

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, 1970

1. PROJECT: NORTH CENTRAL REGIONAL PROJECT NC-7
NC-7 "New Plants" - The Introduction, Multiplication, Preservation and Evaluation of New Plants for Industrial and Agricultural Utilization.

2. COOPERATING AGENCIES AND PRINCIPAL LEADERS:

Administrative Adviser

E. F. Frolik, Nebraska

Regional Coordinator

W. H. Skrdla, Iowa

State Experiment Stations and Representatives

North Dakota	*G. A. Peterson, Chm.	Minnesota	*L. C. Snyder
Alaska	*R. L. Taylor	Missouri	*A. D. Hibbard
Illinois	*E. B. Patterson	Nebraska	*J. H. Williams, Sec'y
Indiana	*K. J. Lessman	Ohio	*M. H. Niehaus
Iowa	*I. T. Carlson	South Dakota	*R. M. Peterson
Kansas	*C. E. Wassom	Wisconsin	*W. H. Gabelman
Michigan	*C. M. Harrison		

U.S. Department of Agriculture

New Crops Research Branch	*J. L. Creech, Chief
Cooperative State Research Service	C. I. Harris
Soil Conservation Service	*R. S. MacLauchlan
Northern Utilization Research & Dev. Div.	*W. H. Tallent
U.S. Forest Service	*D. H. Dawson
Entomology Research Division	*J. L. Jarvis, Iowa

*Voting members of NC-7 Technical Committee

North-Central Regional Plant Introduction Station Staff, Ames, Iowa

Regional Coordinator	W. H. Skrdla
Horticulturist	A. F. Dodge
Plant Pathologist	R. L. Clark
Entomologist	J. L. Jarvis

3. PROGRESS OF WORK AND PRINCIPAL ACCOMPLISHMENTS:

a. Introductions Having Special Value

(1) Corn

(a) In a special evaluation, 144 corn introductions were surveyed for oil content, including palmitic, stearic, oleic, linoleic and several minor oils. Many introductions had more oil than commercial lines. In a group of 40 introductions, 51 ears with oil of 60% or more linoleic acid (compared with 58.7% for commercial lines) were obtained from 15 introductions. This work is one of the first of its kind to be performed on corn introductions and could serve as a basis for development of inbred lines high in specific oils and oils of unique composition.

(b) Two early corn introductions are being used in crosses with teosinte in a project concerning the origin of corn.

(2) Indiangrass

'Oto' indiangrass was released by the Nebraska Agricultural Experiment Station. The variety traces to clonal selections from collections made in 1953-54 from natural grasslands of Nebraska and Kansas, and sponsored by the NC-7 project.

(3) Alfalfa

(a) 'Hayden' alfalfa was released by the Arizona Agricultural Experiment Station. Two of the parent clones were selected from PI 235736 and two others from a field of 'Sonora'. It has good resistance to four biotypes of the spotted alfalfa aphid.

Introductions evaluated in the field for disease resistance included 300 corn and 180 tomatoes. In the greenhouse and laboratory, 42 cucumbers were evaluated for powdery mildew resistance, and 260 corn lines were evaluated for race T, Helminthosporium maydis.

Of 300 lines of corn screened, four (222618, 222629, 222645, and 257612) showed promise of resistance to Diplodia stalk rot, six (222494, 233332, 240330, 219890, 219880, and 219876) showed resistance to rust, and four (233317, 251934, 257508, and 257515) were resistant to smut. In a lab test, five (255976, 255982, 257517, 257619, and 270297) out of 260 lines showed resistance, in the seedling stage, to race T, H. maydis.

Of 180 lines of tomato, four (146129, 155375, 155376, and 158164) showed a degree of resistance to a severe field exposure to fruit rots (anthracnose and soil rot).

Of 42 cucumbers, four (197085, 197086, 197088, and 288238) showed tolerance to powdery mildew in a replicated greenhouse test. The 42 lines tested had previously been reported to have a degree of resistance, or tolerance, to powdery mildew by various workers.

Disease control in grass seed increase plantings is being planned for the coming year as well as continuation of roguing diseased plants in sunflower and vine crop plantings.

Cooperator reports of the performance of 20 trees and shrubs placed in simultaneous regional trial in the spring of 1964 were studied and 5-year reports prepared. Of the 15 5-year reports assembled, four were duplicated for presentation to the Ornamentals Subcommittee Meeting.

Ornamentals Subcommittee members in four states were helpful in securing ten cultivars and two lots of seedling trees for regional trial. Four commercial nursery firms also cooperated.

Seedlings of five rosaceous shrubs, two shrub dogwoods, three common privet and two Genista from the Skrdla-Brooks exploration in the USSR were lined out for local trial.

