ANNUAL REPORT OF COOPERATIVE REGIONAL PROJECTS
Supported by Allotments of the Regional Research Fund,
Hatch Act, as Amended August 11, 1955
January 1 to December 31, 1959

1. PROJECT: NORTH CENTRAL REGIONAL PROJECT NC-7

The Introduction, Multiplication, Preservation and Evaluation of New Plants for Industrial and Agricultural Use.

2. COOPERATING AGENCIES AND PRINCIPAL LEADERS:

State Experiment Stations	Representatives
South Dakota	*S. A. McCrory, Chairman
Alaska	*C. E. Logsdon
Illinois	*E. B. Patterson
Indiana	*H. H. Kramer
Iowa	*C. P. Wilsie
Kansas	*R. V. Olson
Michigan	*C. M. Harrison
Minnesota	*A. N. Wilcox
Missouri	*A. D. Hibbard
Nebraska	*W. R. Kehr
North Dakota	*T. E. Stoa
Ohio	*F. S. Howlett
Wisconsin	*W. H. Gabelman
Administrative Adviser	E. F. Frolik

U. S. Department of Agriculture

New Crops Research Branch	*C. O. Erlanson, In Charge
Crop Development Section	W. E. Whitehouse
Plant Introduction Section	H. L. Hyland
State Experiment Station Division	N. F. Farris
	W. C. Kennard
Soil Conservation Service	*A. D. Stoesz
	K. Welton
Northern Utilization Laboratory	I. A. Wolff

North Central Regional Plant Introduction Station, Ames, Iowa

Regional Coordinator	W. H. Skrdla
Horticulturist	A. F. Dodge
Plant Pathologist	E. E. Leppik

* Voting members of NC-7 Regional Technical Committee

3. PROGRESS OF WORK AND PRINCIPAL ACCOMPLISHMENTS

a. Regional Station Program

(1) Production program. The year 1959 was the twelfth crop year since the establishment of the North Central Regional Station. The growing season was quite favorable with regard to moisture and temperature conditions and as a result, good seed harvests were obtained for most crops, which are reflected by many new items added to the new seed list as listed in Appendix B. In the 1959 seed list, 7933 items are catalogued as compared to 7274 in 1958, a net increase of about 660 accessions.

The winter of 1958-59 was one of the most severe in many years with regard to winter killing. More than half of the grasses and legumes planted in 1958 were completely killed. Consequently, our carryover of perennial and biennial accessions was reduced to 512 as compared with 1218 in 1958.

However, the exceptionally large planting in 1959 greatly offset the reduction of carryover accessions from 1958 and the total number of accessions maintained in 1959 was 3331 as compared with 3702 in 1958. The table, which follows, provides additional details on the 1959 planting.

Table I. Number of genera and accessions of various crops grown at the Regional Station in 1959.

Crop	No. of genera	No. of accessions
Grasses	37	967
Legumes	17	540
Vegetables	13	1050
Ornamental	43	73
Special	12	189
Total (1959)	122	2819
Carryover of accessions from 1958		512
Total for 1959		3331

Notes on plant characteristics as well as disease incidence were taken several times during the season.

Carrots, onions, and celery were grown in cages where bees were used for pollination purposes. Sib pollinations were made on cucumbers, squash, pumpkins, sunflowers, and corn.

(2) Introductions received. The number of introductions received in 1959 was less than in 1958; 771 compared with 1194 in 1958. Most of the introductions were received through exchange, gift and a special exploration in Europe for vegetable breeding material. Table II lists additional detail on the introductions received.

Table II. Number of genera and accessions of the various crop groups received in 1959.

Crop	No. of genera	No. of accessions
Grasses	23	287
Legumes	14	191
Vegetables	13	281
Ornamental & Special	3	9
Total	53	768

(3) Plant Pathology program. The station pathologist continued his work in 1959 on making field observations of introductions for the presence of diseases. During the season, a disease was found in several sunflower introductions from the Middle East which is presently under study. The disease is Plasmopora halstedii. Infected plants were destroyed and further steps are being taken to screen the entire collection for presence of this disease.

Greenhouse work is continuing on further studies of Cercospora traversiana on Trigonella foenum-graecum and Ascochyta pisi on Lathyrus sativa and L. cicera. Disease free seed has been obtained and it is hoped that healthy seed can be obtained of all introductions concerned. These diseases were previously reported.

(4) Seed Distribution by Regional Station. During the calendar year 1959, nearly 8000 packets of seed were distributed to cooperators in all 4 regions and foreign countries. This includes more than 2400 packets of grass, 1922 legumes, 3314 vegetables and 191 special, plus about 140 seed packets of various oil crops which were evaluated in 1959 through contract with the NC-7 Regional Research Project. The amount of material distributed from this station is supplemented by the woody ornamentals program. A total of 1720 plants were sent out. Further details are given in Appendix B.

(5) Woody Ornamentals Program. The regional testing of woody ornamentals continued with 16 additional trees and shrubs being sent to 12 states for planting on 35 sites. State cooperators also requested 7 items for replacement planting. New plantings in Nebraska, South Dakota, Wisconsin and Indiana were started this year in cooperation with the regional testing program.

A committee for summarizing the five year performance of the regional plantings was organized during the year. Thus the groundwork for recording the results of the 1954 and 1955 plantings was laid.

Of the Chrysanthemum plants received from the Glenn Dale Plant Introduction Station in 1958, 99 accessions have been established. Of these, 17 produced flowers out of doors. While 26 accessions flowered in the greenhouse this fall. This collection will be replanted and observations will be continued. Propagation material is available.

(6) Industrial Utilization Program. In 1959, this station continued to participate in growing and observing new plants having possible industrial use. New crops are being sought through plant introduction and also through more extensive study of existing crops and native species for sources of oils, waxes, proteins, and fiber. This research work is closely cooperative among the project leaders of the several state experiment stations, the Regional Plant Introduction Station, and the Northern Utilization Laboratory at Peoria, Illinois.

In 1959, through the NC-7 program, the regional station distributed seed of 28 species of promising oil crops to 5 experiment stations for contract evaluation of cultural practices and seed yields and increases. Results from these 5 locations will be summarized, distributed and also used as a guide for further work planned in 1960. Seed samples of the increased material will be analyzed at the Northern Utilization Laboratory for oil.

Eleven species, other than those grown under contract, were observed at the regional station. Additional crops will be grown as they are obtained.

(7) Public Relations. The Regional Station was host to about 90 visitors during 1959. They included representatives from other agricultural agencies, commercial interests, foreign visitors and others.

b. Evaluation Program

Evaluation of plant introductions customarily has been accomplished through (1) observational notes taken at the Regional Station, (2) Evaluation information received from Cooperators who use the material, (3) seed contract evaluations negotiated by the coordinator with state experiment station research personnel and (4) through contributing state projects which receive NC-7 assistance with Regional Research funds. The information obtained from these sources is consolidated and distributed through special reports or reported in the annual seed list.

