.7	40.1	22.1

[1]Days earlier (-) or later (+) than Clark 63 which matured September 27, 125 days after planting.

Table 78. Seven-year summary of yield and yield rank, Uniform Test IV, 1963-1969.

Strain	Mean of 149 Tests	New Jersey[1]	Delaware	Maryland		Ohio	Indiana			Kentucky	Illinois		
		Centerton	Georgetown	Queenstown[2]	Linkwood	Columbus	Lafayette	Worthington	Evansville	Henderson	Urbana	Girard	Edgewood
Years Tested		1963, 1966-69	1963-67 1969	1964-65 1967-69	1966-1969	1963-1969	1967-1969	1963-1969	1963-1969	1966-1969	1965-1969	1965-1969	1963-1969
Clark 63	38.5	30.3	27.9	39.8	35.0	35.0	41.3	41.9	43.0	43.8	43.9	41.4	38.6
Cutler	41.8	31.0	28.0	41.1	37.9	38.5	51.7	54.1	51.5	46.8	46.9	45.5	40.4
Kent	40.9	35.9	36.2	37.7	35.9	36.1	46.8	52.8	49.0	47.0	46.5	43.1	39.5
		Yield Rank											
Clark 63		3	3	2	3	3	3	3	3	3	3	3	3
Cutler		1	2	1	1	1	1	1	1	2	1	1	1
Kent		2	1	3	2	2	2	2	2	1	2	2	2

[1]Bridgeton, 1963, 1967. Salem, 1966
[2]Upper Marlboro, 1964-1965
[3]Irrigated
[4]Loam
[5]Lincoln, 1966-1967

Table 78. (Continued)

Strain	Illinois				Missouri		Nebraska[3,5]	Kansas						California[3]
	Trenton	Eldorado	Carbondale	Miller City	Columbia	Portageville[3,4]	Mead	Powhattan	Manhattan	Manhattan[3]	Ottawa	Newton	Columbus	Five Points
Years Tested	1966-1969	1963-1969	1963-1969	1963-1969	1963-1968	1963-1969	1966-1968	1963-1969	1963-1969	1963-1969	1966-1969	1965-1969	1966-1969	1966, 1968-69
Clark 63	45.5	47.9	35.6	40.0	34.8	40.7	41.8	38.3	42.3	51.2	46.0	28.9	32.5	17.3
Cutler	50.8	51.4	38.7	42.6	35.0	43.3	52.7	40.9	44.9	54.5	44.8	28.7	35.3	20.2
Kent	49.2	50.0	39.1	41.8	34.9	41.7	49.0	40.1	46.8	51.5	40.1	30.2	34.8	22.8
	Yield Rank													
Clark 63	3	3	3	3	3	3	3	3	3	3	1	2	3	3
Cutler	1	1	2	1	1	1	1	1	2	1	2	3	1	2
Kent	2	2	1	2	2	2	2	2	1	2	3	1	2	1

PRELIMINARY TEST IV, 1969

Strain	Parentage	Generation Composited
1. Clark 63		
2. L67-6301	Clark^{6} x PI 84.946-2	F_5
3. L67-6330	Clark-Rps rxp x (Clark^{5} x PI 84.946-2)	F_5
4. Cutler		
5. Kent		
6. CX403-209	C1266R x C1253	F_7
7. L63-0097-C3-1	Clark^{2} x PI 84.946-2	F_9
8. L63-0123-C5-2*	Clark^{4} x PI 84.946-2	F_7
9. L66-1359	Wayne x L57-0034	F_6
10. L66-1448	Clark 63 x L57-9819	F_6
11. L66L-144	Wayne x L57-0034	F_6
12. L66L-186	Wayne x L57-9819	F_6
13. L66L-191	Wayne x L57-9819	F_6
14. L66L-238	Wayne x L57-9819	F_6
15. L66L-257	Clark 63 x L57-9819	F_6
16. L66L-262	Clark 63 x L57-9819	F_6
17. L66L-276	Clark 63 x L57-9819	F_6
18. L66L-287	Clark 63 x L57-9819	F_6
19. L66L-307	Clark 63 x L57-9819	F_6
20. L66L-310	Clark 63 x L57-9819	F_6
21. L66L-333	Clark 63 x L57-9819	F_6
22. L66L-347	Clark 63 x L57-9819	F_6
23. Md62-3223	Selection from bulk population	F_4
24. Md62-3605	Selection from bulk population	F_4
25. Md63-148-3	(9 Protein sources x Dunfield) x Clark	F_4
26. Md63-949-4	(9 Protein sources x Dunfield) x Clark	F_4
27. Md64-3953	(Dunfield x T106-6) x Clark^{2}	F_4
28. Md64-4050	(Dunfield x T106-6) x Clark^{2}	F_4
29. Md64-4552	(Dunfield x T106-6) x Clark^{2}	F_4
30. SS64-2122	Scott^{3} x FC 33.243	F_4
31. SS64-2124	Scott^{3} x FC 33.243	F_4

* Sel. from L63-0123, in Uniform Preliminary IV in 1966

Four strains, L67-6301, L67-6330, L63-0097-C3-1, and L63-0123-C5-2, are Clark backcrosses selected for resistance to brown stem rot. From some of the Urbana and Lafayette data, there appears to be a significant reduction in BSR incidence (Table 81). In the performance tests they showed no clearcut evidence of superiority to Clark in yield.

The remaining L strains were selected for improved seed quality as well as agronomic performance and a few showed evidence of some seed improvement along with low PSB ratings in Delaware (Table 81). However, none of the strains in the test showed superiority in mean yield to Cutler and Kent although many of them outyielded Clark. L66L-144 and L66-1359 yielded well for their early maturity. Md62-3223 was very lodging resistant and yielded well at some locations. L66L-276, SS64-2122, and SS64-2124 were late in maturity and should probably be classified Group V.

Table 79. Descriptive data and shattering scores, Preliminary Test IV, 1969.

Strain	Flower Color	Pubescence Color	Pod Color	Seed Coat Luster	Seed Coat Color	Hilum Color	Shattering			
							Manhattan Kans.		Stoneville Miss.	
							2 wks.	4 wks.	Loam	Clay
Clark 63	P	T	Br	D	Y	Bl	1	1	1	1
L67-6301	P	T	Br	D	Y	Bl	1	1	3	2.5
L67-6330	P	T	Br	D	Y	Bl	1	1	2	1.5
Cutler	P	T	Br	S	Y	Bl	1	1	3	3.5
Kent	P	T	Br	I	Y	Bl	1	3	3	3
CX403-209	P	G	Br	S	Y	Bf+Ib	3	5	4	4
L63-0097-C3-1	P	T	Br	D	Y	Bl	1	1	2	3.5
L63-0123-C5-2	P	T	Br	D	Y	Br	1	1	2	3
L66-1359	W	T	Tan	D	Y	Bl	3	5	3	3
L66-1448	P	G	Br	D	Y	Ib	1	1	2	2.5
L66L-144	W	T	Tan	D	Y	Bl	1	1	2	3.5
L66L-186	P	G	Br	D	Y	Ib	1	1	1	1
L66L-191	P	G	Br	D	Y	Ib	1	1	2	1
L66L-238	P	G	Tan	D	Y	Ib	1	1	1	1
L66L-257	P	G	Tan	D	Y	Ib	1	1	1	1
L66L-262	P	G	Br	D	Y	Ib	1	1	1	1
L66L-276	P	T	Br	D	Y	Bl	1	1	1	1
L66L-287	P	T	Br	D	Y	Bl	1	2	1	1
L66L-307	P	T	Br	D	Y	Bl	1	2	1	1
L66L-310	P	T	Tan	D	Y	Bl	1	2	1	1
L66L-333	P	T	Tan	D	Y	Bl	1	1	3	4
L66L-347	P	T	Br	D	Y	Bl	3.5	5	2	1.5
Md62-3223	W	G	Br	S	Y	Bf	1	1	3	2
Md62-3605	P	G	Tan	D	Y	Ib	1	2	4	3
Md63-148-3	W	T	Br	D	Y	Bl	1	1	3	2
Md63-949-4	P	T	Tan	I	Y	Lbl	3	5	2	2
Md64-3953	P	T	Br	D	Y	Bl	1	1	3	1.5
Md64-4050	P	T	Br	D	Y	Bl	1	1	2	2
Md64-4552	P	T	Br	D	Y	Bl	1	1	2	1.5
SS64-2122	W	G	Br	S	Y	Bf	1	1	1	1
SS64-2124	P	G[1]	Br	S	Y	Ib	1	1	1	1

[1] Semi-appressed

Table 80. Summary of data, Preliminary Test IV, 1969.

Strain	Yield	Rank	Maturity[1]	Lodging	Height	Seed Quality	Seed Weight	Seed Composition	
								Protein	Oil
No. of Tests	13	13	13	12	13	13	11	6	6
Clark 63	44.4	19	0	2.7	41	2.1	16.6	40.9	22.7
L67-6301	45.7	14	- .1	2.6	41	2.1	16.8	41.2	22.0
L67-6330	41.1	29	+ 1.2	3.3	41	1.9	17.2	41.1	22.4
Cutler	49.8	2	+ 2.5	1.9	41	2.1	18.6	41.3	22.2
Kent	49.2	4	+ 6.5	1.7	41	2.3	17.7	41.5	22.5
CX403-209	39.7	31	+ 4.4	3.0	46	2.4	18.8	44.8	21.1
L63-0097-C3-1	43.0	22	- .3	2.3	39	2.3	19.2	40.2	23.5
L63-0123-C5-2	46.0	9	+ 1.5	2.3	40	1.7	17.1	42.1	22.1
L66-1359	49.3	3	- .2	2.0	40	2.0	18.7	40.2	23.7
L66-1448	41.2	28	- 2.1	2.3	42	1.9	15.3	41.8	21.8
L66L-144	49.9	1	- .9	2.1	41	1.9	17.9	39.6	23.6
L66L-186	46.2	7	+ 6.8	2.6	47	1.9	16.3	42.5	21.6
L66L-191	47.1	6	+ 6.1	2.7	47	1.8	16.4	41.4	22.7
L66L-238	43.6	20	+ 1.8	3.4	43	1.5	15.7	42.0	22.9
L66L-257	45.5	15	+ 7.4	2.8	45	1.7	13.8	42.8	21.6
L66L-262	46.0	9	+ 2.5	2.0	42	2.0	16.2	42.5	22.4
L66L-276	45.8	11	+13.7	3.1	49	2.0	13.0	41.3	21.7
L66L-287	40.9	30	- .2	2.6	38	2.0	15.3	41.5	21.7
L66L-307	42.4	24	+ 3.1	2.3	46	2.1	16.0	42.6	21.6
L66L-310	44.5	18	+ 3.5	2.7	46	1.9	16.2	42.2	21.4
L66L-333	46.2	7	+ 3.5	2.6	42	1.6	14.7	42.0	21.2
L66L-347	48.2	5	+ 6.4	2.2	46	1.8	16.0	42.6	22.0
Md62-3223	45.8	11	+ 2.2	1.5	41	2.1	17.0	40.4	22.6
Md62-3605	43.2	21	+ 5.0	2.3	38	2.1	16.6	39.3	23.9
Md63-148-3	42.6	23	- .4	1.8	36	2.1	17.0	39.1	24.1
Md63-949-4	41.6	26	+ 6.5	3.1	44	2.6	19.4	42.2	21.9
Md64-3953	45.5	15	- .1	2.4	40	2.0	17.4	40.5	22.7
Md64-4050	44.6	17	+ .5	2.5	40	2.2	17.2	40.6	22.4
Md64-4552	45.8	11	+ .7	2.7	41	2.1	17.1	40.6	22.5
SS64-2122	41.3	27	+14.7	2.7	45	2.1	16.5	39.2	21.8
SS64-2124	41.7	25	+14.8	2.7	45	2.6	16.4	38.8	21.6

[1] Days earlier (-) or later (+) than Clark 63 which matured September 25, 123 days after planting.