A total of 100 corn introductions were screened for resistance to second generation European corn borer; all introductions were susceptible. The search for second generation resistance represents a change in direction of this work. In previous years, screening was directed toward a search for first generation resistance. However, there is a greater need for second generation resistance, so future plans are to continue in this new direction.

Horticultural characteristics of peppers (commercial type, pod shape, pungency, and pod size) affected the level of infestation of peppers by European corn borer.

Cabbages were screened for resistance to green peach aphid; 14 plants from 153 introductions were selected for further evaluation.

c. Domestic Exploration

PI numbers were assigned to a portion of the native grass collection in Alaska. A list of seed available (from NC-7 and W-6) was prepared and distributed. Numbers were assigned to 36 Festuca rubra accessions, 23 of which are available. Numbers were also assigned to 134 Poa pratensis accessions, 87 of which are available. The Alaska Station is assisting with seed increases.

The native grass exploration in South Dakota, started July 1, 1969, is continuing. Over 300 collections were made between July 1, 1969, and June 30, 1970. This material is lined out in a nursery for establishment and evaluation.

d. Regional Cooperative Program

The Ohio Station assisted with the increase and evaluation of 150 new tomato introductions. The Nebraska and Indiana Stations are evaluating new alfalfa introductions for insect resistance.

4. USEFULNESS OF FINDINGS:

Plant introductions continue to provide valuable germ plasm for plant characters, disease and insect resistance and other traits that are useful to plant breeders for developing and improving crop varieties, which benefits

the general public. The evaluation of introductions and dissemination of information and seed helps to better serve crops workers. The permanent maintenance of plant introductions assures a valuable germ plasm pool for present and future use.

5. WORK PLANNED FOR NEXT YEAR:

- a. Continue: (1) program of seed increase, storage, preliminary evaluation; (2) pathology and entomology screening work; (3) local and regional testing of new crops and ornamentals; and (4) coordination of cooperative program.
- b. Assist the South Dakota Station with collecting native grasses.

6. PUBLICATIONS ISSUED OR MANUSCRIPTS PREPARED DURING THE YEAR: Publications that concern information from the North Central Region on plant introductions are listed below. Additional ones are listed in Appendix A.

a. Regional Station Publications

(1) Clark, R. L. 1969. Resistance to northern root knot nematode (*Meloidogyne hapla* Chitwood) in plant introductions of *Daucus carota* L. FAO Plant Prot. Bull. 17(6):136-137.

(2) Clark, R. L. 1970. Resistance to *Diplodia* stalk rot in plant introduction corn (*Zea mays*), 1966-1968. Plant Disease Repr. 54(7):624-626.

(3) Dodge, A. F. 1970. A new sweetberry honeysuckle from Hokkaido, Japan. American Horticultural Magazine 49(3):135-136.

(4) Dodge, A. F. 1970. Five year report on regional plantings of woody ornamental and shelter plants in the North Central Region, 1964-1968. Loose Notebook, North Central Regional Plant Introduction Station, Ames, Iowa. 39 pp., 4 maps.

(5) Jarvis, J. L. 1970. Relative injury to some cruciferous oilseeds by the turnip aphid. J. Econ. Entomol. 63(5):1498-1502.

b. State Station Publications

(1) Michigan

(a) Honma, S., H. H. Murakishi and S. H. Wittwer. 1968. Moto-Red--a tobacco mosaic virus resistant greenhouse tomato. Mich. Agr. Exp. Sta. Quar. Bul. 50(3):285-287.

(b) Honma, S., S. H. Wittwer, M. C. Strong, Otto Heeckt and W. R. Robb. 1962. A new greenhouse tomato-Spartan Pink 10. Mich. Agr. Exp. Sta. Quar. Bull. 44(4):684-687.

(c) Honma, S., S. H. Wittwer and Otto Heeckt. 1961. Spartan Red 8, a new tomato for greenhouse production. Mich. Agr. Exp. Sta. Quar. Bul. 43(3):478-481.

c. Journal Articles

(1) Alaska

(a) Klebesadel, L. J. 1969. Siberian wildrye (*Elymus sibiricus* L.): agronomic characteristics of a potentially valuable forage and conservation grass for the North. Agron. J. 61(6):855-859.

(2) Iowa

(a) Prasad, K. and J. L. Weigle. 1970. Screening for resistance to *Rhizoctonia solani* in *Phaseolus vulgaris*. Plant Disease Repr. 54(1):40-44.

(3) Minnesota

(a) Krarup H., A. and D. W. Davis. 1970. Genetic control of ovule number in peas (*Pisum sativum* L.). Crop Sci. 10(5):517-518.