Reports received in 1959 on promising introductions or those which appear to possess certain desirable characteristics are summarized in Appendix C. This section of the annual report will receive broad distribution.

c. Domestic Exploration in the North Central Region

Through the assistance of the New Crops Research Branch, domestic explorations for native species were conducted in two locations. One was an exploration for the collection of Wild Rubus species in the Ozark region in Southeast Missouri. The other, for the collection of Native grasses, legumes, and forbs in Kansas. Twenty-one items were collected in the Rubus exploration. Figures are not yet available on the native grass and forb species collected.

d. State Contributing Projects

In 1959, the NC-7 Regional Project continued to support the work of 13 state contributing projects. As of June 30, 1959, support was terminated for 3 projects. Contributing projects now receiving NC-7 support are located at Illinois, Indiana, Kansas, Minnesota, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin. Work covered by these projects includes the evaluation of plant introductions (in several crop categories), preservation of fruit introductions and certain valuable stocks, and preservation of corn genetic stocks and strains of flax rust.

Specific findings and developments are reported in Appendix C. Plant material is supplied for the work as it is received by this station.

A list of projects currently being supported appears in Appendix A.

e. Inventory for National Repository for Clonally Propagated Material

At the 1959 meeting of the National Coordinating Committee, the following motion was passed:

> "That the Agricultural Research Service be requested to provide leadership to work cooperatively with the Regional New Crops Committees and the State Experiment Stations in developing as rapidly as possible an adequately documented inventory of valuable germ plasm of food, drug, fiber, oil and other industrial crops presently being maintained through asexual propagation."

The first inventory to be made for this purpose is on fruits. The New Crops Research Branch has provided this station with a supply of inventory cards which will be filled out and returned. The NC-7 Fruit Crops subcommittee is assisting in this work and plans are now underway to initiate the inventory.

4. USEFULNESS OF FINDINGS: A list of benefits and uses of material and information realized through the NC-7 Regional Program is provided below:

a. Seed and plant collections at the Regional Station or those supported at other states are available for use by geneticists and other crop workers for fundamental research.

b. Plant introductions are a source of plant material containing resistance to diseases and insects, as well as other characteristics as winterhardiness, agronomic and horticultural types, etc.

c. Through the NC-7 regional station and program, these introductions are increased, evaluated and permanently maintained for present and future use by crops workers; thus valuable germ plasm is permanently maintained.

Much use was made of plant introductions in 1959 as indicated by the amount of material distributed (Appendix B). Contributions of this program is primarily of benefit to research workers and through them the public is benefitted by the release of new and improved crop varieties.

The regional evaluation work on promising crops for Industrial Utilization, initiated in 1959, c an eventually contribute much to Utilization Research which ultimately would benefit the public.

5. WORK PLANNED FOR NEXT YEAR: Generally there is no major change anticipated in the work reported above, except that the volume of materials received and handled continues to grow and adjustments to meet this need are necessary. Work will continue toward the evaluation of crops for Industrial Utilization. Also, work will continue toward completing the inventory of fruit varieties for the development of a National Repository. Other crops will be inventoried later.

6. PUBLICATIONS ISSUED OR MANUSCRIPTS PREPARED DURING THE YEAR

Regional Station

a. 1958 Seed list

b. The accomplishment of the NC-7 Regional Research Project during the first 10 years of operation, 1948-1957.

c. Leppik, E. E., 1960. Cercospora traversiana and some other pathogens of Fenugreek new to North America. Plant Disease Reporter, 44:40-44.

d. Newspaper and magazine articles which concern the station activities.

e. Annual reports to the NC-7 Technical Committee and the State Experiment Station Division.

Illinois

No formal publications were issued during the year. A brief report on the NC-7 contributing project on maintenance of maize tester stocks and a catalogue of available stocks appeared in the 1959 Maize Genetics Cooperation News Letter.

Michigan

a. Lockwood, J. L., and Ballard, J. C., 1959. Factors affecting a seedling test for evaluating resistance of peas to Aphanomyces root rot. Phytopathology, 49: 406-410.

b. A publication on the evaluation of pea introductions for resistance to Aphanomyces and Fusarium root rots is in preparation.

Nebraska

a. Detailed reports of work in progress have been filed with the Department of Agronomy; the Director, Nebraska Agricultural Experiment Station; and with the Grass and Turf Section, Forage and Range Research Branch, USDA, Beltsville, Maryland.

b. Eberhart, S. A., and L. C. Newell. Variation in domestic collections of switchgrass, Panicum virgatum L. Agron. Jour. (In Press) Nebr. Journal Series Paper 927.

North Dakota

a. Flor, H. H., 1958. Mutations to wider virulence in Melampsora lini Phytopathology, 48: 297-301.

b. Flor, H. H. Incorporating multiple genes for rust resistance into flax varieties. Twenty-eighth annual Flax Institute of the United States, pp 8-10.

Ohio

a. Stall, R. E., 1958. An Investigation of Nuclear number in Alternaria solani. Amer. Jour. Bot., 45: 657-659.

b. Henning, R. G., and L. J. Alexander, 1959. Evidence of Physiological Races of Alternaria solani. Plant Disease Reporter, 43: 298-308.

c. Alexander, L. J., 1959. Progress Report of National Screening Committee for Disease Resistance in the Tomato for 1954-1957.

7. APPROVED:

January 20, 1960
Date

S. G. McCray
Chairman, Technical Committee

January 20, 1960
Date

C. F. Frolik
Regional Administrative Adviser

APPENDIX A

NC-7 STATE CONTRIBUTING PROJECTS, 1959-60
WHICH RECEIVE ASSISTANCE WITH REGIONAL RESEARCH FUNDS

1. Illinois: The Assembly, Evaluation, and Seed Increase of New Introductions and Genetic Chromosomal Tester Stocks of Maize. Initiated 7/1/53, $3500 annually. Project 15-382.

2. Illinois: The Collection, Preservation, and Extensive Evaluation of Trifolium, Lotus, Melilotus, and Dactylis Introductions. Initiated 7/1/56, $500 annually.

3. Indiana: Evaluation of Legume and Grass Introductions. Initiated 7/1/56, $900 annually, Project 890.

*4. Iowa: Evaluation of Grasses and Legumes. Initiated 7/1/56, $500 annually, Project 1333, Grasses and 1048, Legumes.

5. Kansas: Multiplication, Preservation, and Determination of Potential Value of Forage Grasses and Legumes. Initiated 7/1/49, $1500 annually as of July 1, 1959, Project 287.

6. Kansas: Evaluation of Legumes, Native and Introduced, other than Alfalfa. Initiated 7/1/56, $500 annually, Project 492.

*7. Michigan: Evaluation of Peas for Horticultural Characteristics and Resistance to Root Rots and Viruses. Initiated 7/1/56, $900 annually, Project Hatch 837.