Table 81. Disease data, Preliminary IV, 1969.

Strain	BB	BP	BSR			DM			PS	PSB	PR		
					Lafayette	Worthington	Eldorado		Georgetown	Georgetown		Stoneville	
	Ames Iowa	Ill.	Urbana Ill.		Ind.	Ind.	Ill.	FE_2 Ind.	Del.	Del.	Ind.	Miss.	
	n	a	n	n[1]	n[1]	n	n	a	n	n	a	n	vigor
Clark 63	2	1	4	81	54	4.0	3.5	5	3.0	4.0	R	R	1.0
L67-6301	3	1	4	31	28	3.5	3.0	5	2.0	4.0	S	S	3.5
L67-6330	3	1	4	16	26	3.5	3.0	5	2.4	4.0	R	R	1.5
Cutler	3	1	3			4.0	3.0	1	2.2	2.3	S	S	3.0
Kent	4	3	3			2.0	1.0	1	2.2	1.2	S	S	3.0
CX403-209	3	1	4			2.5	1.5	1	2.3	1.5	H	S	2.5
L63-0097-C3-1	4	1	4	30	--	3.5	1.5	5	4.0	5.0	S	S	4.5
L63-0123-C5-2	3	1	4	24	--	3.5	3.0	5	2.3	1.7	S	S	4.5
L66-1359	3	1	4			3.5	3.0	5	2.2	3.5	S	MR	1.5
L66-1448	4	1	4			3.5	3.5	5	2.3	3.3	R	R	1.0
L66L-144	4	1	3			4.0	2.9	4	2.0	2.7	S	S	3.0
L66L-186	4	1	3			3.0	4.0	5	4.0	2.0	S	S	2.5
L66L-191	4	1	3			4.0	4.3	5	1.6	1.2	S	S	2.5
L66L-238	3	1	4			4.5	3.5	5	1.2	2.0	S	S	2.5
L66L-257	3	1	4			4.0	3.0	5	1.5	1.6	S	MR	2.0
L66L-262	3	1	4			3.5	3.5	5	2.0	2.5	S	S	4.0
L66L-276	4	1	4			4.0	3.5	5	2.7	2.0	S	S	3.0
L66L-287	3	1	4			4.0	3.0	5	1.2	2.0	S	S	2.5
L66L-307	4	1	4			4.0	4.3	5	2.7	2.2	S	S	4.0
L66L-310	3	1	4			4.0	4.0	5	1.3	2.2	R	R	1.0
L66L-333	3	1	1			3.5	4.0	5	1.2	1.3	S	S	2.5
L66L-347	3	1	1			4.0	2.0	5	2.4	1.8	S	S	4.5
Md62-3223	4	4	2			3.0	1.5	5	1.6	1.3	S	S	2.5
Md62-3605	3	4	2			3.5	2.5	1	2.3	1.5	S	S	4.0
Md63-148-3	3	4	2			4.5	4.0	5	2.5	3.3	S	S	3.0
Md63-949-4	4	4	2			3.5	2.0	5	3.7	4.7	S	S	2.5
Md64-3953	3	4	1			3.5	3.0	5	2.5	4.5	S	S	3.0
Md64-4050	3	3	4			4.0	3.0	5	2.2	4.0	S	S	3.0
Md64-4552	3	3	4			3.5	3.0	5	2.4	4.7	S	S	2.5
SS64-2122	3	1	4			3.0	3.0	5	3.5	1.5	R	R	1.0
SS64-2124	4	1	4			3.0	2.5	5	4.2	2.0	R	R	1.0

[1] Percentage of plants with internal stem browning.

Table 82. Yield, Preliminary Test IV, 1969.

Strain	Mean of 13 Tests	Delaware	Maryland			Ohio	Indiana		Illinois
		George-town[3]	Clarks-ville	Queens-town	Link-wood	Colum-bus	Worthing-ton	Evans-ville	Edge-wood
		*				*			
Clark 63	44.4	40.7	44.0	51.1	31.7	48.7	41.7	38.9	47.0
L67-6301	45.7	46.1	42.5	52.5	33.0	31.9	49.6	47.4	47.0
L67-6330	41.1	37.0	44.0	43.3	27.1	39.2	40.0	36.0	44.5
Cutler	49.8	51.5	46.3	55.5	37.6	53.2	59.0	48.9	48.2
Kent	49.2	47.7	41.8	46.4	36.2	47.6	58.7	45.0	52.1
CX403-209	39.7	39.6	41.2	44.2	31.6	19.6	47.7	31.0	40.7
L63-0097-C3-1	43.0	46.6	43.1	48.9	37.8	48.3	55.2	43.6	46.8
L63-0123-C5-2	46.0	42.0	43.6	49.4	35.1	40.1	51.0	45.6	44.5
L66-1359	49.3	47.0	48.0	59.2	39.5	59.9	58.0	46.9	44.7
L66-1448	41.2	39.0	38.0	48.3	27.0	41.7	44.8	30.9	42.9
L66L-144	49.9	49.1	52.7	53.4	43.2	51.1	54.8	50.4	41.7
L66L-186	46.2	52.4	44.5	46.2	42.3	29.2	48.8	46.0	46.6
L66L-191	47.1	46.8	38.2	49.7	37.1	55.0	52.6	38.8	48.4
L66L-238	43.6	41.2	37.6	45.3	36.4	49.1	39.7	48.3	43.4
L66L-257	45.5	51.3	44.7	45.0	40.6	32.7	44.1	40.7	42.1
L66L-262	46.0	44.0	45.4	48.7	38.1	22.2	52.0	40.3	44.2
L66L-276	45.8	49.4	44.0	38.8	42.4	43.4	46.2	38.2	38.7
L66L-287	40.9	40.6	34.8	46.7	38.4	35.9	43.3	40.7	34.7
L66L-307	42.4	39.1	38.5	42.6	38.1	31.4	45.4	34.6	35.3
L66L-310	44.5	42.1	39.7	48.6	37.4	36.3	51.0	31.8	42.7
L66L-333	46.2	48.9	45.1	52.0	38.6	39.1	43.0	48.6	42.3
L66L-347	48.2	45.0	41.7	49.2	41.0	51.8	52.9	42.6	43.3
Md62-3223	45.8	40.9	39.2	48.3	38.0	57.4	53.9	41.4	44.3
Md62-3605	43.2	43.6	48.2	47.8	31.2	29.7	29.2	50.2	35.9
Md63-148-3	42.6	43.9	42.0	51.8	41.1	35.2	41.2	43.7	37.6
Md63-949-4	41.6	41.5	41.6	48.0	39.6	49.5	39.3	41.2	42.4
Md64-3953	45.5	46.8	41.7	50.5	33.2	41.0	50.2	40.4	43.8
Md64-4050	44.6	48.5	43.8	52.8	38.2	48.3	48.5	42.3	35.6
Md64-4552	45.8	48.2	41.7	53.4	37.8	50.3	54.3	40.6	42.7
SS64-2122	41.3	48.5	31.8	40.4	37.9	33.4	35.1	37.7	43.2
SS64-2124	41.7	51.0	32.8	46.8	41.6	29.4	43.1	33.8	44.8
Coef. of Var. (%)		-	12.0	11.1	6.8	-	14.0	18.9	7.7
L.S.D. (5%)		N.S.	8.4	9.0	5.2	-	13.6	N.S.	6.7
Row Spacing (In.)		36	30	30	38	28	38	36	38

* Not included in the mean.
1 Clay.
2 Loam.
3 Irrigated.

Table 82. (Continued)