(4) Nebraska

(a) Coyne, D. P. 1970. Genetic control of a photoperiod-temperature response for time of flowering in beans (*Phaseolus vulgaris* L.). Crop Sci. 10(3):246-248.

(b) Kehr, W. R. 1970. Registration of N.S. 30 alfalfa germ plasm. Crop Sci. 10(6):731.

(c) Newell, L. C. 1968. Chemical composition of two warm-season prairie grasses in three environments. Crop Sci. 8:325-329.

(5) Wisconsin

(a) Shea, P. F., W. H. Gabelman and G. C. Gerloff. 1967. The inheritance of efficiency in potassium utilization in snap beans, (Phaseolus vulgaris L.). Proc. Amer. Soc. Hort. Sci. 91:286-293.

(6) USDA

(a) Barksdale, T. H. 1970. Resistance to anthracnose in tomato introductions. Plant Disease Repr. 54(1):32-34.

(b) Gentile, A. G., R. E. Webb and A. K. Stoner. 1969. Lycopersicon and Solanum spp. resistant to the carmine and the two-spotted spider mite. J. Econ. Entomol. 62:834-836.

7. APPROVED:

January 28, 1971

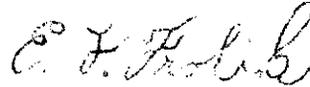
Date



Chairman, Technical Committee
G. A. Peterson

January 28, 1971

Date



Regional Administrative Adviser
E. F. Frolik

MISCELLANEOUS PUBLICATIONS

1. Printed Publications. The publications listed below are from other regions and foreign sources but concern NC-7 primary maintenance crops.

a. Alfalfa

(1) Beard, D. F. 1970. Registration of WL 306 alfalfa. Crop Sci. 10(6):725.

(2) Horner, E. S. 1969. Florida 66 alfalfa, an improved variety for well-drained soils in Florida. Florida AES Circular S-191. 10 pp.

(3) Keller, C. J., N. L. Taylor, C. L. Van Meter and B. C. Pass. 1970. Feeding response of the adult alfalfa weevil to plant species phylogenetically related to alfalfa. J. Econ. Entomol. 63(1):302-303.

(4) Panella, A., M. Ribaldi and F. Lorenzetti. 1969. Screening of alfalfa lines for resistance to Verticillium wilt. Phytopathologia Mediterranea VIII(2):116-123.

b. Corn

(1) Jellum, M. D. 1970. Plant introductions of maize as a source of oil with unusual fatty acid composition. J. Agr. Food Chem. 18(3):365-370.

c. Tomato

(1) Cirruli, M. 1968. Research into the sources of resistance in species of Lycopersicon to tomato disease. Annals of the faculty of agrarian sciences of the University of Bari (Italy). XXII:361-371.

(2) Kerr, A. E. and J. H. L. Truscott. 1966. Tomato breeding lines for release. Report Hort. Res. Inst. Ontario. pp 59-61.

(3) Martin, M. W. 1970. Developing tomatoes resistant to curly top virus. Euphytica 19:243-252.

(4) Strobel, J. W., N. C. Hayslip, D. S. Burgis and P. H. Everett. 1969. Walter, a determinate tomato resistant to races 1 and 2 of the Fusarium wilt pathogen. Florida AES Circular S-202. 9 pp.

(5) Strobel, J. W. and J. M. Walter. 1969. Tropic, a new disease resistant indeterminate tomato for Pink Harvest. Florida AES Circular S-198. 9 pp.

Inventory and Summary of Accessions Maintained and Received through 1970.

Genera	Total	Removed		Total	Seed	**To Be	Packets
	Active Jan. 1 1970	from Inventory 1970*	Rec'd 1970	Active Dec. 31 1970	List 1971	Increased	Distributed
GRASSES & FIELD CROPS							
Aegilops	163	0	0	163	157	6	2
Agropyron	181	0	0	181	164	17	0
Agrostis	134	0	0	134	122	12	8
Alopecurus	44	0	0	44	35	9	0
Apera	6	0	0	6	5	1	0
Arrhenatherum	14	0	0	14	12	2	0
Avena	1	0	0	1	0	1	0
Boissiera	1	0	0	1	0	1	0
Brachypodium	6	1	0	5	0	5	2
Bromus	548	1	0	547	535	12	136
Calamagrostis	18	0	0	18	9	9	10
Clinelymus	2	0	0	2	0	2	0
Cynosurus	8	0	0	8	8	0	0
Cyperus	1	1	0	0	0	0	1
Dactylis	415	0	0	415	388	27	12
Danthonia	1	0	0	1	0	1	0
Deschampsia	1	1	0	0	0	0	1
Echinochloa	24	0	0	24	23	1	5
Eremopoa	3	0	0	3	2	1	2
Eremopyrum	12	0	0	12	12	0	0
Eriachne	1	0	0	1	0	1	0
Festuca	202	0	0	202	195	7	282
Gaudiniopsis	1	0	0	1	1	0	0
Glyceria	4	0	0	4	1	3	2
Helictotrichon	6	0	2	8	7	1	1
Heterantherium	5	0	0	5	4	1	0
Hordeum	7	1	1	7	7	0	1
Koeleria	9	0	0	9	6	3	0
Lasiagrostis	1	0	0	1	0	1	0
Lolium	129	0	0	129	121	8	1
Milium	2	0	0	2	0	2	0
Nardus	4	0	0	4	2	2	0
Neurachne	1	0	0	1	0	1	0
Panicum	235	0	14	249	214	35	49
Phalaris	76	0	0	76	76	0	43
Phleum	48	0	0	48	46	2	17
Poa	51	0	0	51	51	0	120
Polypogon	13	0	0	13	12	1	16
Puccinellia	3	0	0	3	0	3	0
Schedonnardus	1	0	0	1	1	0	0
Secale	4	0	0	4	4	0	4
Setaria	156	0	6	162	136	26	30
Sorghum	31	0	0	31	29	2	0
Stipa	1	0	0	1	0	1	0