8. Minnesota: Introduction, Preservation and Evaluation of Stone Fruits of Probable Potential Value to the North Central Region. Initiated 7/1/50, $1,000 annually, Project 2119 RRF, Hort 2221.

9. Nebraska: Preservation of Alfalfa Clones and Seed Stocks Needed in Alfalfa Improvement and Preliminary Evaluation of Plant Introductions. Initiated 7/1/49, $700 annually, Project 347.

10. Nebraska: The Introduction, Multiplication, Preservation, and Determination of Potential Value of New Accessions and Strains of Native and Exotic Grasses. Initiated 7/1/49, $1500 annually, Project 348.

11. Nebraska: Introduction and Preliminary Evaluation of Legumes other than alfalfa and sweetclover. Initiated 7/1/56, $500 annually, Project 542.

12. North Dakota: Preservation of certain Physiologic Races of Flax Rust - Melampsora lini. Initiated 7/1/50. $500 annually, Project Hatch 13-IR.

*13. Ohio: Multiplication, Preservation, and Determination of Potential Value of Pear Varieties of North Central States Introduced into and collected within the United States. Initiated 7/1/49, $500 annually, Project Hatch 73.

14. Ohio: The Evaluation of the Collection of Domestic and Wild Species of Tomato, and the Maintenance of the Desirable Accessions and Valuable Breeding Stocks. Initiated 7/1/49, $1000 annually, Project Hatch 72.

15. South Dakota: The Collecting, Preserving, Cataloguing, Propagating, and Testing of Fruit Plants having Potential Genetic Value. Initiated 7/1/49, $2000 annually, as of July 1, 1959, Project 174.

16. Wisconsin: Reaction of Accessions of Barley (Hordeum spp.) in the World Collection of Small Grains to the Yellow Dwarf Virus. Initiated 7/1/56, $1000 annually, Project 761.

* Support from NC-7 Regional Project terminated on June 30, 1959

APPENDIX B

Table I. Inventory and summary of accessions received through 1959

Genera	1958 total cumulative	Removed from inventory 1959*	Received 1959	1959 net cumulative	Seed list 1959	To be increased**	Packets Distributed
GRASSES AND FIELD CROPS							
Aegilops	105	1	7	111	98	13	118
Agropyron	169	3	19	185	129	56	239
Agrostis	79	-	5	84	52	32	40
Alopecurus	26	-	4	30	17	13	29
Apera	5	-	-	5	5	0	-
Arrhenatherum	11	-	-	11	9	2	5
Beckmannia	2	2	-	-	-	-	-
Bouteloua	3	-	-	3	3	0	6
Brachypodium	21	3	-	18	12	6	14
Bromus	336	1	31	366	236	130	551
Calamagrostis	9	-	-	9	6	3	14
Cynosurus	7	-	1	8	1	7	1
Dactylis	290	-	32	322	206	116	465
Danthonia	6	-	1	7	1	6	3
Echinochloa	20	-	3	23	15	8	23
Elymus	5	-	-	5	4	1	-
Enneapogon	2	-	-	2	2	0	1
Eremopoa	1	-	-	1	-	1	-
Eriachne	-	-	1	1	-	1	-
Euchlaena	1	-	-	1	1	0	5
Festuca	139	1	34	172	93	79	335
Gaudiniopsis	1	-	-	1	-	1	-
Glyceria	-	-	1	1	-	1	-
Helictotrichon	4	-	-	4	1	3	-
Henrardia	1	-	-	1	-	1	-
Hesperochloa	1	1	-	-	-	-	-
Heteranthelium	2	-	-	2	2	0	-
Hordeum	8	-	-	8	6	2	6
Koeleria	7	-	-	7	-	7	5
Lolium	112	-	1	113	92	21	47
Melica	2	-	-	2	2	0	-
Milium	1	-	-	1	-	1	-
Nardus	2	-	-	2	-	2	-
Neurachne	-	-	1	1	-	1	-
Panicum	146	3	8	151	137	14	113
Pennisetum	-	-	1	1	1	0	-
Phacelurus	1	-	-	1	1	0	-
Phalaris	72	-	7	79	59	20	48
Phleum	47	-	-	47	39	8	46
Poa	51	2	1	50	44	6	26

* Removed because of transfer to other regions, to Glenn Dale storage, or loss of seed due to inability to obtain increase and/or loss of viability

**Does not include seed list items regrown for seed increase or maintenance of viability.

Table I. Continued

Genera	1958 total cumulative	Removed from inventory 1959*	Received 1959	1959 net cumulative	Seed list 1959	To be increased***	Packets Distributed
GRASSES AND FIELD CROPS, Cont'd.							
Polypogon	1	-	-	1	1	0	-
Pringlea	-	-	1	1	-	1	1
Puccinellia	1	-	1	2	-	2	1
Rottboellia	1	-	-	1	-	1	-
Schedonnardus	1	-	-	1	1	0	-
Secale	6	-	-	6	2	4	1
Setaria	82	3	2	81	68	13	62
Sorghum	11	-	2	13	12	1	-
Sporobolus	2	2	-	-	-	-	-
Tricholaena	-	-	2	2	-	2	-
Tridens (Triodia)	1	-	-	1	1	0	-
Trisetum	1	-	2	3	-	3	-
Triticum	1	-	-	1	1	0	-
Zea							
Introductions	1354	2	119	1471	1397	74	198**
State O.P. Collections	202	-	3	205	205	0	
Total Zea	1556			1676	1602		
Totals: Genera 54	3359	24	290	3625	2962	663	2403
LEGUMES							
Anthyllis	-	-	2	2	-	2	-
Astragalus	37	4	1	34	18	16	38
Cicer	-	-	4	4	-	4	-
Coronilla	14	-	-	14	8	6	16
Dalea	3	-	-	3	1	2	1
Desmodium	1	-	-	1	1	0	-
Glycine	1	-	3	4	-	4	-
Hedysarum	1	1	-	-	-	-	-
Lathyrus	82	2	9	89	10	79	16
Listia	-	-	1	1	-	1	-
Lotus	81	1	18	98	70	28	94
Medicago	431	1	80	510	326	184	1226
Melilotus	152	-	13	165	136	29	58
Onobrychis	28	1	16	43	21	22	89
Psoralea	5	-	5	10	-	10	1
Scorpiurus	6	-	1	7	5	2	4
Tetrogonolobus	3	-	-	3	2	1	1
Trifolium	373	2	36	407	213	194	356
Trigonella	122	-	2	124	17	107	22
Totals: Genera 19	1340	12	191	1519	828	691	1922

* Removed because of transfer to other regions, to Glenn Dale storage, or loss of seed due to inability to obtain increase and/or loss of viability.

** Total of introduced and open pollinated corn.

***Does not include seed list items regrown for seed increase or maintenance of viability.

Table I. Continued.