Strain	Illinois			Missouri			Kansas			
	Trenton	Eldorado	Carbondale	Mt. Vernon	Portageville[1]	Portageville[2,3]	Manhattan	Manhattan[3]	Ottawa	Columbus
	*			*	*					
Clark 63	43.9	57.8	35.3	38.1	40.3	37.7	39.3	63.1	58.9	30.3
L67-6301	48.8	53.6	40.8	44.3	25.6	34.0	44.5	62.5	53.2	33.0
L67-6330	52.4	54.3	35.9	41.3	35.5	34.7	39.5	55.4	51.0	29.2
Cutler	58.0	61.6	45.8	45.7	21.8	40.2	40.3	72.6	59.0	31.9
Kent	56.4	65.9	47.0	45.9	17.8	39.9	47.5	64.4	63.8	31.4
CX403-209	37.1	42.4	38.7	31.6	20.5	34.3	38.2	45.9	49.6	30.8
L63-0097-C3-1	43.2	49.1	39.8	42.3	11.9	33.9	34.1	51.7	42.3	33.0
L63-0123-C5-2	52.1	55.6	39.9	36.1	13.0	34.4	47.3	58.0	55.0	38.0
L66-1359	60.0	57.6	33.2	44.5	32.6	40.1	49.9	68.8	61.8	33.6
L66-1448	47.9	40.9	34.7	35.3	34.1	36.9	44.5	55.6	54.0	37.4
L66L-144	47.6	57.7	40.8	41.7	21.9	39.5	51.4	73.5	57.0	32.5
L66L-186	50.1	59.3	46.5	36.8	25.1	37.6	39.0	59.4	51.0	33.8
L66L-191	56.4	55.3	49.2	40.1	23.1	39.3	47.1	64.9	54.9	36.9
L66L-238	53.3	49.3	43.0	34.1	22.5	44.7	44.6	50.8	54.0	30.3
L66L-257	53.6	51.7	49.0	36.6	26.0	40.0	49.3	57.1	50.9	35.8
L66L-262	50.4	57.7	43.1	40.5	28.4	41.2	39.4	56.5	55.1	35.8
L66L-276	47.8	60.3	49.0	33.6	20.0	36.2	45.4	71.8	49.5	34.7
L66L-287	53.8	51.7	35.2	34.0	17.9	33.6	38.8	52.0	46.4	35.8
L66L-307	55.5	44.9	41.2	37.2	11.7	33.8	44.4	60.9	55.4	35.8
L66L-310	51.2	50.3	41.2	35.0	32.0	41.4	53.3	56.9	46.9	36.9
L66L-333	54.5	55.0	41.4	38.9	16.0	38.4	50.6	53.0	59.1	33.6
L66L-347	48.5	57.3	46.2	37.6	11.5	40.2	45.7	70.5	59.7	35.8
Md62-3223	43.4	60.4	42.9	42.0	24.9	33.6	48.9	60.8	51.3	32.5
Md62-3605	--	54.1	41.8	41.1	11.7	34.6	39.7	58.5	51.6	38.5
Md63-148-3	38.8	43.7	37.5	39.5	19.8	31.8	37.5	58.9	55.3	31.9
Md63-949-4	35.8	47.1	33.1	37.1	17.7	28.1	39.3	54.3	48.0	38.5
Md64-3953	43.4	62.3	38.4	35.6	20.6	29.3	48.9	63.1	55.2	34.1
Md64-4050	45.8	58.3	40.7	41.2	22.0	30.6	43.8	61.8	47.3	36.3
Md64-4552	40.5	52.3	40.3	39.1	25.2	30.3	40.3	67.5	56.2	37.4
SS64-2122	49.3	51.6	45.5	38.3	23.8	33.7	42.5	54.4	50.2	33.0
SS64-2124	42.9	49.5	43.8	39.8	30.2	35.4	44.6	51.9	47.0	27.0
Coef. of Var.	8.4	7.2	12.5	28.9	19.9	9.2	9.8	9.4	8.8	8.5
L.S.D. (5%)	8.4	8.0	N.S.	N.S.	9.3	6.8	8.8	11.4	N.S.	5.9
Row Spacing	36	36	40	15	38	38	28	36	30	30

Table 83. Yield rank, Preliminary Test IV, 1969.

Strain	Mean of 13 Tests	Delaware	Maryland			Ohio	Indiana		Illinois
		George-town[3]	Clarks-ville	Queens-town	Link-wood	Colum-bus	Worthing-ton	Evans-ville	Edge-wood
Clark 63	19	26	9	9	27	10	25	22	4
L67-6301	14	16	15	6	26	25	14	6	4
L67-6330	29	31	9	28	30	18	27	26	10
Cutler	2	2	4	2	19	4	1	3	3
Kent	4	11	17	23	23	13	2	10	1
CX403-209	31	28	22	27	28	31	17	30	25
L63-0097-C3-1	22	15	14	14	17	11	4	12	6
L63-0123-C5-2	9	22	13	12	24	17	11	9	10
L66-1359	3	12	3	1	9	1	3	7	9
L66-1448	28	30	27	17	31	5	20	31	18
L66L-144	1	6	1	3	1	6	5	1	24
L66L-186	7	1	8	24	3	29	15	8	7
L66L-191	6	13	26	11	21	3	9	23	2
L66L-238	20	24	28	25	22	9	28	5	15
L66L-257	15	3	7	26	7	24	21	17	23
L66L-262	9	18	5	15	13	30	10	21	13
L66L-276	11	5	9	31	2	14	18	24	26
L66L-287	30	27	29	22	11	21	22	17	31
L66L-307	24	29	25	29	13	26	19	27	30
L66L-310	18	21	23	16	20	20	11	29	19
L66L-333	7	7	6	7	10	19	24	4	22
L66L-347	5	17	18	13	6	5	8	13	16
Md62-3223	11	25	24	17	15	2	7	15	12
Md62-3605	21	20	2	20	29	27	31	2	28
Md63-148-3	23	19	16	8	5	22	26	11	27
Md63-949-4	26	23	21	19	8	8	29	16	21
Md64-3953	15	13	18	10	25	16	13	20	14
Md64-4050	17	8	12	5	12	11	16	14	29
Md64-4552	11	10	18	3	17	7	6	19	19
SS64-2122	27	8	31	30	16	23	30	25	17
SS64-2124	25	4	30	21	4	28	23	28	8

[1] Clay.
[2] Loam.
[3] Irrigated.

Table 83. (Continued)

Strain	Illinois			Missouri			Kansas			
	Trenton	Eldorado	Carbondale	Mt. Vernon	Portageville[1]	Portageville[2,3]	Manhattan	Manhattan[3]	Ottawa	Columbus
Clark 63	22	8	27	18	1	12	25	9	6	28
L67-6301	16	18	17	4	9	21	15	11	17	19
L67-6330	10	16	26	8	2	17	23	23	20	30
Cutler	2	3	7	2	18	4	20	2	5	24
Kent	3	1	4	1	24	8	8	8	1	26
CX403-209	29	30	23	31	20	20	29	31	24	27
L63-0097-C3-1	25	26	22	5	28	22	31	29	31	19
L63-0123-C5-2	11	13	21	24	27	19	9	18	13	3
L66-1359	1	11	30	3	4	6	4	5	2	17
L66-1448	18	31	29	26	3	14	15	22	15	4
L66L-144	20	9	17	7	17	9	2	1	7	22
L66L-186	14	6	5	22	11	13	27	15	20	16
L66L-191	3	14	1	12	14	10	10	7	14	6
L66L-238	9	25	11	28	15	1	13	30	15	28
L66L-257	8	20	2	23	8	7	5	19	22	9
L66L-262	13	9	10	11	7	3	24	21	12	9
L66L-276	19	5	2	30	21	15	12	3	25	14
L66L-287	7	20	28	29	23	25	28	27	30	9
L66L-307	5	28	15	20	29	23	17	13	9	9
L66L-310	12	23	15	27	5	2	1	20	29	6
L66L-333	6	15	14	16	26	11	3	26	4	17
L66L-347	17	12	6	19	31	4	11	4	3	9
Md62-3223	23	4	12	6	12	25	6	14	19	22
Md62-3605	-	17	13	10	29	18	22	17	18	1
Md63-148-3	28	29	25	14	22	27	30	16	10	24
Md63-949-4	30	27	31	21	25	31	25	25	26	1
Md64-3953	23	2	24	25	19	30	6	9	11	15
Md64-4050	21	7	19	9	16	28	18	12	27	8
Md64-4552	27	19	20	15	10	29	20	6	8	4
SS64-2122	15	22	8	17	13	24	19	24	23	19
SS64-2124	26	24	9	13	6	16	13	28	28	31

Table 84. Maturity dates, Preliminary Test IV, 1969.

Strain	Mean of 13 Tests	Delaware	Maryland			Ohio	Indiana		Illinois
		George-town	Clarks-ville	Queens-town	Link-wood	Colum-bus	Worthing-ton	Evans-ville	Edge-wood
		*				*			
Clark 63	0	0	0	0	0	0	0	0	0
L67-6301	- .1	- 1	+ 2	0	- 1	0	+ 1	0	+ 1
L67-6330	+ 1.2	+ 1	+ 8	+ 1	+ 1	+ 5	+ 1	+ 1	+ 3
Cutler	+ 2.5	- 2	+ 9	+ 2	0	+ 5	+ 3	+ 2	+ 6
Kent	+ 6.5	+ 2	+10	+ 6	+ 5	+ 7	+ 7	+ 5	+10
CX403-209	+ 4.4	+ 2	+ 8	+ 3	+ 3	+ 8	+ 3	+ 4	+ 7
L63-0097-C3-1	- .3	- 2	- 2	0	- 1	+ 8	+ 3	- 2	- 1
L63-0123-C5-2	+ 1.5	+ 2	+ 5	+ 1	- 1	+ 9	+ 3	+ 2	+ 2
L66-1359	- .2	- 1	- 1	+ 1	- 1	+ 2	+ 1	0	0
L66-1448	- 2.1	-10	- 2	0	- 3	0	- 1	- 4	- 7
L66L-144	- .9	0	- 3	0	- 2	+ 3	+ 1	- 2	- 1
L66L-186	+ 6.8	- 1	+ 7	+ 8	+ 9	+ 3	+ 7	+ 6	+ 4
L66L-191	+ 6.1	- 1	+ 6	+ 8	+ 9	+ 5	+ 7	+ 4	+ 6
L66L-238	+ 1.8	- 9	0	+ 4	+ 3	+ 7	+ 1	0	- 2
L66L-257	+ 7.4	- 3	+12	+10	+ 9	+ 7	+ 9	+ 4	+ 6
L66L-262	+ 2.5	- 7	+ 4	+ 1	0	+ 8	+ 2	+ 1	- 1
L66L-276	+13.7	+ 6	+15	+18	+18	+ 8	+15	+ 8	+13
L66L-287	- .2	- 9	0	+ 2	+ 3	+ 8	+ 1	- 2	- 2
L66L-307	+ 3.1	- 1	+ 3	+ 3	+ 3	+ 3	+ 3	+ 2	+ 1
L66L-310	+ 3.5	- 6	+ 2	+ 5	+ 4	+ 2	+ 3	+ 2	+ 1
L66L-333	+ 3.5	- 3	+ 4	+ 3	+ 3	+ 1	+ 5	+ 2	+ 4
L66L-347	+ 6.4	- 3	+10	+ 9	+ 9	+ 2	+ 7	+ 3	+ 3
Md62-3223	+ 2.2	+ 3	+ 2	0	+ 1	+ 3	+ 5	+ 2	+ 5
Md62-3605	+ 5.0	- 1	+13	+ 8	+ 5	+ 5	+10	+ 4	+ 6
Md63-148-3	- .4	- 2	+ 1	+ 1	- 3	+ 3	+ 1	- 1	- 1
Md63-949-4	+ 6.5	+ 3	+15	+10	+ 9	+ 7	+ 9	+ 4	- 3
Md64-3953	- .1	- 2	+ 2	+ 1	0	+ 5	+ 1	- 2	+ 1
Md64-4050	+ .5	+ 4	+ 3	+ 1	0	+ 3	+ 2	+ 3	+ 2
Md64-4552	+ .7	+ 2	- 2	+ 1	+ 3	+ 7	+ 2	+ 2	+ 2
SS64-2122	+14.7	+ 9	+15	+18	+20	+11	+21	+10	+16
SS64-2124	+14.8	+ 9	+15	+18	+20	+13	+19	+12	+17
Wayne (III)		--	--	--	--	-17	--	- 5	- 8
Hill (V)		--	--	--	+28	--	--	--	+20
Date planted	5-25	6-19	5-27	5-27	5-26	5-24	5-13	5-29	5-28
Clark 63 matured	9-25	10-10	9-28	9-24	9-20	10-15	9-17	9-24	9-25
Days to mature	123	113	124	120	117	144	127	118	120

* Not included in the mean.
1 Clay.
2 Loam.
3 Irrigated.