* 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.

Genera	Total Active Jan. 1 1970	Removed from Inventory 1970*	Rec'd 1970	Total Active Dec. 31 1970	Seed List 1971	**To Be Increased	Packets Distributed
Tetrachne	1	0	0	1	0	1	0
Tricholaena	3	0	0	3	2	1	1
Tridens	2	0	0	2	2	0	0
Tripsacum	2	0	0	2	1	1	0
Triticum	1	0	0	1	1	0	0
Urochloa	1	0	0	1	0	1	1
Zea mays--Introd.	1944	0	215	2159	2134	25	2317
St. O.P. Coll.	259	0	0	259	259	0	---
TOTAL ZEA MAYS	2203	0	215	2418	2393	25	2317
TOTALS :Genera-51	4787	5	238	5020	4784	236	2885

LEGUMES

Amphicarpa	0	0	3	3	0	3	0
Astragalus	62	0	0	62	43	19	7
Coronilla	50	0	2	52	39	13	92
Dalea	9	0	0	9	5	4	2
Desmodium	0	0	0	0	0	0	0
Dorycnium	1	0	0	1	1	0	1
Galega	12	0	0	12	5	7	6
Genista	2	0	0	2	0	2	0
Glycyrrhiza	1	0	0	1	0	1	0
Lathyrus	287	0	0	287	174	113	40
Lespedeza	36	0	0	36	31	5	7
Lotus	181	0	0	181	177	4	19
Madia	1	0	0	1	0	1	0
Medicago	839	0	37	876	840	36	1424
Melilotus	524	0	2	526	300	226	122
Onobrychis	78	0	1	79	693	10	1
Ononis	6	0	0	6	6	0	1
Psoralea	21	0	0	21	16	5	8
Scorpiurus	45	0	0	45	26	19	0
Tetragonolobus	20	0	0	20	14	6	2
Trifolium	462	0	0	462	459	3	21
Trigonella	154	0	8	162	151	11	15
TOTALS :Genera-22	2791	0	53	2844	2356	488	1768

FRUITS & VEGETABLES

Allium	200	0	0	200	182	18	0
Apium	58	0	0	58	25	33	0
Asparagus	54	0	0	54	26	28	0
Beta	300	0	4	304	300	4	603
Carica	3	0	0	3	0	3	0
Citrullus	2	0	0	2	0	2	0
Cucumis	537	25	9	521	477	44	334
Cucurbita	457	50	0	407	383	24	194
Daucus	360	0	0	360	248	112	346
Fragaria	2	0	0	2	0	2	0
Lycopersicon	3271	1	225	3495	3402	93	1237
Petroselinum	94	0	0	94	32	62	31
Phaseolus	0	0	1	1	0	1	2
Pisum	1282	0	34	1316	1271	45	53

