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MINUTES

SOUTHERN REGIONAL COOPERATIVE PROJECT S-9

Experiment, Georgia

July 11-12, 1958

SOUTHERN REGIONAL COOPERATIVE PROJECT S-9, ON "NEW PLANTS"

Experiment, Georgia

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Members Present:

- Administrative Advisor - R. D. Lewis, Director, Texas Agricultural Experiment Station, College Station, Texas
- Regional Coordinator - Edwin James, Experiment, Georgia
- U.S.D.A. - W. E. Whitehouse, A.R.S., N.C.R.B., Beltsville, Md.  
W. C. Kennard, A.R.S., S.E.S.D., Washington, D. C.
- Alabama - W. R. Langford, Alabama Polytechnic Institute, Auburn, Alabama
- Arkansas - A. M. Davis, U. of Arkansas, Fayetteville, Arkansas
- Florida - G. B. Killinger, U. of Florida, Gainesville, Fla.
- Georgia - A. H. Dempsey, Ga. Experiment Station, Experiment, Ga.
- Louisiana - Julian C. Miller, Louisiana State U., Baton Rouge, La.
- Mississippi - E. L. Moore, Mississippi State College, State College, Mississippi
- North Carolina - Paul H. Harvey, N. C. State College, Raleigh, N. C.
- Oklahoma - Ralph S. Matlock, Okla. State University, Stillwater, Oklahoma
- Puerto Rico - Antonio Sotomayor-Rios, U. of Puerto Rico, Rio Piedras, Puerto Rico
- South Carolina - J. A. Martin, Clemson College, Clemson, S. C.
- Tennessee - W. E. Roever, Univ. of Tennessee, Knoxville, Tenn.
- Texas - R. G. Reeves, Texas A.&M. College, College Station, Texas

Others Present

- A. J. Norden, Florida Agr. Exp. Station, Gainesville, Fla.  
R. G. Orellana, Spec. Crops, U.S.D.A., U. of Florida, Gainesville, Fla.  
W. C. Young, S.C.S., U.S.D.A., Athens, Georgia  
Paul Tabor, S.C.S., U.S.D.A., Athens, Georgia  
W. T. Fullilove, Director, Georgia Experiment Station, Experiment, Ga.  
W. L. Corley, Regional Plant Introduction Station, Experiment, Georgia

Agenda

MEETING OF TECHNICAL COMMITTEE  
SOUTHERN REGIONAL COOPERATIVE RESEARCH PROJECT  
S-9 - NEW PLANTS

Experiment, Georgia

July 11-12, 1958

R. D. Lewis (Texas), Administrative Advisor  
R. G. Reeves (Texas), Chairman  
A. H. Dempsey (Georgia), Secretary  
Edwin James, Coordinator

1. Registration and roll call.
2. Appointments of tentative committees
3. Report from New Crops Research Branch A.R.S. - W. E. Whitehouse
  - A. Plant Introduction Section
  - B. Crop Development Section
4. Report of activities of the Southern Regional Plant Introduction Station, 1957-58 - Edwin James
5. Reports from State Stations - Contributing to the S-9 regional project. Each representative is requested to prepare a brief typed report for the Secretary to incorporate into the minutes.
6. Further developments resulting from the work of the Task Group on New and Special Crops - R. D. Lewis
7. Report of the subcommittee on Ways and Means of Increasing Regional and State Activities Related to Industrial Use of New Crops - J. C. Miller
8. Report of committee on Maintenance of Asexually Propagated Crops - W. E. Roever
9. Inspection of Plant Introduction Station facilities and tour of nursery areas
10. Punched card system for tabulation of data concerning plant introductions - Edwin James
11. Suggestions for and approval of proposed explorations
12. Future leadership of S-9 Project - Discussion
13. Business items and election of officers
14. Date and location of next S-9 conference

The meeting was called to order at 8:30 A.M., July 11, by Chairman R. G. Reeves who appointed the following committees -

- 1 - Nominating - J. C. Miller, W. R. Langford, G. B. Killinger
- 2 - Committee for considering future leadership of S-9 - R. D. Lewis, R. S. Matlock, J. C. Miller, Edwin James, W. E. Whitehouse
- 3 - Resolutions - A. H. Dempsey, R. S. Matlock, R. D. Lewis

Report of the Activities  
of the  
Southern Regional Plant Introduction Station  
Edwin James

The addition of the 500 square-foot room reported at last year's meeting has allowed the modernization of the Plant Introduction Building. The concrete block walls have been plastered, sheetrock ceilings installed, and asphalt tile laid on the floors. The office rooms thus improved have been painted. A soil bin has been built in the greenhouse, replacing the one previously in the corridor. A surplus cabinet has been acquired and installed in the corridor, providing space for storage of pots and supplies.

Even though a pathologist has not as yet been appointed, several major items of equipment have been purchased for pathological work. These include a microscope, a hot-air sterilizer, a steam sterilizer, and an incubation chamber. A desk and chair are on order. A large capacity germinator has been acquired to provide for the increased load of germination tests of stored introductions.

Following several conferences with members of the Agricultural Economics Department which used the IBM punched card system and a representative of the Royal McBee Corporation, a punched card system has been set up using the latter's system. Conversion to the new system is now in progress. The details of the system will be discussed under a separate

item in the agenda.