Table 84. (Continued)

Strain	Illinois			Missouri			Kansas			
	Trenton	Eldorado	Carbondale	Mt. Vernon	Portageville[1]	Portageville[2,3]	Manhattan	Manhattan[3]	Ottawa	Columbus
	*				*					
Clark 63	0	0	0		0	0	0	0	0	0
L67-6301	+ 1	+ 2	0		+ 2	- 3	0	- 1	0	- 2
L67-6330	+ 2	+ 3	0		+ 1	- 3	+ 1	+ 1	0	- 2
Cutler	+ 5	+ 3	+1		+ 6	0	+ 1	+ 2	+ 2	+ 2
Kent	+11	+ 8	+5		+12	+ 3	+ 5	+ 6	+10	+ 5
CX403-209	+ 8	+ 4	+5		+ 6	+ 1	+ 6	+ 4	+ 6	+ 3
L63-0097-C3-1	+ 2	0	-2		+ 3	- 4	+ 1	0	+ 4	0
L63-0123-C5-2	+ 6	+ 2	-?		+ 7	- 3	+ 4	+ 1	+ 6	+ 1
L66-1359	+ 2	+ 2	+1		0	- 3	- 5	- 2	+ 4	+ 1
L66-1448	- 1	- 6	-4		- 1	- 4	+ 2	0	+ 2	0
L66L-144	- 1	- 1	-2		+ 1	- 3	- 5	0	+ 4	+ 2
L66L-186	+ 8	+ 6	+5		+11	+11	+ 3	+ 6	+10	+ 6
L66L-191	+ 9	+ 4	+3		+10	+ 9	+ 1	+ 6	+10	+ 6
L66L-238	+ 4	- 1	0		+ 8	+ 5	0	+ 3	+10	+ 1
L66L-257	+10	+ 5	+3		+11	+10	+ 6	+ 8	+10	+ 4
L66L-262	+ 5	- 1	+2		+ 8	+ 5	+ 5	+ 3	+10	+ 1
L66L-276	+16	+11	+5		+15	+20	+ 6	+11	+28	+10
L66L-287	+ 1	- 3	-4		+ 5	+ 2	- 2	0	+ 2	0
L66L-307	+ 8	+ 3	+1		+ 7	+ 7	+ 1	+ 4	+ 6	+ 3
L66L-310	+ 7	+ 3	+2		+ 7	+ 7	- 1	+ 5	+ 8	+ 4
L66L-333	+ 6	+ 3	+2		0	+ 2	+ 5	+ 5	+ 8	0
L66L-347	+ 9	+ 4	+3		+ 9	+10	+ 6	+ 7	+ 8	+ 4
Md62-3223	+ 7	+ 4	+2		+ 4	- 2	+ 7	+ 4	- 2	+ 1
Md62-3605	--	+ 1	+3		+ 5	- 1	+ 4	+ 2	+ 6	+ 4
Md63-148-3	0	- 5	-4		+ 1	- 3	+ 7	- 1	+ 2	+ 1
Md63-949-4	+ 3	+ 2	+3		+12	+ 8	+ 5	+ 6	+ 9	+ 8
Md64-3953	+ 3	+ 2	-4		+ 4	- 4	+ 2	+ 1	- 2	+ 1
Md64-4050	+ 4	+ 2	-4		+ 2	- 4	+ 2	+ 2	0	- 2
Md64-4552	+ 4	+ 3	-1		+ 1	- 4	+ 2	+ 3	0	- 2
SS64-2122	+17	+13	+6		+10	+13	+10	+15	+28	+ 6
SS64-2124	+18	+13	+6		+10	+14	+10	+15	+28	+ 6
Wayne (III)	- 3	- 7	--		--	--	- 8	-11	- 8	--
Hill (V)	+17	+17	--		--	--	+ 8	+10	+16	--
Date planted	5-17	5-28	6-4	5-19	5-14	5-12	5-27	5-20	5-14	6-6
Clark 63 matured	9-20	9-21	9-30	--	9-15	9-16	10-8	10-6	9-25	9-24
Days to mature	126	116	118	--	124	127	134	139	134	110

IDENTIFICATION OF PARENT STRAINS NOT IN CURRENT TESTS

Strain	Parentage	Generation Composited	Regional Testing
Pridesoy II	Selection made by Pride Hybrid Corn Co., Minn.	--	--
II-42-4-6	Lincoln^2 x Richland	--	--
II-42-37	Lincoln^2 x Richland	--	--
II-44-46	Hawkeye x Flambeau	--	--
II-54-139	Renville x Capital	--	--
II-54-240	(Lincoln^2 x Richland) x Korean	--	--
II-55-19	Acme x Hardome	--	--
C1069	Lincoln x Ogden. From same F_3 plant as Kent.	F_7	54-58 U.T. IV
C1079	Lincoln x Ogden. From same F_3 plant as Kent.	F_7	54-56 U.T. IV
C1128	Wabash x Hawkeye	--	54-58 U.T. II, 58,62 U.T. III
C1253	Blackhawk x Harosoy. Phytophthora resistant.	F_6	64 P.T. II
C1264	Harosoy x C1079	F_6	62-63 U.T. II
C1266R	Harosoy x C1079	F_6	62-63 U.T. IV
D49-2525	Sister strain of Lee	--	--
D53-354	D49-2525 x L46-5679	F_5	57-58 U.T. IV, 56-58 U.T. IVS
D54-2437	N48-1394 x L46-5679	F_5	57-61 U.T. IVS
FC 33.243	Rogue in Lincoln, by H. J. Anderson, Calamus, Iowa; tested as "Anderson".	--	49 U.T. III, 50 U.T. IV
L46-5679	Lincoln x Richland	--	49-50 U.T. IV
L48-7289	Seneca x Richland	--	50-51 U.T. II
L49-4091	(F_3 Lincoln^2 x Richland) x (F_1 Lincoln x CNS) Pustule resistant.	F_4	51 U.T. IV, 52-53 U.T. III
L57-0034	Clark x Adams	F_6	60-62 U.T. IV
L57-9819	Hawkeye x Lee	F_6	61 U.T. IV
L62-1926	Clark^6 x T245	F_3	--
M55-67	Grant x Acme	F_5	66 P.T. 00
M319	Lincoln x Hawkeye	F_5	58-61 U.T. I
M406	Harosoy x Norchief	F_5	64-65 U.T. 0
N48-1394	Same as Hood	--	--
0-52-903	Strain 753-1 from Sven A. Holmberg, Norrkoping, Sweden, same as PI 194.654	--	60-61 U.T. 00
PI 84.946-2	Selected from introduction from Korea	--	--
T106-6	G. ussuriensis from Manchuria	--	--
T245	PI 86.024 from Obihiro, Hokkaido Island, Japan.	--	--
W49-1982-32	Hawkeye x Wisconsin Manchu 3	F_8	57-59 U.T. I
WOS-3386	Lincoln x Flambeau	--	53-56 U.T. 0

GROWING CONDITIONS AT TEST LOCATIONS IN 1969

The following notes provide information useful in interpreting strain performance at the individual test locations.

Ottawa, Ontario, Canada. Planting was delayed about ten days by a period of cool, wet weather in the latter part of May. Below normal temperatures persisted until mid-July. Rainfall was likewise below normal in July. Tests were irrigated twice. From the period mid-July to maturity, temperatures were near or slightly above normal. Growth was good. Lodging was excessive, resulting in uneven maturity, hence no maturity observations were made.

Cooperator: Ottawa Research Station.
Soil Type: Grenville loam.
Fertilizer Application: 400 lbs. 10-20-30 plus 300 lbs. Ammonium nitrate.
Herbicide Application: None.
Soil Analysis: pH, 6.5.

Kemptville, Ontario, Canada. The tests were planted on May 22. Temperatures were below normal in May, June, and part of July while precipitation was above normal. Warm dry weather in August resulted in normal maturity and yield. Excellent yields of average quality soybeans were harvested on September 19.

Cooperator: J. D. Curtis.
Soil Type: Mountain sandy loam.
Fertilizer Application: 700 lbs. 0-15-30 fall, 1968; 100 lbs. N spring, 1969.
Herbicide Application: 3/4 lbs. Treflan and 1 lb. Linuron pre-plant-incorporated.
Soil Analysis: pH, 6.6; P, H+ 404; K, H+ 386; Mg, H- 192.

Elora, Ontario, Canada. Growing conditions were cold and wet until mid-July and warm and dry thereafter. Prolonged moisture stress occurred during the filling period.

Cooperator: University of Guelph, Crop Science Department.
Soil Type: London Loam
Fertilizer Application: 500 lbs. 5-20-20/A.
Herbicide Application: 3/4 lbs. (active) Treflan ppi + 3/4 lbs. (active) Linuron preemerge.
Soil Analysis: pH, 7.8; OM, Medium; P, 147; K, 219; Ca, High; Mg, 224.

Ridgetown, Ontario, Canada. Emergence was uniform and seedling growth was slow following planting because of cool, wet conditions in late May and early June. Above average temperatures and excessive moisture during late June and July resulted in succulent vegetative growth. As a result, considerable early lodging occurred. Normal temperatures were recorded in August but moisture was limited during the latter part of the month. September brought cool, wet conditions. This, coupled with the severe lodging problem, delayed maturity.

Cooperator: Ridgetown College of Agricultural Technology.
Soil Type: Brookston clay loam.
Fertilizer Application: 900 lbs./A. of 3-11-11 broadcast.
Herbicide Application: Amiben, 4 lbs. active/A. incorporated.

Harrow, Ontario, Canada. Seeding was delayed until June 10 due to above average precipitation. Uniform stands were obtained but growth was slow during the early part of the growing season. July precipitation was 8.69 inches compared to the average of 2.59 inches. This resulted in some flooding but no serious damage. Growing conditions during August and September were favorable for rapid growth and maturity. All plots were harvested prior to the first killing frost (October 23). Lodging was not a serious problem. Yields were average for this location.

Cooperator: Canada Department of Agriculture Research Station.
Soil Type: Brady sandy loam.
Fertilizer Application: 500 lbs./A. 5-10-15.
Herbicide Application: Amiben 2 1/2 lbs./A.

Vail, New Jersey. Soybeans were planted on June 13 in soil with adequate moisture. Rainfall through the growing season was consistent but not excessive. Poor herbicide application resulted in some weed growth, but weeds were not a real problem. Growth was normal. No problems were encountered due to insects or diseases. Frost was not a factor.