Genera	Total Active	Removed from Inventory	Rec'd 1970	Total Active Dec. 31 1970	Seed List 1971	**To Be Increased	Packets Distributed
	Jan. 1 1970	1970*	1970	1970	1971	Increased	Distributed
Rheum	7	0	0	7	4	3	0
Rubus	84	0	0	84	0	84	18
Solanum	1	0	0	1	0	1	0
Spinacia	194	0	0	194	188	6	386
Vaccinium	3	0	0	3	0	3	0
TOTALS: Genera-19	6909	76	273	7106	6538	568	3204
OIL & SPECIAL							
Adonis	2	0	2	4	0	4	0
Alyssum	1	0	0	1	1	0	1
Ammi	2	0	0	2	1	1	0
Anethum	50	0	0	50	17	33	0
Arctium	1	0	0	1	1	0	0
Atractylis	1	0	0	1	0	1	0
Berteroa	2	0	0	2	2	0	0
Bifora	1	0	0	1	0	1	0
Biscutella	1	0	0	1	0	1	0
Brassica	485	5	19	499	424	75	9
Briza	4	0	0	4	0	4	0
Bupleurum	2	0	0	2	0	2	0
Calamintha	1	0	0	1	1	0	0
Calendula	3	0	1	3	2	1	0
Caltha	1	0	0	1	0	1	0
Camelina	8	0	0	8	7	1	0
Cardamine	1	0	0	1	0	1	0
Cassia	6	0	0	6	1	5	0
Caucalis	1	0	0	1	0	1	0
Centranthus	0	0	1	1	0	1	0
Cephalaria	2	0	0	2	0	2	0
Chamaepeuce	1	0	0	1	0	1	0
Chenopodium	3	0	0	3	0	3	0
Christolea	1	0	0	1	0	1	0
Chrysanthemum	1	0	0	1	0	1	0
Cichorium	2	0	0	2	2	0	0
Cnicus	1	0	0	1	1	0	0
Crambe	40	0	0	40	34	6	8
Crepis	2	0	0	2	1	1	0
Crotalaria	1	0	0	1	0	1	0
Cyamopsis	5	0	0	5	0	5	0
Cynara	2	0	0	2	0	2	0
Cynoglossum	0	0	1	1	0	1	0
Daucus	1	0	1	2	0	2	0
Dimorphotheca	1	0	0	1	0	1	0
Ducrosia	1	0	0	1	0	1	0
Echinacea	1	0	0	1	0	1	0
Echium	2	0	0	2	2	0	2
Eruca	32	0	0	32	32	0	0
Eryngium	5	0	0	5	0	5	0
Euphorbia	12	0	0	12	7	5	0
Foeniculum	3	0	0	3	2	1	0
Glaucium	1	0	0	1	1	0	0
Goldbachia	1	0	0	1	0	1	0

Genera	Total Active	Removed from Inventory	Rec'd	Total Active	Seed List	**To Be Increased	Packets Distributed
	Jan. 1 1970	1970*	1970	Dec. 31 1970	1971		
Guizotia	1	0	0	1	0	1	0
Helianthum	1	0	0	1	1	0	0
Helianthus annuus	333	0	2	335	321	14	234
Helianthus sp.	10	0	0	10	6	4	0
Heracleum	2	0	0	2	1	1	0
Hibiscus (Kenaf)	1	0	0	1	0	1	3
Iberis	2	0	0	2	0	2	1
Impatiens	2	0	0	2	0	2	0
Isatis	2	0	0	2	0	2	0
Lallemantia	2	0	0	2	1	1	0
Lappula	2	0	0	2	1	1	0
Lapsana	3	0	0	3	1	2	0
Leonotis	1	0	0	1	0	1	0
Lepidium	1	0	0	1	1	0	1
Limnanthes	17	0	0	17	17	0	0
Limnoscium	1	0	0	1	0	1	0
Lobularia	1	0	0	1	0	1	1
Lunaria	1	0	0	1	0	1	0
Mentha	11	0	0	11	7	4	0
Monarda	4	0	0	4	2	2	0
Mosla	1	0	0	1	1	0	0
Oenothera	1	0	0	1	0	1	0
Onosma	1	0	0	1	0	1	0
Orlaya	2	0	0	2	0	2	0
Osteospermum	1	0	0	1	0	1	0
Perilla	9	0	0	9	9	0	0
Petroselinum	1	0	0	1	0	1	0
Picris	3	0	0	3	1	2	0
Prionosciadum	1	0	0	1	0	1	0
Raphanus	8	0	0	8	8	0	4
Rhaponticum	2	0	0	2	0	2	0
Ricinus	10	0	0	10	0	10	0
Rochelia	1	0	0	1	0	1	0
Rudbeckia	1	0	0	1	1	0	0
Satureja	6	0	0	6	3	3	0
Schlechtendalia	2	0	0	2	0	2	0
Sesamum	5	0	0	5	0	5	0
Sideritis	2	0	0	2	0	2	0
Sigesbeckia	1	0	0	1	0	1	0
Sisymbrium	1	0	0	1	0	1	0
Spergula	1	0	0	1	1	0	0
Stenachaenium	2	0	0	2	0	2	0
Stokesia	0	0	3	3	0	3	0
Symphytum	1	0	0	1	1	0	1
Tephrosia	2	0	0	2	0	2	0
Thalictrum	2	0	6	8	1	7	0
Thlaspi	1	0	0	1	1	0	0
Trachyspermum	1	0	0	1	0	1	0
Vaccaria	1	0	0	1	1	0	0
Vernonia	4	0	0	4	3	1	2
TOTALS:Genera-93	1166	5	35	1196	928	268	268