Genera	1958 total cumulative	Removed from inventory 1959*	Received 1959	1959 net cumulative	Seed list 1959	To be increased**	Packets Distributed
FRUITS AND VEGETABLES							
Allium	191	4	26	213	96	117	244
Apium	54	1	5	58	49	9	58
Asparagus	16	2	4	18	7	11	16
Beta	237	-	2	239	222	17	542
Crepis	1	-	-	1	1	0	-
Cucumis	354	2	12	364	342	22	201
Cucurbita	468	1	5	472	446	26	273
Cynara	-	-	1	1	-	1	-
Daucus	169	-	12	181	104	77	464
Frageria	2	1	-	1	-	1	-
Lactuca	172	1	17	188	168	20	200
Luffa	2	-	-	2	-	2	2
Lycopersicon	1397	2	96	1491	1432	59	782
Phaseolus	9	-	10	19	-	19	20
Pisum	884	-	41	925	890	35	310
Prunus	3	1	-	2	2	0	-
Pyrus	5	3	-	2	2	0	-
Rheum	7	-	-	7	1	6	3
Rubus	10	3	-	7	7	0	-
Spinacia	157	-	50	207	154	53	199
Vaccinium	5	3	-	2	2	0	-
Totals: Genera 21	4143	24	281	4400	3925	475	3314
ORNAMENTAL, OIL AND SPECIAL							
Group I. OIL AND SPECIAL							
Camelina	-	-	2	2	-	2	-
Crambe	1	-	-	1	1	0	-
Cyamopsis	5	-	-	5	-	5	-
Guizotia	-	-	1	1	-	1	-
Helianthus annuus	194	-	6	200	194	6	160
Helianthus spp.	4	-	-	4	3	1	9
Lallemantia	2	-	-	2	-	2	-
Mentha	11	-	-	11	7	4	-
Ononis	2	-	-	2	1	1	-
Perilla	11	-	-	11	9	2	20
Ricinus	10	-	-	10	-	10	-
Robinia	1	-	-	1	1	0	-
Rosa	1	-	-	1	1	0	2
Sesamum	5	-	-	5	-	5	-
Symphytum	1	-	-	1	1	0	-
Oil crops evaluated through contract with NC-7 in 1959							140
Totals: Genera 15	248	0	9	257	218	39	331

* Removed because of transfer to other regions, to Glenn Dale storage, or loss of seed due to inability to obtain increase and/or loss of viability.

**Does not include seed list items regrown for seed increase or maintenance of viability.

Table I. Continued

Genera	Cumulative on hand	Status*	No. accessions available 1959	No. plants distributed 1959
Group II. HERBACEOUS AND WOODY ORNAMENTALS				
PI Abelia	1	G	0	0
Acanthopanax	1	D,P	0	
Acer	7	G,H,P	0	0
Ammocharis	1	G	0	0
Amorpha	2	H,G	1	20
Anagyris	1	G	0	0
Berberis	3	G,PD	1	101
PI Betula	2	H,P	0	0
Buxus	2	G,H	1	48
Caragana	3	D,H	1	66
PI Carpinus	1	G	0	0
Caryopteris	2	H	0	0
Ceanothus	1	G	0	0
Cercidiphyllum	1	H	1	17
PI Chrysanthemum	99	P	12	10
PI Cornus	4	G,H,P	2	18
Cotinus	1	D	1	89
Cotoneaster	2	G,H	0	0
PI Cydonia	1	G	0	0
PI Elaeagnus	2	G	0	0
Elsholtzia	1	G,P	0	0
PI Dianthus	1	G	0	0
Euonymus	6	D	3	287
PI Euphorbia	1	H	0	0
Exochorda	1	G	0	0
Forsythia	2	D,H	1	110
Fraxinus	1	H	1	13
Gleditsia	2	D	2	110
Hypericum	1	H	0	0
Ilex	1	G	0	0
PI Iris	1	G	0	0
PI Ixia	1	G	0	0
Koelreuteria	1	D	1	77
Larix	1	G	0	0
PI Ligustrum	1	H	1	19
Lonicera	2	G	0	0
Malus	2	G,H	0	0
PI Melicope	1	G	0	0
PI Morus	1	G	0	0
Pachystima	1	H	0	0
Phellodendron	1	D	1	72
PI Philadelphus	2	G	0	0
Photinia	2	G	0	0
Physocarpus	1	G	0	0
PI Pinus	1	G	0	0
PI Populus	7	G	0	0
Potentilla	2	D	2	135
PI Prinsepia	1	D	1	81
Pyracantha	1	D	1	95
PI Rhododendron	1	G	0	0
Rhus	1	H	0	0

Genera	Cumulative on hand	Status*	No. accessions available 1959	No. plants distributed 1959
Group II. HERBACEOUS AND WOODY ORNAMENTALS, Cont'd.				
Ribes	1	H	0	0
Salix	2	D,H	0	0
Securinega	1	D,H	1	19
PI Shepherdia	2	H	0	0
PI Sorbus	1	G	0	0
Symphoricarpos	1	H	1	23
PI Syringa	1	G	0	0
PI Thuja	1	P	0	0
Tilia	1	G	0	0
Ulmus	1	D	1	60
Viburnum	2	D	2	200
Vitex	1	G	0	0
Totals: Genera 63	201		39	1720

* D-Distributed; G-Growing at Regional Station (not distributed); H-Holding (distributed in past); P-Under Propagation.

Table II. Summary of information in Table I.

Crop	No. Genera	1958 total cumulative	Removed from inventory 1959	Received 1959	1959 net cumulative	Seed list 1959	To be Grown	Packets or Plants Distributed
Grasses	54	3359	24	290	3625	2962	663	2403
Legumes	19	1340	12	191	1519	828	691	1922
Fruits and Vegetables	21	4143	24	281	4400	3925	475	3314
Ornamental, Oil & Special								
Group I.								
Oil, & Special	15	248	0	9	257	218	39	331
Totals	109	9090	60	771	9801	7933	1868	7970
Group II.*								
Ornamentals	63	--	--	--	201	39	--	1720
Totals	172	9090	60	771	10002	7972	1868	9690

*Group II. Woody and herbaceous ornamentals do not appear on the published seed list. A list of available stock is circulated to interested co-operators and orders are filled from their requests.

NORTH CENTRAL TEGIONAL
PLANT INTRODUCTION STATION
Ames, Iowa

Appendix C to Project NC-7 Annual Report for 1959

PROMISING PLANT INTRODUCTIONS REPORTED IN 1959

A. Regional Station Observations: Notes on agronomic and horticultural characteristics are made annually on introductions grown for seed increase. Listed below are the most promising grass and legume introductions planted in 1958 that appeared to perform well for a 2 year period, 1958-59, and which had a generally good appearance during 1959. Observations on hardiness are considered especially important at this time because of the severe winter of 1958-59 which resulted in much loss of plant material. Through normal cropping sequence, perennial crops are plowed under at the end of the second year.

Information on these promising introductions is listed for the interest of crops workers who are encouraged to use them for further evaluations.

1. GRASSES

a. Agropyron spp.