Cooperator: Walter Jones, Jr., Farmer, and C. Fred Lorenzo, Sr., County Agent, Warren County.
Fertilizer Application: 300 lbs. 5-20-20.
Herbicide Application: DNBP (dinitro).

Adelphia, New Jersey. The planting was made on May 29 in soil with good moisture. Emergence was rapid and growth was normal until mid-July. June rainfall was 7.9 inches with 4.6 inches falling on June 14. July rainfall was 8.9 inches. From July 21 until August 6, rainfall totalled 8.2 inches. During this 17-day period, the weather was cloudy and humid when not actually raining. Excessive, spindly growth developed on the top of normal sized plants. The excessive growth contributed nothing to yield, but did contribute to lodging. The remainder of August was dry. Viruses were general in the field with most lines exhibiting some mottling. Frost was not a factor.

Cooperator: E. C. Visinski, Superintendent, Soils and Crops Research Center.
Soil Type: Freehold loam.
Fertilizer Application: 300 lbs. 0-20-20.
Herbicide Application: 1 lb. Treflan/A.

Centerton, New Jersey. The trial was seeded on June 11 in soil which was somewhat dry. Rain within five days resulted in good emergence. July rainfall totalled 11 inches, with most of it occurring during the latter half of the month. The first 10 days of August continued to be wet, but the remainder of the month was dry. Growth was normal and sturdy. No real problems developed with insects or diseases. No outstanding factors developed to affect growth. Vegetative development was adequate but not excessive. Frost was not a factor.

Cooperator: Joseph Steinke, Assistant to Director, South Jersey Research Center.
Fertilizer Application: 250 lbs. 10-20-20.

Georgetown, Delaware. Rainfall was only 1.41 inches in May and 1.95 inches in June. All tests were planted June 19 when soil moisture became adequate. Heavy rains occurred in July, 9.8 inches and August, 8.73 inches. September rainfall was deficient and test plots were irrigated on August 28 and September 19 with 2 inches each time. With rainfall occurring on 21 days during July and August there were many days of little sunlight. Temperatures were below normal for these months. Plants made good vegetative growth and considerable lodging occurred, especially in Group V maturity strains. However, seed quality was good overall in spite of the killing frost on October 24 which damaged some Group V strains. All plots were sprayed once for corn earworm.

Soil Type: Norfolk sandy loam.
Fertilizer Application: 40-40-40 plowed down in spring.
Soil Analysis: pH, 6.2; OM, 1-2%; P, 330 Very high; K, 180 Medium; Ca, 660; Mg, 137; High.

Taneytown, Maryland. Growing conditions were poor for early growth. Soybeans were planted after barley and a drouthy period prohibited plowing until July 1. Late rains saved the test from total loss. The soil was of high fertility as indicated by the 100 bushel per acre barley yields this year.

Cooperator: Earle Stonesifer.
Soil Type: Keysville silt loam.
Fertilizer Application: 500 lbs. 0-20-20.
Herbicide Application: Dynap.
Soil Analysis: pH, 6.7; P, 210 High; K, 189 Medium; Mg, 220 Very high.

Clarksville, Maryland. Early growing conditions were excellent. Weed control was nearly perfect and germination, emergence, and seedling growth were very good. Heavy rains in late July and August caused early lodging and came at the critical time of flowering for both Maturity Groups III and IV.

Cooperator: Thomas Blaney.
Soil Type: Manor silt loam.
Fertilizer Application: 500 lbs./A. 5-20-20.
Herbicide Application: Vernam 3 lbs./A. 10 days prior to planting + Dynap at cracking.
Soil Analysis: pH, 6.2; P, 135 Medium; K, 180 Medium; Mg, 224 High.

Queenstown, Maryland. Seed was sown the last week of May under almost ideal conditions. Rains followed planting and by the last week of June, the plants were tall and lush and had closed in the 30 inch rows. There were very few weeds due to the use of Vernam. Heavy rains the last part of July (7.5 inches) and the first part of August (9 inches), accompanied by high wind caused severe lodging from which the plants never recovered. September brought early rain during the first ten days and cooler than normal temperatures. October was ideal for harvesting with only traces of rain. Late maturing lines were frosted October 24. As far as harvesting is concerned, November was a mess--heavy rains and cold weather. The result--shattering and moldy beans.

Soil Type: Mattapex silt loam.
Fertilizer Application: 700 lbs. 0-15-30, spring.

Herbicide Application: Vernam two weeks prior to planting.
Soil Analysis: pH, 6.6; P, Medium; K, High.

Linkwood, Maryland. Perfect planting conditions the last week of May were followed by more than two inches of rain the first part of June. The beans emerged early and appeared to be vigorous plants. A post-emergence herbicide (Lorox) did a good job of slowing the growth and stunting the plants--many were severely injured and some entire plots were "wiped out". In spite of the herbicide the fields were very weedy throughout most of the summer. Rain started the last part of July (eight inches after the 19th) and continued until the middle of August (10 inches by the 20th). September was dry and cool after the first week and October provided excellent harvest weather with only traces of rain. November was cold and wet which increased shattering and incidence of moldy beans. In general, yields were lower than normal.

Soil Type: Sassafras silt loam.
Fertilizer Application: 300 lbs. 0-15-30, spring.
Herbicide Application: Lorox--post emergence.
Soil Analysis: pH, 6.2; P, High; K, High.

Snow Hill, Maryland. Growing conditions were good throughout the growing season except for heavy rains in July. A serious infestation of Mexican bean beetle damaged soybean foliage and caused serious reductions in soybean yields particularly of the late maturing varieties.

Cooperator: D. Northram.
Soil Type: Mattapex silt loam.
Fertilizer Application: 500 lbs. 0-20-20.
Herbicide Application: Vernam 3 lbs./A.
Soil Analysis: pH, 6.5; P, 270 Very high; K, 96 Medium; Mg, 94 Medium.

Snow Hill, Maryland (After barley). Early barley harvest allowed the planting of these double crop beans at a reasonable time. In addition, rainfall was generally adequate for good growth. The cooperator uses a rotation of tomatoes-barley-soybeans and thus has accumulated P_2O_5 in high quantities. Root-knot nematodes were widespread in the test plots.

Cooperator: Douglas Carmean.
Soil Type: Sassafras sandy loam.
Fertilizer Application: 300 lbs./A. 5-15-30 (on barley).
Herbicide Application: Treflan 1 lb./A.
Soil Analysis: pH, 6.4; P, 580 Very high; K, 114 Medium; Mg, 166 High.

Hoytville, Ohio. Late spring rainfall delayed planting until June 14, 1969. Hoytville missed the heavy July 4 storm and was generally dry throughout the growing season, resulting in below normal yields.

Cooperator: P. E. Smith.
Soil Type: Hoytville clay.
Fertilizer Application: None.
Herbicide Application: Amiben pre-emergence.
Soil Analysis: pH, 7.6; P, 16 lbs./A. (available); K, 298 lbs./A. (exchangeable); Ca, 5995 lbs./A. (exchangeable); Mg, 794 lbs./A. (exchangeable).

Wooster, Ohio. The planting date of May 16, 1969 was about normal and the beans had a good start. There was excessive moisture during the July 4 storm and some soil erosion occurred. No soil moisture stress occurred during the growing season which was reflected in better than normal yields.

Cooperator: P. E. Smith.
Soil Type: Wooster silt loam.
Fertilizer Application: None.
Herbicide Application: Amiben pre-emergence.
Soil Analysis: pH, 6.8; P, 100 lbs./A. (available); K, 367 lbs./A. (exchangeable); Ca, 2170 lbs./A. (exchangeable); Mg, 428 lbs./A. (exchangeable).

Columbus, Ohio. Due to wet soil conditions, planting was delayed until May 24, 1969. No serious soil moisture stress occurred during the growing season. Excess soil moisture from beans, rain and winds on July 4, 1969 resulted in heavy vegetative growth and poor weed control. Yields were still above average.

Cooperator: P. E. Smith.
Soil Type: Miami-Brookston silt loam.
Fertilizer Application: 500 lbs./A. of 0-20-20 pre-plant.
Herbicide Application: Amiben pre-emergence.

East Lansing, Michigan. At harvest it became obvious that meaningful yield and maturity data for Uniform Tests O-II and Preliminary Tests O-I could not be obtained because of herbicide damage.

Dundee, Michigan. No unusual climatic conditions occurred during the growing season. Rainfall was slightly below normal during the month of August.

Cooperator: Russell Haupt.
Soil Type: Silty clay loam.
Herbicide Application: Amiben.

Knox, Indiana. Planting was June 6, somewhat later than usual for this location. Soil condition was excellent at planting and stands were good. Growth was excellent and yields were above average. Rainfall averaged 4.30 inches above normal for the months of June and July combined. Yield was depressed by below average rainfall of 2.21 inches in August and 0.35 inches in September. There was no more than a trace of precipitation from August 9 until September 6. There were 21 summer days with temperatures of 90° or above with June, July, and August having 4, 8, and 6 of these hot days, respectively. Generally, temperatures were near normal. Harvest was delayed until October 23 due to rain following maturity. Harvest conditions were fairly good. Frost occurred after all strains were mature. Brownspot and downy mildew were very light. No other diseases were observed.

Cooperator: Frank Pulver.
Soil Type: Maumee loam.
Fertilizer Application: 200 lbs. of 6-24-24 + 40 lbs. N/A.
Herbicide Application: None.
Soil Analysis: pH, 6.6; P, 35 lbs./A.; K, 135 lbs./A.

Bluffton, Indiana. Planting was timely on May 26 with good planting conditions in moist soil. Emergence was rapid and stands were good. Precipitation was 2.88, 2.07, and 1.93 inches above normal in June, July, and September, respectively, but 2.42 inches below normal in August with only a trace of precipitation from August 9 to September 16. Harvest conditions were fairly good. Harvest was delayed until early October and also interrupted by late September rains. Temperatures were near normal throughout the growing season. There were 21 days with temperatures of 90° F or above with four, eight, and six of these in June, July, and August, respectively. Light and scattered phytophthora was observed throughout the plot. Brownspot was present in moderate amounts and downy mildew was very prevalent throughout the plot. Mildew infection averaged from 1.3, resistant, to 5.0 very severe. There was a moderate amount of lodging. Yields were somewhat below average, and well below expected in relation to plant growth. The lack of precipitation following August 9 appeared to be an important factor in reducing yields. This test was in 30-inch rows with single-row plots. Multiple-row plots were not used since the cooperator changed to 30-inch rows just ahead of planting.

Cooperator: Gerald Bayless and Sons.
Soil Type: Nappanee silt loam.
Fertilizer Application: 150 lbs./A. 5-20-20 + 7 lbs. Mn/A. in the row.
Herbicide Application: 11 lbs. Amiben granules/A.
Soil Analysis: pH, 6.6; P, 41 lbs./A.; K, 300 lbs./A.