Genera	Total Active Jan. 1 1970	Removed from Inventory 1970*	Rec'd 1970	Total Active Dec. 31 1970	Plants Distributed 1970
	ORNAMENTALS				
Abeliophyllum	1	0	0	1	0
PI Abies	2	0	0	2	0
PI Acer	4	0	0	4	0
PI Actinidia	2	2	0	0	0
PI Agapanthus	1	0	0	1	0
PI Alnus	6	0	0	6	0
PI Amelanchier	5	1	0	4	0
Amorpha	3	0	0	3	0
PI Ardisia	1	0	0	1	0
PI Armeria	1	0	0	1	0
PI Aronia	1	0	0	1	0
PI Aruncus	1	0	0	1	0
PI Begonia	4	0	0	4	0
PI Belamcanda	1	0	0	1	0
Berberis	1	1	0	0	0
PI Betula	6	1	0	5	0
Buddleia	1	1	0	0	0
Buxus	22	11	1	11	0
PI Callicarpa	2	0	0	2	0
PI Camellia	1	0	0	1	0
Caragana	2	0	0	2	0
PI Carica	3	0	0	3	0
PI Carpinus	1	0	0	1	0
Caryopteris	1	0	0	1	0
Castanea	1	0	0	1	0
Gelastus	2	0	0	2	0
PI Cercocarpus	3	0	0	3	0
Chaenomeles	1	0	0	1	0
PI Chamaebataria	3	0	0	3	0
PI Chrysanthemum	8	0	0	8	0
PI Clematis	2	0	0	2	0
PI Clethra	1	0	0	1	0
PI Coleus	22	3	0	19	0
PI Colutea	1	0	0	1	0
PI Cornus	15	0	0	15	0
PI Cotoneaster	21	8	0	13	0
PI Cowania	1	1	0	0	0
PI Crataegus	8	0	0	8	0
PI Cupressus	7	0	0	7	43
PI Cytisus	5	0	0	5	0
PI Damnacanthus	1	0	0	1	0
PI Dasylirion	1	0	0	1	0
PI Deutzia	3	0	0	3	0
PI Dianthus	8	0	0	8	0
PI Dierama	1	0	0	1	0
Dirca	1	0	0	1	0
PI Duchesnea	2	0	0	2	0
Elaeagnus	2	0	0	2	0
Elsholtzia	1	0	0	1	0
Eucommia	1	1	0	0	0
PI Euonymus	12	1	0	11	0
PI Euphorbia	1	0	0	1	0

Genera	Total Active	Removed from Inventory	Rec'd	Total Active	Plants Distributed
	Jan. 1 1970	1970*	1970	Dec. 31 1970	1970
PI Penderia	1	1	0	0	0
PI Foresteria	1	0	0	1	0
PI Forsythia	2	0	0	2	0
Fothergilla	1	0	0	1	0
PI Fraxinus	2	0	4	6	417
PI Gaultheria	1	0	0	1	0
PI Genista	2	0	0	2	0
Gleditsia	1	0	0	1	0
PI Haemanthus	1	0	0	1	0
PI Hedera	3	0	0	3	0
Helianthilla	1	0	0	1	0
PI Hemiptelea	1	0	0	1	0
Hippophae	2	0	0	2	0
PI Hydrangea	2	0	1	3	0
PI Hypericum	8	4	1	5	0
PI Ilex	40	32	0	8	118
Indigofera	1	0	0	1	0
PI Iris	7	0	0	7	0
PI Juglans	1	0	0	1	0
PI Juniperus	5	0	1	6	0
PI Kohleria	1	0	0	1	0
PI Ledum	1	1	0	0	0
PI Ligustrum	9	0	1	10	0
PI Lilium	1	0	0	1	0
PI Lindera	1	0	0	1	0
PI Lippia	1	0	0	1	0
Lonicera	9	0	0	9	0
PI Lycium	1	0	0	1	0
Lythrum	1	0	0	1	0
PI Maackia	2	0	0	2	0
Malus	8	0	4	12	405
Medicago	1	0	0	1	0
PI Metasequoia	1	0	0	1	0
PI Mimulus	1	0	0	1	0
PI Morus	1	0	0	1	0
PI Orlaya	1	0	0	1	0
Ostrya	1	0	0	1	81
Pachistima	1	0	0	1	0
PI Passiflora	1	0	0	1	0
Penstemon	10	0	0	10	0
PI Peraphyllum	1	0	0	1	0
PI Pelargonium	1	0	0	1	0
PI Philadelphus	6	0	0	6	0
Photinia	2	0	0	2	0
Physocarpus	1	0	0	1	0
PI Pinus	8	0	0	8	0
PI Polygonum	1	0	0	1	0
Potentilla	3	0	3	6	0
Prunus	1	0	1	2	84
Ptelea	1	0	0	1	0
Pyracantha	1	0	0	1	0
Pyrus	3	0	0	3	0
Quercus	1	0	1	2	0
Rhamnus	3	0	0	3	0