229578 - A. intermedium - Iran - vigorous, leafy, narrow leaves, strongly spreading.

240128 - A. repens - Iran - vigorous, leafy, good fall recovery, hardy, a little coarse.

b. Agrostis castellana

240143 - Portugal - Best overall appearance of a group planted in 1958. Fine leaves, very green, strongly stoloniferous, about 6-8" tall, hardy. May have possibility for turf use.

c. Alopecurus arundinaceus

204403 - Turkey - vigorous, med. fine leaves, leafy, good spreader with strong rhizomes, hardy, good seed producer. One of best in 1958 planting.

240146 - Iran - Best appearing in 1958 planting. Leafy, vigorous, med-fine leaves, good spreader, hardy, good seed producer.

240147 - Iran - Leafy, quite vigorous with med-fine leaves, quite hardy.

d. Bromus spp.

172389 - B. fibrosus - Turkey - Good fall recovery, hardy, very leafy.

206678 - B. inermis - Turkey - Vigorous, leafy, spreading, hardy, good seeder.

232217 - B. inermis - Utah - Vigorous, hardy, spreading, leafy, good seeder.

232218 - B. inermis - Utah - Good fall recovery, otherwise similar to 232217.

234714 - B. erectus - France - Hardy, fine leaves, dark green, med-good fall recovery, erect, produces strong seedlings. Production not too good.

236754 - B. carinatus - Canada - Establishes quickly, vigorous, seeds profusely during first year, shattered seed quickly produces strong seedlings between rows, coarse stems and leaves but quite productive. Hardy, but was less vigorous at Ames during second year.

236755 - B. carinatus - Canada - Similar to PI 236754.

236765 - B. marginatus - Canada - Similar to PI 236754 except that most plants mature at end of first season.

236766 - B. marginatus - Canada - Similar to PI 236754.
236768 - B. marginatus - Canada - Similar to PI 236754.

e. Dactylis glomerata
231612 - Iran - Shows promise for winter hardiness. Survived the best out of a large number of Dactylis introductions planted in 1958. - Vigorous and leafy.
237974 - Iran - May have possibility for winterhardiness because of its survival during winter of 1958-59. Not an especially desirable accession, otherwise.

f. Lolium perenne
231604 - Portugal - Vigorous, fine leaves, leafy. Good general appearance but not hardy at Ames.
231605 - Portugal - Similar to 231604.
231606 - Portugal - Appears very promising. It was the only Lolium accessi having 90% winter survival (1958-59) while others had 0% to only 1 or 2 plants that survived. It is vigorous, leafy, uniform, relatively disease free and a good seeder. Should have further evaluation.

g. Phalaris arundinacea
237724 - Germany - Good general appearance, hardy, leafy, vigorous, sprea ing wide leaves.

h. Poa pratensis
241068 - Oregon - Uniform, vigorous, hardy, fair seed producer, good general appearance.

2. LEGUMES
a. Coronilla varia
204871 - Turkey - Hardy, vigorous, makes good ground cover, good seeder, but not as productive as others grown.

b. Lotus corniculatus
228150 - Russia - Hardy, productive, spreading, uniform, vigorous. Medium to upright growth.
232097 - Germany - Good general appearance, mostly hardy, vigorous, productive, med-erect.
232098 - Germany - Similar to 232097.
234786 - Sweden - Similar to 232097 except slightly more prostrate.
234811 - Switzerland - Good general appearance, mostly hardy, vigorous, productive, spreading prostrate growth.
237278 - Denmark - Good general appearance, part to mostly hardy, upright growth, vigorous.

c. Onobrychis spp.
170582 - O. viciaefolia - Turkey - Good appearance, hardy, good fall recovery, vigorous, leafy, erect.
227373 - O. viciaefolia - Iran - Good appearance, mostly hardy, uniform, vigorous, good fall recovery, leafy, medium to erect.
228154 - O. antasiatica - Russia - Good appearance, hardy, uniform, good fall recovery, vigorous, mostly erect.
228289 - O. viciaefolia - Iran - Good appearing, mostly hardy, quite vigorous.

d. Trifolium repens

189176 - Netherlands - Uniform, mostly hardy, vigorous, good seeder.
232111 - Germany - Ladino type, good appearance, but not very hardy. Otherwise vigorous.
232113 - Germany - Good appearance but not very hardy, otherwise vigorous.
233813 - Italy - Ladino type, good appearance but not very hardy, otherwise vigorous.
237292 - Denmark - White Dutch type, good appearance, part hardy, otherwise vigorous.
237732 - Germany - Ladino type, good appearance, part hardy, otherwise vigorous.
239982 - Iran - Ladino type, good appearance but not very hardy, otherwise vigorous.
241460 - Australia - Ladino type, good appearance but not very hardy, otherwise vigorous. Produced a 100% row cover from a winter survival of 15%.

B. Evaluation Reports: As a result of evaluation and screening programs through contributing projects and individual reports from cooperators, reports were received which indicated varying degrees of promise or value for many introductions. A summary of these reports follows:

1. GRASSES

a. Agropyron elongatum

179162 - Turkey - Shows a tendency for seed to germinate better than other lines at extremely low temperatures. - O. J. Hunt, Wyoming
234708 - France - A very unusual tall wheatgrass - grows about 2 ft. tall and produces very large seeds. Not too winterhardy. - D. R. Dewey, Utah

b. Agrostis canina

189141 - Netherlands - Has good general vigor and appearance. Needs further evaluation. - F. Elliott, Michigan

c. Bromus spp.

172390 - B. erectus - Turkey - Excellent performance of yield at Aberdeen under irrigation in 1958. Being further evaluated.
202276 - B. haenkeanus - Argentina - Same as 172390.
202534 - B. sitchensis - Belgium - Excellent spring and fall growth under irrigation at Aberdeen.

-- R. B. Foster, Idaho

231758 - B. inermis - New Hampshire - Used in breeding program because of disease resistance and adaptation.
234045 - B. inermis - Spain - Same as PI 231758.

-- F. Elliott, Michigan

d. Dactylis glomerata

(1) Introductions listed below were used in a breeding program for resistance to leaf spotting organism. Individual plants were used in polycross in 1959.

173689 - Turkey	176555 - Turkey	220887 - Ireland
174774 - Sweden	199245 - Greece	225822 - Denmark

237174 - Netherlands - Used in breeding program for disease resistance and desirable agronomic type.

-- F. Elliott, MSU

(2) Dactylis introductions established in 1956 which still had a good general appearance on Aug. 1, 1959 following a severe winter in 1958-59 and an outbreak of Stagonospora in July, 1959:

202697 - Uruguay 206430 - Turkey 222761 - Argentina
206265 - Turkey 206431 - Turkey
206428 - Turkey 206432 - Turkey

-- C. N. Hittle, Illinois

(3) Selections from the following orchardgrass introductions produced well over 50% resistant plants when inoculated with stem rust:

172407 - Turkey 180831 - Turkey 204700 - Turkey
172880 - Turkey 189388 - New Zealand

-- Indiana

e. Echinochloa coarctata

223254 - Afghanistan - Holds seed very well even when dead ripe. A long awned type. Seed production good.