Lafayette, Indiana. Planting was from May 24 to 27, a little later than hoped for at this location. Soil conditions were excellent for planting. Emergence was rapid and stands excellent. Growth was excellent with little or no lodging evident until a 2.33 inch rain occurred August 10 which caused a marked amount of lodging in most strains. Rainfall distribution was rather good through most of the season with 1.63 inches above normal and 1.09 inches below normal in August. Following the 2.33 inch rain August 10 there was no precipitation until September 4. Temperatures were near normal but a little cool throughout the growing season with only four, four, and two days with 90° F or above in June, July, and August, respectively. A moderate amount of brownspot occurred throughout the plot. Other diseases were negligible. Harvest was interspersed with rains but generally most tests were harvested under fairly good conditions. Yields were the best ever at Lafayette with many strains averaging 60 bushels per acre or above, and one experimental strain reaching 70 bushels per acre. The previous year of especially good yield was in 1965 on the same field. Late Group III and Group IV varieties were generally somewhat lower in yield than earlier varieties. These later varieties may have been affected by lack of moisture in late August and early September.

Cooperator: O. W. Luetkemeier.
Soil Type: Chalmers silty clay loam.
Fertilizer Application: 600 lbs. 0-0-60/A. plowed under in fall of 1968, 187 lbs. 5-20-20 + 5% Mn in row.
Herbicide Application: Treflan at recommended rate.
Soil Analysis: pH, 6.3; P, 38 lbs./A.; K, 375 lbs./A.

Greenfield, Indiana. Planting was somewhat late on May 28. Emergence was rapid and stands were good. Rainfall was 3.08 inches above normal in July, normal in June, 0.53 inches below normal in August, and 0.85 inches above normal in September. Temperature was near normal throughout the growing season. There were five, six, three, and two days of 90° F or above in June, July, August, and September, respectively. The growth and condition of this plot was about the best ever at this location. Yields were well above average. Phytophthora damage was light to moderate throughout the plot. There was a light to moderate infection of brownspot. Other diseases were of little or no consequence. All varieties matured ahead of frost. Harvest conditions were very good but delayed until October 17 due to fall rains.

Cooperator: Mrs. Raymond Roney.
Soil Type: Brookston-Crosby complex.
Fertilizer Application: 125 lbs. 6-24-24 in the row.
Soil Analysis: pH, 6.1; P, 9 lbs./A.; K, 150 lbs./A.

Worthington, Indiana. Planting date of May 13 was normal for the location. Planting conditions were excellent. Emergence varied from good to very poor in different parts of the field. The poor emergence may have been due in part to the higher than recommended rate of Treflan applied. Hard rains, one and five days after planting, probably were the major cause of poor emergence. Precipitation was slightly below normal in June, 1.50 inches above normal in July, and 1.13 and 2.16 inches below normal in August and September, respectively. There were 9, 10, and 3 days of temperatures above 90° F during June, July, and August, respectively. Growth was excellent during the season and harvest conditions were good on all tests. Average yields were the highest ever attained at this location, exceeding the record yields of the previous year.

Cooperator: Frederic Sloan.
Soil Type: Genesee silt loam.
Fertilizer Application: 200 lbs./A. 6-24-24 PD, 150 lbs./A. 6-24-24 in row, 200 lbs./A. 5-15-25 with Treflan.
Herbicide Application: 1 qt. Treflan/A.
Soil Analysis: pH, 7.7; P, 112; K, 240.

Evansville, Indiana. Planting on May 29 was approximately two weeks late for this location. Planting conditions were good in a moist soil. Emergence was fair and stands were noticeably thin in many of the plots. Precipitation was 1.8 and 1.4 inches below normal in May and June, about normal for July, and 2.7 and 1.8 inches below normal in August and September. Temperatures exceeded 90° F on 14, 14, and 7 days in June, July, and August. Manganese deficiency symptoms were apparent at full bloom stage and persisted through the rest of the growing season. Lodging was moderate by late August and was severe in some tests by harvest. Harvest conditions were good. The thin stands and manganese deficiency are believed to have reduced yields to below average for the location.

Cooperator: Bernard Wagner.
Soil Type: Montgomery silty clay loam.
Fertilizer Application: 400 lbs./A. 4-10-10 in row.
Herbicide Application: 1 pt. Treflan.
Soil Analysis: pH, 6.0; P, 56; K, 270.

Lexington, Kentucky. Plant growth was excellent during the growing season. Precipitation in May, June, and July was very near normal. Temperature in May was one degree above normal while temperatures in August and September were one degree below normal. Precipitation in August was 2.75 inches above normal while September was very dry (2.31 inches below normal). Most varieties tended to make vigorous vegetative growth which led to early lodging for some varieties. Weed control was good. There were no serious insect or disease damage. Stands were good on all plots.

Soil Type: Burgin silt loam.
Fertilizer Application: None.
Herbicide Application: Treflan.
Soil Analysis: pH, 6.1; P, High; K, High.

Henderson, Kentucky. Plant growth was excellent during the growing season, except for being too wet in June and early July, and too dry in September. Cultivation was shallow and weed control was good. Harvesting conditions were good. No serious insect damage or diseases were observed. Killing frosts came in late October, too late to seriously hurt any varieties. The drouth in September may have hurt some of the very late varieties in yield. Stands were good on all plots.

Cooperator: Joe Toy.
Soil Type: Sharkey silt loam.
Fertilizer Application: None.
Herbicide Application: Alanap plus CIPC.
Soil Analysis: pH, 5.9; P, High; K, Low.

Ashland, Wisconsin. The nursery was planted May 14, which is about ten days earlier than normal. Very drouthy conditions prevailed and there was only .06 inches of moisture during the balance of the month. During this period only a few beans emerged. Most emergence occurred after we received 1.33 inches of rain between June 1 and 5. Rainfall was below normal during April and May and continued below normal during June and July. Late June and July were very dry. Rainfall records for July show that we received 74% of normal, however 60% of this amount fell after the 27th of the month. From that time on through August, moisture was not excessive but there was ample rainfall, slightly above normal during August. September was a very wet month and presented problems in getting into the fields. Temperatures during the season were also erratic with April, May, August, and September above normal and June and July below normal. As our greatest amount of growth occurs during June and July, bean heights were held down. The cool dry growing period held weed growth down also and no diseases of any consequence were noted.

Cooperator: G. E. Tenpas.
Soil Type: Clay loam.
Fertilizer Application: 170 lbs. 6-24-24 drilled in before seeding.
Herbicide Application: None.

Spooner, Wisconsin. The 1969 growing season was generally below normal for good soybean production. Rainfall was not very well distributed and was below normal. The nurseries were planted May 28 under favorable soil conditions and emergence of the beans occurred June 5 to 7. Rainfall in June was 1.77 inches below normal but distribution was very good, temperatures were seven degrees below normal. There were 4.77 inches of rainfall in July, .82 inches above normal, and distribution was excellent; temperatures were about three degrees below normal. Rainfall in August

was very low, only 1.32 inches accumulating and 1.04 inches of this occurring on August 5 and 6. Temperatures were over two degrees above normal for the month. The nursery was irrigated August 16 and 29. Temperatures in September were normal but rainfall was 1.9 inches below normal. The total for the month was 1.29 inches with no substantial rainfall on any day or period.

Cooperator: Carl O. Rydberg.
Soil Type: Pence sandy loam.
Fertilizer Application: 250 lbs. 5-20-20/A. in row before planting.
Soil Analysis: pH, 6.5.

Durand, Wisconsin. The plots were discarded due to extreme drouth.

Madison, Wisconsin. The nursery was planted May 20. Emergence was on May 31 and stands were excellent. Rainfall was .56 inches below normal--5.49 inches above normal, .08 inches above normal, and .90 inches and 1.97 inches below normal in May, June, July, August, and September, respectively. Temperatures were slightly above normal in May and August and 6.6, 1.5, and 1.5 degrees F below normal in June, July, and September, respectively. Cool, wet weather in June resulted in a heavy growth. Drouth during the latter part of August and September reduced yields, especially of late maturing varieties. Disease and insects were not a problem.

Cooperator: Wisconsin Experiment Station.
Soil Type: Miami silt loam.
Fertilizer Application: 200 lbs. of 0-20-20.
Herbicide Application: 2 lbs. Amiben.
Soil Analysis: pH, 6.4; OM, 26; N, -; P, 80; K, 160.

DeKalb, Illinois. Good seedbed and plenty of moisture. On August 5, plots starting to lodge and downy mildew showing up. A wet cool year which may have reduced yields. Real good weed control. No insect problems. Plots harvested October 24. Lodging minimal although much more severe in other fields. Used 4-row plots, 30" row spacing, harvested middle two rows, three replications.

Cooperator: R. R. Bell, Northern Illinois Research Center.
Soil Type: Flanagan silt loam.
Fertilizer Application: None.
Herbicide Application: 1 qt./A. Treflan.
Soil Analysis: pH, 6.7; P_1, 38; P_2, 130+; K, 272.

Pontiac, Illinois. Excellent seedbed. On August 1 very few weeds, some lodging observed. Moisture adequate. Harvested October 4. Used two-row plots, 38 inch row spacing, harvested both rows, three replications. Lodging moderate.

Cooperator: Donald Alltop.
Soil Type: Dodgeville silt loam.
Fertilizer Application: None.
Herbicide Application: 1 qt./A. Treflan.
Soil Analysis: pH, 6.0; P_1, 23; P_2, 35; K, 400.

Urbana, Illinois. Planting was on May 16 in a moist but very trashy seedbed. A heavy growth of alfalfa had been plowed under the first part of May, and this created problems all year long. Stands were poor and there was a moisture deficit most of the gorwing season. Growth was poor to very poor. Downy mildew was heavy and general. Brown spot was slight to moderate. There was some premature dying in some varieties such as Calland.

Cooperator: M. G. Oldham, Illinois Agricultural Experiment Station.
Soil Type: Flanagan silt loam and Drummer silty clay loam.
Herbicide Application: 24 oz. of Treflan incorporated per acre.
Soil Analysis: pH, 6.2; P_1, 103, P_2, 125+; K, 288.

Girard, Illinois. Planting was timely on May 20 in a moist excellent seedbed. Moisture was favorable all season. Some slight hail damage and bacterial blight were observed in early July. Stands were excellent. Lodging started in late July and was severe before maturity. There was little leaf feeding or disease. Rain delayed harvest but shattering was not a problem.

Cooperator: Lloyd Brothers.
Soil Type: Harrison silt loam.
Fertilizer Application: None.
Herbicide Application: Amiben banded.
Soil Analysis: pH, 5.6; P_1, 152; P_2, 125+; K, 506.