Genera	Total Active	Removed from Inventory	Rec'd	Total Active	Plants Distributed
	Jan. 1 1970	1970*	1970	Dec. 31 1970	
Rhododendron	23	3	6	26	0
Rhus	2	1	0	1	0
Robinia	1	0	0	1	0
Rosa	14	1	1	14	0
Rubus	2	0	0	2	0
Salix	4	1	1	4	0
Salmea	1	0	0	1	0
Salvia	1	0	0	1	0
Sambucus	6	4	0	2	0
Sanguisorba	1	0	0	1	0
Scabiosa	2	0	0	2	0
Securinega	2	0	0	2	0
Sedum	1	0	0	1	0
Sheperdia	2	0	0	2	0
PI Sophora	2	0	0	2	0
Sorbus	5	0	0	5	0
Spiraea	6	0	0	6	0
Stachyurus	1	0	0	1	0
Strobilanthes	1	0	0	1	0
Styrax	1	1	0	0	0
Symplocos	1	0	0	1	0
Syringa	8	0	0	8	0
PI Taiwania	1	0	0	1	0
Taxus	4	0	0	4	0
Thuja	2	0	0	2	78
Ulmus	39	0	0	39	158
Viburnum	7	1	0	6	0
PI Verbena	0	0	1	1	0
PI Viola	1	0	0	1	0
Weigela	2	0	0	2	0
Xanthorrhiza	1	0	0	1	0
PI Yucca	7	0	0	7	0
TOTALS:Genera-138	528	81	26	473	1384

MISCELLANEOUS INFORMATION NOT INCLUDED
IN MAIN BODY OF 1970 NC-7 ANNUAL REPORT

1. Regional Station Production Program

The 1970 growing season is the twenty-third since the establishment of the Regional Station at Ames on December 1, 1947. The growing season started fairly late because of a cold wet spring. June and July were quite hot and August was somewhat cooler. The last of July and early August were very wet, having rained on nine out of 13 days between July 27 and August 8. September was also very wet, having rained on nine out of 12 days between September 14 and 25. The remainder of the fall was cold and wet and we had trouble getting all the land plowed.

Generally, it was a good season for seed production and seed increases resulted in the availability of about 850 additional accessions for the seed list. We did experience some difficulty with making successful hand pollinations of corn and cucurbits in late July and August which we partly attribute to low temperature. The minimum daily temperatures, 47° F. and 42° F. for these two months are indicative of the very cool night temperatures experienced during the heavy rainfall period in late July and early August.

The following summary shows the rainfall and temperature ranges for the spring, summer and fall months of 1970. We maintain a small weather station at the Plant Introduction Farm, so the data represents temperatures and rainfall at the farm. Daily records are kept.

<u>Month</u>	<u>Total Rainfall (inches)</u>	<u>Temperature Ranges, ° F.</u>	
		<u>Minimum</u>	<u>Maximum</u>
April	1.56	8-55	32-74
May	8.64	35-72	41-78
June	2.38	42-70	68-100
July	5.32	47-70	72-98
August	6.37	42-69	73-89
September	7.20	38-68	54-90
October	3.66	27-58	46-84
November	1.49	5-40	26-58

A summary of the number of accessions grown in 1970, compared with 1969 is provided in Table I.

Table I. Number of Genera and Accessions of Various Crops Grown at the Regional Station in 1970.

<u>Crop</u>	<u>No. of Genera</u>		<u>No. of Accessions</u>	
	<u>1969</u>	<u>1970</u>	<u>1969</u>	<u>1970</u>
Grasses	17	16	690	500
Legumes	14	11	515	636
Vegetables	6	8	677	665
Ornamentals	142	138	538	473
Special Crops	52	24	200	276
TOTAL	231	197	2620	2550
Carryover of perennial accessions			700	700
Total for Season			3320	3250

Special Purpose Plantings

Corn borer resistance evaluations (corn)	100 acc.	
Corn borer resistance evaluations (peppers)	100 acc.	
Cucumber beetle resistance evaluations	150 acc.	
Corn disease resistance evaluations	310 acc.	1240 plots
Tomato disease resistance evaluations	180 acc.	720 plots
TOTALS	840 acc.	1960 plots

2. Total Seed and Plant Inventory for 1970

An inventory of accessions on hand in 1970 appears in Appendix A. A summary of that inventory appears in Table II below.