-- C. C. Sorensen, California

f. Elymus dahuricus

221900 - Afghanistan - Showed good performance during a dry year at the Tetons Experiment Station. Being further evaluated.

-- R. B. Foster, Idaho

g. Festuca spp.

187219 - F. arundinacea - Belgium - Good seeder, coarse, dark green, 12" high, some rust in later stages.

189146 - F. ovina - Netherlands - Good seed producer, very fine, slow growing, similar to creeping red in early stages, medium dark green color.

198066 - F. elatior - Sweden - Very fine leaf, good dark green color, fair seeder.

-- H. E. Dougherty, Oregon

237182 - F. rubra var. commutata - Netherlands - Used in breeding program because of its general vigor and uniformity.

225824 - F. rubra - Denmark - Used in breeding program because of its general vigor and uniformity.

-- F. Elliott, Michigan

h. Setaria italica

173804 - Turkey - Good seed production, disease-free.
180884 - Turkey - Good seed production, disease-free.
180886 - Turkey - Good seed production, disease-free.

-- C. C. Sorensen, California

i. Phleum pratense

The following introductions are among the top performers of a group of Phleum introductions. They are being further evaluated:

158382 - New Zealand 196541 - Italy 206909 - Turkey

-- R. B. Foster, Idaho

j. Zea mays

(1) 162702 - Argentina - Reported by Rutgers to be resistant to giberella stalk rot.

(2) The following introductions carry resistance to Puccinia sorghi. Investigations on inheritance are continuing:

163558 - Guatemala 186191 - Uruguay 213777 - S. Dakota
172332 - Australia 193906 - Ethiopia

-- W. A. Russell, Iowa

(3) The following accessions stood very well when grown in a field where there was a prevalence of stalk breakage due to stalk rot:

163558 - Guatemala	183757 - Turkey	213702 - Iowa
167962 - Turkey	184279 - Yugoslavia	213782 - S. Dakota
171909 - Turkey	213696 - Iowa	

-- L. McCurdy, Iowa

(4) Resistant to common rust, Puccinia sorghi:
163597 - Guatemala

-- Kramer & Ullstrup, Indiana

(5) 167972 - Turkey - Appears to have resistance to stalk rot.

-- A. Nevala, Wisconsin

(6) Segregated male-sterile and partially fertile plants probably due to the presence of sterile cytoplasm:
213787 - South Dakota (Rainbow) 214199 - Canada (Rainbow)

Segregated partial or male-sterile plants. Both have proven to carry sterile cytoplasm similar to the S or USDA type:

167972 - Turkey	172597 - Turkey

Upon crossing, gave progenies segregating male-sterile or partially fertile plants, probably due to the presence of male-sterile cytoplasm:

(167982 x WF9)WF9 - Turkey - Seg. fertiles, partials, and steriles
(171918 x WF9)WF9 - Turkey - Seg. fertiles, partials, and steriles
(183738 x WF9)WF9 - Turkey - Seg. fertiles and partials
(183774 x WF9)WF9 - Turkey - Seg. fertiles and steriles
213739 x WF9 - Arizona- Definitely carries a sterile cytoplasm
177107 - Turkey - Carries male-sterile cytoplasm

-- J. B. Beckett, Illinois

(7) Corn introductions having low ratings for resistance to corn borer (1 - resistant; 9 - most susceptible):

171915 - Turkey	- rating: 3
198901 - Argentina	- rating: 2
233312 - South Dakota	- rating: 3

-- F. F. Dicke, Iowa

(8) Mutant from selfed ear gave an amylose percentage of 35.0%. This mutant is allelic to the gene du on Chromosome 10:
183814 - Turkey

Mutant from E. B. Patterson from a selfed ear had 38% amylose and was later shown to be allelic to su_2
193907 - Ethiopia

-- Kramer & Ullstrup, Indiana

(9) Resistant to southern corn rust, Puccinia polysora:
186208 - South Africa

-- Kramer & Ullstrup, Indiana

(10) 217407 - Peru - Highly resistant to Helminthosporium turcicum and H. maydis.

-- A. J. Ullstrup, Indiana

(11) Show resistance to southern leaf blight, Helminthosporium maydis:

213696 - Iowa	
213698 - Indiana	213724 - Iowa
	214294 - Ohio

-- A. L. Hooker, Illinois

(12) Show resistance to leaf blight, Helminthosporium turcicum and H. maydis:

213713 - Missouri 221866 - Missouri 222609 - Kansas
221827 - S. Africa 221871 - Arkansas
221845 - S. Africa 221876 - Tennessee

-- A. L. Hooker, Illinois

(13) Used in breeding program due to its generally good agronomic quality for Minnesota area. Also shows drought tolerance. Will undergo further evaluation:

213721 - Iowa 214191 - Canada 214289 - Iowa

-- A. F. Troyer, Minnesota

(14) 214198 - Canada - Used in breeding program because it is very early, has fair stalk quality considering earliness, will undergo further evaluation.

-- A. F. Troyer, Minnesota

(15) 217462 - New York - Used in breeding program because it is extremely early but poor in other respects. Will undergo further evaluation.

-- A. F. Troyer, Minnesota

(16) Used in breeding program. Germ plasm transferred to standard inbred lines because of its earworm resistance - has tight husk. Needs furth evaluation.

217413 - Mexico 218160 - Arizona 218161 - Arizona

-- C. Q. Brown, Idaho

2. LEGUMES

a. Astragalus spp.

(1) Quite resistant to Aphanomyces root rot in greenhouse:

172377 A. galegiformis - Turkey 206405 A. cicer - Turkey
172379 A. galegiformis - Turkey 206406 A. galegiformis - Turkey
172380 A. galegiformis - Turkey 227440 A. hamosus - Iran

-- J. L. Lockewood, Michigan

b. Lathyrus spp.

(1) Quite high resistance to Aphanomyces root rot in greenhouse:

212312 L. cicera - Afghanistan 221465 L. cicera - Afghanistan
219923 L. sativus - Afghanistan 221466 L. cicera - Afghanistan
220176 L. cicera - Afghanistan 223269 L. cicera - Afghanistan
221463 L. cicera - Afghanistan 223270 L. cicera - Afghanistan

c. Medicago spp.