Edgewood, Illinois. Planting was on May 28 in a cloddy, moist seedbed. Emergence was only fair because of excess rain. Stunting was severe in some plots because of the excess water from time of planting through the end of August. Rain also delayed harvest. Downy mildew was heavy throughout the field on susceptible varieties. Bacterial pustule and bacterial blight occurred in small areas throughout the field. Phytophthora killing and stunting were observed. Large numbers of grasshoppers were observed in mid-July and increased in numbers through frost.

Cooperator: John A. Wilson.
Soil Type: Cisne silt loam.
Herbicide Application: Granular Amiben banded.
Soil Analysis: pH, 6.0; P_1, 32; P_2, 68; K, 150.

Trenton, Illinois. Planting was timely on May 17. Stands were fair to very poor because of two weeks of cold wet weather after planting. Some replanting of border rows had to be done. There was stunting from excess water. Bacterial pustule was slight to severe. Severe alternaria leafspot occurred in small areas. Brown spot was slight on lower leaves. Two-row plots were harvested from three replications. Uniform Tests III-IV plots were bordered, and Uniform Test II plots were unbordered because of their more restricted growth.

Cooperator: Fred Bergmann.
Soil Type: Harrison silt loam.
Herbicide Application: Granular Amiben banded.
Soil Analysis: pH, 6.7; P_1, 36; P_2, 125+; K, 234.

Eldorado, Illinois. Planting was on May 28 in an excellent but tight seedbed. Moisture deficiency was never a problem. At times the field was saturated, with soft mud up to eight inches deep. There was no apparent stunting observed. Perennial weeds were a problem. Growth was excellent. Cucumber beetles, leaf hoppers, lady bugs, thrips, and bean leaf beetles, were present in varying numbers throughout the growing season. Lodging began in mid-July but did not get as bad as it normally does for this location. Bacterial pustule was slight to severe, downy mildew heavy and general, bacterial blight slight, and a scattering of stem canker.

Cooperator: Marshall Grisham.
Soil Type: Harco silt loam.
Fertilizer Application: 150 lbs./A. of 7-21-7.
Herbicide Application: Liquid Amiben banded.
Soil Analysis: pH, 6.2; P_1, 40; P_2, 100; K, 245.

Carbondale, Illinois. Planting was on June 4 in a fair seedbed. Emergence was very good. Growth was excellent all season due to an abundance of rainfall. The center two rows of four-row plots were harvested from three replications. Yields were very high ever though moderate lodging was noted during the latter part of the growing season. Seed quality was good at this location.

Soil Type: Stoy silt loam.
Fertilizer Application: 0-110-180.
Herbicide Application: 1 quart Treflan/A. incorporated.
Soil Analysis: pH, 6.5; OM, 1.3%; P_1, 80; K, 300.

Miller City, Illinois. Planting on May 15 was timely for this location. The seedbed was good with moisture within one-fourth inch of the surface. Growth and stands were good although cyst nematode apparently caused moderate stunting and lowered yields in some plots of susceptible varieties. Downy mildew was moderate to heavy and brown spot defoliated the lower half of some plots. There was very little lodging.

Cooperator: M. B. Patton.
Soil Type: Riley fine sandy loam.
Herbicide Application: 1.5 qts. of Treflan incorporated per acre.
Soil Analysis: pH, 5.8; P_1, 107; P_2, 125+; K, 303.

Crookston, Minnesota. Planting was done in late May in a reasonably good seedbed. Moisture adequate most of the summer. Mid-summer temperatures somewhat under normal. Progress of plants somewhat delayed. Killing frost unusually late, permitting most genotypes to reach maturity. Chlorosis apparent in some varieties. Weed control somewhat less than desirable, even through Treflan applied preplant. This location is about 40 miles north of the edge of important soybean production but provides good information on maturity of Group 00 material and on chlorosis.

Soil Analysis: pH, 8.0; OM, high; P, 140 lbs./A.; K, 450 lbs./A.

Morris, Minnesota. Planting done in an excellent seed bed on May 14 and weed control very good. Moisture conditions good until August, resulting in good plant growth. Rainfall very light in August and September. Yields reduced from mid-summer prospects though nearly normal for the location. Maturity reached several weeks before frost.

Soil Analysis: pH, 6.0; OM, Very High; P, 23; K, 300.

St. Paul, Minnesota. Planting done on May 8 in an excellent seed bed on very fertile soil. Good stands with very good early growth. Only moderate lodging. Rainfall very limited during the summer. On September, the deficit from April 1 was nearly seven inches. Group 00 and 0 tests suffered least from drouth, giving near normal yields, though much below the potential shown on August 1. Group I yields were appreciably reduced by heat and drouth in late August and early September.

Soil Analysis: pH, 6.2; OM, Medium; P, 200+, K, 600+.

Lamberton, Minnesota. A very favorable growing season at this location. Highest average yields of any test location in the state in 1969. Planting done on May 26 in a good seedbed. Moisture was adequate most of the growing season and weeds were controlled. All varieties matured well ahead of killing frost. This station lies in the midst of a heavy soybean production area of the state.

Soil Analysis: pH, 6.5; OM, High; P, 27; K, 300.

Waseca, Minnesota. Planting was done in a fairly good seedbed on May 30. Wet soil conditions precluded earlier land preparation and planting. Stands were very good and weed control good. Growth was normal with very little moisture stress. Yields were normal or above for the location. This is our most dependable test location in Minnesota. Plots all matured before frost.

Soil Analysis: pH, 6.5; OM, High; P, 40; K, 210.

Sutherland, Iowa. This nursery was planted May 27 with good soil moisture. Below normal temperatures persisted through the month of June but moisture and temperature was near normal the remainder of the growing season. The nursery was considered good for making strain comparisons.

Cooperator: Northwest Iowa Experimental Association.
Soil Type: Primghar silt loam.
Fertilizer Applications: None.
Herbicide Application: Treflan.
Soil Analysis: pH, 7.1; OM, High; N, 26 lbs./A.; P, 17 lbs./A.; K, 132 lbs./A.

Kanawha, Iowa. The nursery was planted May 28 with good soil moisture; however, the seedbed was only fair. Temperature during the month of June was seven degrees below normal and precipitation was 3.5 inches above normal. The remaining months of the growing season were near normal for both temperature and precipitation. Plots were kept weed-free and growth was generally good. This nursery was considered good for making strain comparisons.

Cooperator: Northern Iowa Experimental Association.
Soil Type: Webster silty clay loam.
Fertilizer Application: None.
Herbicide Application: Treflan.
Soil Analysis: pH, 6.4; OM, High; N, 25 lbs./A.; P, 58 lbs./A.; K, 114 lbs./A.

Clarence, Iowa. This nursery is located in east central Iowa on fairly productive soil. Planting was completed on May 23. Stands were fair and plots were kept weed-free. Moisture was excellent during the growing season. Temperature was 5.0 degrees below normal in June but was near normal for the remaining growing months. Growth, yield, and general response was fair. This nursery was considered good for making strain comparisons.

Cooperator: Richard Elijah.
Soil Type: Muscatine silty clay loam.
Fertilizer Application: None.
Herbicide Application: Treflan.
Soil Analysis: pH, 6.8; OM, High; N, 32 lbs./A.; P, 49 lbs./A.; K, 236 lbs./A.

Ames, Iowa. Soil moisture was good at planting time. Moisture levels were good throughout the growing season. Temperatures during the growing season were near normal. A hail storm at the time when Chippewa material was mature appeared to have little effect on making adequate strain comparisons of the group material tested at Ames.

Cooperator: Agronomy Farm, Agricultural Experiment Station.
Soil Type: Nicollet silt loam.
Fertilizer Application: 0-80-80.
Herbicide Application: Amiben broadcast.
Soil Analysis: pH, 6.6; OM, High; N, 37 lbs./A.; P, 42 lbs./A.; K, 140 lbs./A.

Ottumwa, Iowa. This nursery is in southeastern Iowa on flat, very productive Haig silty clay loam. The nursery was planted May 26. Moisture and temperature conditions were near normal during the growing season except for June which had a mean temperature of 6.0 degrees below normal and 2.5 inches of rain above normal. Hail damage of 11% occurred at stage 2.5. Plots were kept weed-free and agronomic responses were considered good for making strain comparisons.

Cooperator: A. E. Newquist.
Soil Type: Haig silty clay loam.
Fertilizer Application: None.
Herbicide Application: Treflan.
Soil Analysis: pH, 6.4; OM, Medium; N, 22 lbs./A.; P, 52 lbs./A.; K, 152 lbs./A.

Red Oak, Iowa. This nursery is located in southwest Iowa and is typical of the rolling terrain frequented by terraces. Temperature and precipitation were near normal during the growing season. Growth, yield, and general response was good for making strain comparison.

Cooperator: Howard Jackson.
Soil Type: Marshall silt loam.

Fertilizer Application: None.
Herbicide Application: Treflan.
Soil Analysis: pH, 6.3; OM, High; N, 29 lbs./A.; P, 28 lbs./A.; K, 424 lbs./A.

Spickard, Missouri. Wet weather delayed planting until May 28. Stands were good but weed control was not perfect. Growth was reasonably good throughout the season but yields were not exceptionally high. Lodging was probably increased in Group III by a late wind and rain storm.

Soil Type: Seymour silt loam.
Fertilizer Application: 10-50-50.
Herbicide Application: 2 lbs. Amiben.
Soil Analysis: pH, 5.3; OM, 3.5; P, 134; K, 300; Ca, 5200; Mg, 580.

Columbia, Missouri. Wet weather delayed planting until May 29. The seedbed was poor because the ground was worked too wet. Two days after planting, 4.5 inches of rain compacted the soil and caused considerable erosion. Stands were not good. A four inch rain two weeks later did not improve the soil conditions. After this, the temperatures increased and rainfall decreased considerably. Growth was poor. The stands in Groups I and II were considered to be too poor for reliable yield information. A late hailstorm shattered Groups III and IV so that they, too, were abandoned.

Soil Type: Mexico silt loam.

Mt. Vernon, Missouri. Wet weather caused planting to be delayed until May 19. Stands were good but sedges and cockleburs were a problem, particularly in several areas of the field. Early growth was good but moisture was somewhat limiting throughout the rest of the season.

Soil Type: Huntington silt loam.
Herbicide Application: 2 1/2 lbs. Amiben.

Portageville, Missouri (Loam and Clay). Planting of the uniform nurseries was during mid-May after the soil temperature was favorable for rapid germination. The seed was planted on pre-shaped beds after an application of Treflan was incorporated. Moisture conditions were optimum for rapid growth and conditions remained rather favorable throughout the growing season with the exception of dry weather in July and August. Supplemental water was applied to the loam soil during July; however, facilities were not available for irrigation on the clay soil. A minor infestation of cyst nematode existed on the test but little visual damage was apparent. A heavy infestation of southern blight was present on the clay soil which resulted in poor yields on that soil. Optimum weather conditions persisted throughout harvest.