Table II. Summary of Appendix B.

Crop	Total Active 1/1/70		Removed from Inven- tory '70	Rec'd 1970	Total Active 12/31/70	Seed List 1971	To Be In- creased	Pkts. Plants Distri- buted '70
	Genera	Accessions						
Grasses	51	4787	5	238	5020	4784	236	2885
Legumes	22	2791	0	53	2844	2356	488	1768
Vegetables	19	6909	76	273	7106	6538	568	3204
Oil & Special	93	1166	5	35	1196	928	268	368
TOTALS	185	15,653	86	599	16,166	14,606	1,560	8,125
Ornamentals	130	528	81	26	473	----	----	1,384
TOTALS	323	16,181	167	625	16,639	----	----	9,509

3. Seed Transfers to the National Seed Storage Laboratory

None was sent in 1970. However, increases of four tomato varieties was made at the Regional Station for the NSSL to replenish their supply of seed which was getting low in germination.

4. Plant Pathology, Entomology and Ornamental Programs. Accomplishments of the Plant Pathology and Entomology programs are described in Supplements I and II of this annual report, respectively. The ornamentals program is discussed below.

a. Ornamental Evaluation Program. Additional information is provided herewith:

(1) Regional trial plantings in cooperation with the NC-7 Ornamentals Subcommittee included:

(a) Widespread Distribution

1. Tree Cultivars

- 1 white ash 'Autumn Purple'
- 2 green ash 'Marshall's Seedless'; 'Kindred'
- 4 crabapple 'Inglis'; 'Kibele'; 'Mary Potter'; 'Spring Snow'
- 1 'Exeter Elm', PI 341754

2. Seedlings

- 1 green ash from SE North Dakota
- 1 Hop hornbeam from NE South Dakota
- 1 Oriental arbor vitae, Rochester hardy
- 1 Common winterberry

3. Less Extensive Distribution

a. Cultivars

- 3 ash trees including the golden European ash, PI 268114 to seven cooperators

b. Seedlings

- 3 introductions each (Viehmeier-Univ. of Nebraska) of Cupressus arizonica to three cooperators in the warmer parts of the region.

5. Domestic Exploration

See page 3 of the main report.

6. New Crops Program

Evaluation of new crops for potential industrial utilization was continued in 1970. Several accessions were grown for the first time. The 1970 season was not good for obtaining stands because of extreme temperatures and severe weather conditions after planting. Some success was obtained by mulching the rows after planting.

7. Public Relations

The Regional Station hosted about 215 people in 1970. They represented private interests, state and federal agencies, foreign visitors and student classes. Some of the larger groups are listed below:

ISU Botany Class	15
Students and advisors from Regional Meeting of Agronomy Clubs	40
Springbrook conservation camp teachers	35
Agronomy 550 class	20
Springbrook teachers	30
Area agronomy extension specialists	17
Horticulture Class	12
Agri-business class, community college, Ankeny, Iowa	30

C. Records of Plant Diseases, 1970

This year was the lightest northern leaf blight infestation in our corn in several seasons. Rust was abundant and smut quite common. Stalk rot damage was higher than normal due, at least partly, to the high level of corn borer feeding. Southern leaf blight (Helminthosporium maydis, race T) was severe on Texas male sterile cytoplasm, almost nonexistent on normal cytoplasm. The only Tms material in my plots was the check line: B37Tms x B14A. This line was severely infected by H. maydis. The second check line: C103TRF x B14ATRF, was moderately susceptible to the disease, but check 3: A239 x B14ATRF, was quite resistant.

Ergot was not as severe in 1970 as in 1969. It was still frequent enough, however, to cause concern in cleaning seed of many of our grasses.

D. Work Planned for Next Year

1. Continue screening corn for stalk rot, smut, northern leaf blight, rust, and southern leaf blight resistance.
2. Continue screening tomatoes for fruit rot resistance in the field.
3. Continue the Leptosphaerulina tests with alfalfa.
4. Finish the powdery mildew tests on cucumbers.
5. Check vine crops for seed borne virus.
6. Instigate control measures for ergot in our seed increase plots of susceptible grasses.
7. Take notes on unusual disease occurrences.

E. Publications

1. Clark, R. L. 1969. Resistance to Northern Root Knot Nematode (Meloidogyne hapla Chitwood) in Plant Introductions of Daucus carota L. FAO Plant Protection Bulletin 17(6):136-137.
2. Clark, R. L. 1970. Resistance to Diplodia Stalk Rot in Plant Introduction Corn (Zea mays), 1966-1968. Plant Disease Reporter 54(7):624-626.