(1) Show tolerance to wilt and blackstem (all are M. sativa):

177011 - Turkey 177464 - Syria 178980 - Turkey

-- R. L. Davis, Indiana

(2) Show tolerance to blackstem (all are M. sativa):

167263 - Turkey 173728 - Turkey 178981 - Turkey
170543 - Turkey 174272 - Turkey 179371 - Turkey
172426 - Turkey 174275 - Turkey 199271 - Portugal

-- R. L. Davis, Indiana

(3) Show tolerance to bacterial wilt (all are M. sativa):

173733 - Turkey 180854 - Turkey

-- R. L. Davis, Indiana

(4) One or more plants from each of the following showed apparent leafhopper resistance:

226684 - M. sativa - Guatemala	251329 - M. sativa - Jordon
229570 - M. sativa - Greece	251689 - M. falcata - Russia
239954 - M. sativa - Algeria	251690 - M. falcata - Russia
243224 - M. sativa - Iran	

Clones were selected from the following introductions in 1956 and are being compared with other selections (all are M. sativa):

204889 - Turkey - 7 clones	205634 - Argentina - 1 clone
206452 - Turkey - 3 clones	206278 - Turkey - 1 clone
205329 - Peru - 1 clone	

-- W. R. Kehr, Nebraska

(5) One or more plants resistant to spotted alfalfa aphid were found, through preliminary tests, in the following introductions (all are M. sativa):

204593 - Turkey	212104 - Afghanistan	222731 - Iran
206903 - Turkey	219928 - Afghanistan	223787 - Iran
207494 - Afghanistan	220299 - Afghanistan	223788 - Iran
210367 - Iran	220301 - Afghanistan	226471 - Iran
211606 - Afghanistan	220808 - Afghanistan	227370 - Iran
211608 - Afghanistan	222112 - Afghanistan	227851 - Iran
211609 - Afghanistan	222113 - Afghanistan	228287 - Iran
211610 - Afghanistan	222198 - Afghanistan	228349 - Iran

-- W. R. Kehr, Nebraska

(6) 246356 - M. sativa - Germany - Showed evidence of resistance to bacterial wilt as high as Ranger.

-- W. R. Kehr, Nebraska

(7) Some spotted alfalfa aphid resistance (all are M. sativa):

162457 - Argentina	- Semidormant-nondormant
163107 - India	- Nondormant
164415 - India	- Some nondormant plants
165512 - India	- Some nondormant plants
183404 - India	- Semidormant-nondormant
208115 - Afghan.	
211608 - Afghan.	- Dormant-semidormant
211609 - Afghan.	- Semidormant
211610 - Afghan.	- Dormant-semidormant
212104 - Afghan.	- Dormant-semidormant
212106 - Afghan.	- Dormant
212612 - Afghan.	- Dormant
220301 - Afghan.	- Probably dormant-semidormant
220530 - Afghan.	- Dormant
220668 - Afghan.	- Semidormant
222733 - Iran	- Semidormant-nondormant, will be tested for combining ability
234205 - Iran	- Nondormant
235736 - India	- Nondormant, will be tested for combining ability.

-- W. F. Lehman, California

(8)

183261 - M. sativa - Arabia - Semidormant
183262 - M. sativa - Arabia - Semidormant-nondormant
183263 - M. sativa - Arabia - Semidormant
201863 - M. sativa - Iran - Dormant-semidormant
202824 - M. sativa - Arabia - Semidormant-nondormant
207495 - M. sativa - Afghan. - Dormant
211054 - M. sativa - Afghan. - Semidormant
211606 - M. sativa - Afghan. - Dormant-semidormant
211607 - M. sativa - Afghan. - Dormant-semidormant
212105 - M. sativa - Afghan. - Dormant-semidormant
217419 - M. sativa - Denmark - Dormant
217648 - M. sativa - Iraq - Probably nondormant
220298 - M. sativa - Afghan. - Probably dormant
220299 - M. sativa - Afghan. - Probably semidormant
220300 - M. sativa - Afghan. - Probably dormant-semidormant
220808 - M. sativa - Afghan. - Dormant
222111 - M. sativa - Afghan. - Probably dormant
245950 - M. sativa - Italy - Dormant-semidormant

-- W. F. Lehman, California

(9) Used in breeding program because of green manure yield:

163107 - M. sativa - India
164415 - M. sativa - India
183060 - M. sativa - India
183328 - M. sativa - India
215595 - M. sativa - India

-- H. E. Kaerwer, Minnesota

(10) 183695 - M. sativa - Turkey - Appears to have combined disease resistance and winterhardiness. Needs further evaluation.

-- F. Elliott, Michigan

(11) Individual plant selections show promise for tolerance or resistance to Downy mildew:

211054 - M. sativa - Afghan.
211608 - M. sativa - Afghan.
211609 - M. sativa - Afghan.
211610 - M. sativa - Afghan.
212105 - M. sativa - Afghan.
212106 - M. sativa - Afghan.
212861 - M. sativa - Afghan.
220299 - M. sativa - Afghan.
220300 - M. sativa - Afghan.
222112 - M. sativa - Afghan.

-- E. L. Sorensen, Kansas

(12) 231731 - M. sativa - Wisconsin 460 - Apparently has more disease resistance in East Lansing environment than most M. sativa accessions.

-- F. Elliott, Michigan

(13) Resistant to spotted alfalfa aphid. Used in breeding program. Vigorous and nondormant, thus suited to Southwest.

234205 - M. sativa "Bam" - Iran
235736 - M. sativa "Sirsa No. 9" - India

-- M. H. Schonhorst, Arizona

d. Trifolium repens

(1) 195484 - Sweden - Shows high resistance to nematode, Meloidogyne incognita var. acrita.

-- D. C. Bain, Mississippi

(2) 195485 - Sweden - Shows resistance to nematode, Meloidogyne incognita var. acrita.

-- D. C. Bain, Mississippi

3. VEGETABLES

a. Beta vulgaris

(1) Relative resistance to black root fungus, Aphanomyces cochlioides when compared with US401, commercial check, having a rating of 100. A low rating means greater resistance.

120692 - Turkey - rating: 99
163181 - India - rating: 100
164810 - India - rating: 100
165502 - India - rating: 97
169031 - Turkey - rating: 99
171508 - Turkey - rating: 79
172733 - Turkey - rating: 96
172734 - Turkey - rating: 95
173843 - India - rating: 93

-- C. L. Schneider, Beltsville

(2) 164355 - India - About 1/15 of population is monogerm
165502 - India - About 1/3 of population is monogerm
175596 - Turkey - About 1/7 of population is monogerm
183211 - Egypt - About 1/2 of population is monogerm

-- R. K. Oldemeyer, Colorado

(3) 183211 - Egypt - Used in crosses because of its ability to grow at low temperatures.

-- R. T. Johnson, California

b. Cucumis spp.

(1) Resistant to powdery mildew:

122847 C. sp. - India
147065 C. anguria - Brazil
164320 C. sp. - India
164327 C. sp. - India
164720 C. sp. - India
164794 C. sp. - India
164796 C. sp. - India
179260 C. sativus - Turkey
182962 C. sp. - India
183310 C. sp. - India
183311 C. sp. - India
196477 C. anguria - Brazil
197085 C. sativus - India
197086 C. sativus - India
197088 C. sativus - India
212233 C. sativus - Barnes, S.C.