Cooperator: University of Missouri Delta Research Center.
Soil Type: Salix silt loam and Sharkey clay.
Fertilizer Application: 0(N) - 50(P) - 50(K).
Herbicide Application: Treflan.
Soil Analysis: Loam--pH, 5.9; OM, 2.1 (Medium); P, 307 (VVH); K, 350 (VVH);
Ca, 3600 (H); Mg, 400 (H).
Clay--pH, 6.5; OM, 2.8 (Medium); P, 326 (VVH); K, 430 (VH);
Ca, 5900 (H); Mg, 920 (H).

Portage la Prairie, Manitoba. Very cool weather during May, June, and the first part of July resulted in very slow growth. The stand, however, was not seriously affected. Considerably above average temperature from mid-July through August and half of September resulted in almost mature soybeans before the first killing frost on October 16th. The yields were quite good. No serious disease or insect problems were encountered.

Cooperator: Canada Department of Agriculture Special Crops Sub-station.
Soil Type: Riverdale silty clay loam.
Fertilizer Application: None.
Herbicide Application: None.

Winnipeg, Manitoba, Canada. The soybean tests were damaged by fall frosts and consequently were not harvested.

Morden, Manitoba, Canada. Soybeans were planted May 13 and were all matured by the end of September. Emergence and growth through May and June were very slow due to very cold weather. The latter half of July, August, and the first half of September were considerably above normal in temperature with the result that degree days above 50° F for the season were only slightly below average. Precipitation for the period was only 8.2 inches compared to 10.7 on the average for the period May 1 to August 31. During August, when temperatures were high, moisture was short. This drouth in August and the poorer stands resulting from low spring temperatures are believed to be responsible for comparatively moderate yields.

Cooperator: Research Station, Canada Department of Agriculture.
Soil Type: Morden heavy clay loam.
Fertilizer Application: 200 lbs. of 27-14-0.
Herbicide Application: Treflan at 1 lb./A.

Fargo, North Dakota. The planting date of May 9 was relatively early this year. However, abnormally cool temperatures in the spring and early summer slowed plant growth until July. A hot dry August lowered the yield potential and hastened maturity of Groups 00 and 0. These lines were unable to take advantage of the longer growing season caused by the relatively late killing frost. Amiben provided good weed control.

Cooperator: North Dakota State University.
Soil Type: Fargo clay.
Fertilizer Application: None.
Herbicide Application: Amiben 2 lbs./A.

Milbank, South Dakota. This test in northeastern South Dakota was not a good one due to extreme lack of soil type uniformity in the test plot area, lack of moisture, and generally undesirable growing conditions during much of the season.

Cooperator: A. O. Lunden.
Soil Type: Beadle-Cavour Association.
Herbicide Application: 4 lbs. Ramrod granular after planting.

Brookings, South Dakota. Conditions were excellent except for a 10-15 percent stand loss from hail about 10 days after planting. Harvest was very late since killing frost did not occur until about October 17.

Cooperator: A. O. Lunden.
Soil Type: Vienna loam.
Fertilizer Application: 0-30-40.
Herbicide Application: 3 lbs. Lasso liquid preemergence.
Soil Analysis: pH, 6.4; OM, 3.5; N, Good; P, 25 lbs./A.; K, 181 lbs./A.

Centerville, South Dakota. This test was destroyed by an extremely severe hail storm in early summer. Stand was reduced as much as 80-90 percent in many areas. No yield test harvest was possible although the plot was maintained until fall to study recovery from hail. The very late entries recovered much more than early or midseason soybeans. The two major problems were premature lodging of injured plants and poor competition for weeds.

Cooperator: A. O. Lunden.

Elk Point, South Dakota. This test was acceptable but not good due to severe drouth during late summer. The location was in the fertile sandy flood plain area in the extreme southeast. The test lacked uniformity because of lack of water and limited area.

Cooperator: A. O. Lunden.
Soil Type: Sarpy River Wash.
Herbicide Application: 4 lbs. granular Ramrod after planting.

Concord, Nebraska. The 1969 growing season began with a full profile of soil moisture. The surface soil was dry at planting but rainfall brought good uniform plant establishment in all plots. June was a wet month, as was the first half of July. The balance of July and the first part of August were very dry, but timely rains in late August and September matured the crop nicely. There was no supplemental irrigation water applied. Uniform Tests I and II were mature at frost but most Uniform Test III entries were immature

Cooperator: Russell Moomaw, Extension Agronomist.
Soil Type: Judson-Wabash silt loam.
Fertilizer Application: 30 lbs./A. P_2O_5.
Herbicide Application: Amiben at 3.0 lbs./A.
Soil Analysis: pH, 6.8; OM, 4.0; N, 21 ppm (low); P, 39 ppm (high); K, 465 ppm (high).

Mead, Nebraska. All tests were badly hailed on August 2 and none were harvested.

Powhattan, Kansas. Excessive rainfall delayed planting until June 4. Approximately 16.0 inches of rain fell from June 4 to October 15. Dry weather caused excessive leaf droppage in August and September. Three inches of rain fell in August and September. Diseases and insects caused no problem.

Cooperator: R. F. Sloan, Superintendent.
Soil Type: Grundy silt clay loam.
Fertilizer Application: None.
Herbicide Application: Treflan 3/4 lbs./A.
Soil Analysis: pH, 6.2; OM, 2.9%; P, 27 lbs./A.; K, 188 lbs./A.; Z, 4.7 ppm.

Manhattan (Dryland) Kansas. Tests were planted May 27 on a very cloddy seedbed. Vegetative growth was reduced in July by the lack of rainfall. Drouth continued through October 1, 1969. No disease and insect problems occurred.

Cooperator: C. W. Swallow, Superintendent.
Soil Type: Smoland silty clay loam.
Fertilizer Application: 16 lbs. N/A., 48 lbs. P/A.
Herbicide Application: Treflan 1 lb./A.
Soil Analysis: pH, 5.9; OM, 2.5; P, 43 lbs./A.; K, 500+ lbs./A.

Manhattan (Irrigated) Kansas. Tests were planted May 20 in a moist seedbed. Two applications (four inches each) of water were made on August 1 and September 4. Severe lodging was absent. No diseases and insect problems were found.

Cooperator: C. W. Swallow, Superintendent.
Soil Type: Sarpy fine sandy loam.
Fertilizer Application: 16 lbs. N/A., 48 lbs. P/A.
Herbicide Application: Treflan 1 lb./A.
Soil Analysis: pH, 7.9; OM, 1.5; P, 31 lbs./A.; K, 359 lbs./A.

Ottawa, Kansas. Tests were planted May 14 on a good seedbed. Adequate water was available throughout the growing season. High winds and wet soil caused severe lodging. Bean leaf beetle caused severe leaf damage and very severe pod damage on late maturing strains.

Cooperator: C. Gruver, Superintendent.
Soil Type: Woodson silt loam.
Fertilizer Application: 64.4 lbs. P/A., 29.2 lbs. N/A.
Herbicide Application: Treflan 1 lb./A.
Soil Analysis: pH, 6.6; OM, 2.8; P, 14 lbs./A.; K, 223 lbs./A.

Newton, Kansas. Soil moisture at planting (May 29) was good. Dry weather occurred in July and early August. Plants prematurely ripened. Diseases and insects were not a problem.

Cooperator: K. Failes, Superintendent.
Soil Type: Ladysmith silty clay loam.
Fertilizer Application: 38.4 lbs. N/A., 153.6 lbs. P/A., 76.8 lbs. K/A.
Herbicide Application: Treflan 1 lb./A.
Soil Analysis: pH, 5.8; OM, 2.0; P, 88 lbs./A.; K, 495 lbs./A.

Columbus, Kansas. This year was considered to be an "average" growing season with a cool, wet spring and a hot, dry summer. The soybeans showed moisture stress during the last week of July. Adequate moisture later in the season greatly helped the later maturing soybeans.

Cooperator: Southeast Kansas Experiment Station.
Soil Type: Silt loam.
Fertilizer Application: 20-45-60 before planting.
Herbicide Application: 1 qt. Treflan/A.
Soil Analysis: pH, 6.1; OM, 1.8; P, 48 lbs./A.; K, 133 lbs./A.

Lubbock, Texas. Summer temperatures were well above normal with 19 days of 100° F or above during June, July, and August. Rainfall was as follows: June, 1.71 inches, July, 3.48 inches, August, 2.24 inches. These amounts came almost entirely in one major rain each month. In each case the soybean test was irrigated just before it rained. Irrigations in the amount of three to four inches per application were applied June 12, July 8, July 20, August 7, and August 21. Late August rains (August 25-26) and 4.67 inches in September carried the plants through maturity. Some leaf damage resulted from an army worm infestation in September. Bacterial blight was present but was not a problem. The plants were hand harvested, tied in bundles, and threshed with a soybean plot thresher equipped with rubber-covered cylinder bars.

Cooperator: Raymond D. Brigham.
Soil Type: Amarillo loam.
Fertilizer Application: None.
Herbicide Application: None.

Davis, California. The planting date, June 5, was two weeks earlier than usual. Inoculated seed was planted with good soil moisture and warm spring temperatures. Emergence and stands were good except for some checks which were of three-year old seed. Some strains of maturity group II were late and were cut before fully mature. Uniform Tests 00, 0, I, and II were grown in single-row plots with six replications. The center 16 feet of each 20-foot row was harvested. Rabbits, a pest in nearby experiments, were fenced out. Irrigations were made on May 28, July 9 and 29, and August 15. Temperatures were normal. Granular Thimet (phorate) was side-dressed on July 7 and seemed to control spider mites (Tetranychus urticae k. and T. pacificus). Average yields were similar to 1968.

Cooperator: P. F. Knowles and J. E. Dille.
Soil Type: Yolo silty clay.
Fertilizer Application: None.
Herbicide Application: None.

Five Points, California. These tests were seeded after barley was harvested. The straw was shredded with a flail-type cotton stalk shredder and beds reworked with a rolling cultivator before seeding. The plants grew normally throughout the season. Irrigations were applied immediately after seeding and as needed thereafter. Volunteer barley plants gave the plots a ragged appearance but apparently caused no reduction in yield.

Cooperator: Richard Hoove, Station Superintendent.
Soil Type: Panoche clay loam.
Fertilizer Application: 25 lbs./N per acre as ammonium sulfate preplant.
Herbicide Application: None.
Insecticide Application: 2 lbs./A. Thimet mite control.