Partially resistant to powdery mildew:

202681 C. metuliferous - Africa
202801 C. sativus - Syria
211117 C. sativus - Israel
227207 C. sativus - Japan
227208 C. sativus - Japan
233646 C. anguria - Ethiopia
234517 C. sativus (SC-50) So. Carolina
236468 C. dipsaceus - Ethiopia

-- J. C. Gilbert, Hawaii

(2) 179676 - C. sativus - India - Segregating for powdery mildew resistance

197088 - C. sativus - India - Possible powdery mildew resistance. Crossed with Massada variety.
200815 - C. sativus - Burma - Possible segregation for powdery mildew resistance.
200818 - C. sativus - Burma - Segregating for powdery mildew resistance
227207 - C. sativus - Japan - Segregating for powdery mildew resistance
227208 - C. sativus - Japan - Segregating for powdery mildew resistance
227209 - C. sativus - Japan - Possible powdery mildew resistance. Crossed with MR-17.
234517 - C. sativus (SC-50) South Carolina - Possible powdery mildew resistance, crossed with MR-17.

-- G. W. Bohn, California

(3) Have good general appearance and vigor:

147065 C. anguria - Brazil
196477 C. anguria - Brazil
196844 C. ficifolius - Ethiopia
202681 C. metuliferous - Africa
233646 C. anguria - Ethiopia

(4) Appeared to show symptoms of necrotic ringspot virus in stone fruits (for possible use as indicators), although did not appear appreciably better than "National Pickling" used as a standard for comparison. Should be retested with a broader range of NRSV strains.

122847 C. sp. - India
164720 C. sp. - India
164794 C. sp. - India
211942 C. sp. - Iran

-- H. G. Pulsifer, So. Dakota

(5) 164816 - C. sativus - India - Produces many female flowers.

(6) 197086 - C. sativus - India - Prolific

-- G. W. Bohn, California

(7) 220860 - C. sativus (shogoin) - Korea - very crisp flesh.

-- G. W. Bohn, California

(8) 227210 - C. sativus - Japan - Shows some tolerance to mosaic. Used in breeding program.

-- C. E. Peterson, Michigan

c. Cucurbita spp.

(1) Highly resistant to squash bug (Anasa tristis). In general, the C. moschata lines were more resistant than C. maxima or C. pepo.

169413 C. moschata - Turkey
169441 C. moschata - Turkey
169444 C. moschata - Turkey

-- C. V. Hall, Kansas

(2) Highly resistant to the striped cucumber beetle, Acalymma vittata and spotted cucumber beetle, Diabrotica undecipunctata.

169441 C. moschata - Turkey
169405 C. maxima - Turkey
163224 C. moschata - India

-- C. V. Hall, Kansas

(3) 192942 - C. moschata - China - High in total solids (10.5% - 11.0%). Very rich orange flesh color. May be used in breeding program to improve color and increase total solids. The shape and external color is not desirable but by crossing with other material, these characteristics may be changed.

It is very good baked and makes a fine textured pie.

-- H. H. Reichman, Illinois

(4) 234616 - C. pepo - So. Africa - A bush Zucchini with good yield and solid dark green fruits. Intermediate in size and shape between Fordhook Zucchini and Black Zucchini, but with no particular advantages over Fordhook Zucchini.

-- T. C. Torrey, Pennsylvania

(5) 234617 - C. pepo - So. Africa - Used in breeding program. Good dark flesh color and good yield. Size intermediate between Acorn and Royal Acorn. Some variation in shape. Needs further selection.

-- T. C. Torrey, Pennsylavnia

d. Lactuca spp.

(1) Segregating for tip burn resistance:

204706 - L. sativa - Turkey
204708 - L. sativa - Turkey
206964 - L. sativa - Turkey

-- B. L. Pollock, Pennsylvania

(2) Appear to have lettuce mosaic resistance but need further evaluation:

218079 - L. sativa - Pakistan
220665 - L. sativa - Afghan.
222254 - L. sativa - Iran
223380 - L. sativa - Iran
226468 - L. sativa - Iran
234204 - L. dentata - Japan

-- R. J. Shepard, Wisconsin

e. Lycopersicon spp.

(1) Resistant to an unidentified cyst nematode in Virginia, tentatively called Horsenettle Cyst. Further testing is needed to determine immunity.

126445 - L. hirsutum - Peru
126924 - L. pimpinellifolium - Peru
126926 - L. peruvianum-dentatum - Peru

-- L. I. Miller, Virginia

f. Pisum sativum

(1) Showed some tolerance to Aphanomyces root rot. Index of 0-8 was used, with 0 indicating healthy plants and 8, dead plants.

121976 - India - Index: 5.0
244054 - Yemen - Index: 6.0
244226 - Holland - Index: 4.0

-- J. L. Lockwood, Michigan

(2) Showed some resistance to Fusarium root rot. Index of 0-9 was used, with 0 indicating healthy plants and 9, dead plants.

244095 - Holland - Index: 2.5
244124 - Holland - Index: 3.5
244125 - Holland - Index: 3.5
244136 - Holland - Index: 3.5
244138 - Holland - Index: 3.5
244144 - Holland - Index: 3.0
244205 - Holland - Index: 3.0
244227 - Holland - Index: 3.0

-- J. L. Lockwood, Michigan

(3) Incorporated into a breeding program to study the relation of auxin inheritance to the resistance of peas to root rot, Fusarium solani f. pisi. Have tolerance to this disease.

164612 - India
166159 - India
173930 - India (shows susceptibility to this disease)
174922 - India
175226 - India

-- A. M. Finley, Idaho

(4) 197454 - Ethiopia - Very productive of small pods - plants grow to height of 6 feet.

-- E. M. Meader, New Hampshire

(5) 244088 - Holland - Alaska type
244089 - Holland - Long podded freezer
244098 - Holland - Decent 2-podded freezer (double podded)
244103 - Holland - Satisfactory double podded late variety

244113 - Holland - Satisfactory double podded late variety
244120 - Holland - Very nice double podded late freezer
244123 - Holland - Large seeded early freezer
244134 - Holland - Of interest because of its extreme earliness. Variable types in sample.
244142 - Holland - Double podded late freezer
244227 - Holland - Long, narrow, double podded late freezer
244229 - Holland - Decent double podded late

All need further evaluation

-- L. Lawyer, Illinois, California

g. Spinacia oleracea

(1) Resistant to beet mosaic. Sibbed seed from resistant plants and progeny will be hybridized with commercial varieties.

103063 - China 165994 - India 171865 - Turkey
165560 - India 166366 - India

-- E. D. Delwiche, California

(2) 165560 - India - Apparently resistant to white rust.

-- W. S. Borham, No. Carolina

(3) 179590 - Belgium - Highly resistant to spinach blight caused by strains of cucumber virus #1 at temperatures up to 28° C. However, it is susceptible at temperatures of 32° C.

-- R. E. Webb, Beltsville