J. H. Massey who has been the assistant to the Coordinator the past six years is now on leave at L.S.U., working for his Ph. D. degree. He has been replaced by W. L. Corley who holds a B. S. degree from Clemson College. It is likely that Mr. Massey will return but it is the recommendation of the Coordinator that Mr. Corley be retained as a horticulturist with the return of Mr. Massey. It is felt that evaluations could be more complete with a team composed of an agronomist, a horticulturist and a plant pathologist. In view of the fact that demands for capital improvements of the existing plant will decrease, a moderate increase in funds would permit this arrangement.

The increase program this year consists of 1220 introductions. Approximately 500 of these are cucurbits, mostly muskmelons of earlier introduction dates. These old P.I.'s were collected from the Wyoming Horticulture Field Station and from Cornell University where they have been stored for 15 to 20 years. The viability of these was amazing. In addition to the summer nursery at the Plant Introduction Station, 208 introductions are being increased under contract arrangements.

The results from the winter nursery were disappointing due to the severe winter. Practically all the annual clovers, vetches and Phalaris species winter-killed. These are to go into the increase program this fall.

Considerable interest has been shown in an introduction from South Africa called Romphagrass. This is considered to be a cross between Harding grass and Reed Canarygrass. Survival of this introduction was excellent and vegetative material is available for distribution this fall.

Financial Statement

Budget 1957 - 1958

Regional Research Fund	\$22,165.00
U.S.D.A. (Salary and L. A.)	10,780.00
State	<u>1,600.00</u>
	\$34,210.00

Expenditures

Capital Outlay	\$ 5,696.16
Operating Expense	3,234.69
Personal Services	24,226.91
Travel	<u>1,032.53*</u>
	\$34,190.30

\*Covers trip to Beltsville and Ft. Collins in connection with N.S.S. Lab.

Source of Funds 1958-59

Regional Research Funds	\$22,000.00
U.S.D.A. (L.A. plus salaries)	8,327.00
State	<u>2,000.00</u>
	\$32,327.00

Tentative Budget 1958-59

Capital Outlay	\$ 3,300.00
Operating Expense	3,500.00*
Personal Services	24,727.00
Travel	<u>800.00</u>
	\$32,327.00

\*\$516.00 paid for contract evaluation and increase for this fiscal year.

NEW CROPS RESEARCH BRANCH  
REPORT OF COOPERATION WITH REGIONAL PROJECT S-9 - by C. O. Erlanson

The New Crops Research Branch is an administrative part of the Crops Research Division, Agricultural Research Service. It consists of two program sections, the Plant Introduction Section and the Crop Development Section. Both of these sections play a part in the cooperation developed with regional projects W-6, NC-7, NE-9 and S-9.

Plant Introduction Section (H. L. Hyland in charge)

Introduces new and potentially valuable plant material through international exchange, purchase, or by foreign and domestic exploration; undertakes arrangements for the sanitary inspection and quarantine of foreign introductions and prepares inventories of all material procured for the information of research workers. Determines the identity of plants introduced and handles the nomenclature problems on plant material for cooperating State and federal agencies; prepares taxonomic monographs on plant groups; investigates the geographic distribution of wild plants as a basis for plant procurement programs. Makes bibliographic studies of the economic utilization of plants; collates information obtained through current use in industry of plant-derived materials; prepares assessments of the information obtained in relation to current and future needs of industry and as a basis for crop development programs; and undertakes a continual program of the collection of economic plants for chemical and industrial evaluation.

Crop Development Section (W. E. Whitehouse in charge)

Increases, distributes and conducts preliminary crop evaluations of plant introductions through federal and cooperative regional introduction stations to discover characteristics for use in crop improvement programs; investigates the cultural potentialities of plant introductions as entirely new crops for food, fiber, chemical or industrial utilization; selects from available stocks of plant introductions and newly developed crop varieties those plant materials which should be held in germ-plasm banks for future use; maintains these materials either as vegetatively propagated living collections or in the form of seed; administers the National Seed Storage Laboratory.

Plant Introduction Section - Report by H. L. Hyland

Plant Procurement and Exchange

During the past year foreign explorations have been conducted in Mexico, Southern Europe, England, Belgian Congo, Angola, Brazil and parts of Chile, Ecuador and Colombia. Domestic exploration was limited to the collecting of native and naturalized *Rubus*. A total of 8,400 items were added to germ plasm banks, and approximately 11,000 accessions from earlier years (1951-52) were covered by published inventories.

General classification of field crop introductions included 1,680 forage grasses and legumes, 710 small grain cereals, 675 sugar plants, 220 oilseeds,

125 cotton and fiber, and 65 tobaccos. Especially significant among these collections were the wild sugar canes and related grasses located in New Guinea and adjacent islands. The first expedition since 1928 for this type of material resulted in 315 lots of canes or seed, and should provide valuable germ plasma for disease resistance in commercial cane. This need has been accentuated by ratoon stunting now reported to account for an annual average loss of 20% in sugar and sirup production (CR il-12).

There were no special explorations for vegetables, fruit or nut crops, but 910 vegetable introductions, and 390 fruit and nut varieties or selections were obtained through regular procurement and exchange activities. The domestic exploration for Rubus in Minnesota and Wisconsin was quite successful with approximately 110 lots of seed and/or plants having been assembled at the University of Minnesota. A preliminary report was prepared by R. W. Tuveson who did the work under supervision of Dr. A. N. Wilcox. Additional collecting was planned for the summer of 1958 but failed to materialize (CR il-12).

Ornamental plant species or types comprised about 35 percent of all introduced stocks this past season. Most of these resulted from two major expeditions, one to Europe and England, and the second to Brazil. The European exploration was completed in early November 1957. All material was sent to Glenn Dale, Maryland. Collections from all areas totaled around 2,800, and of the living plants received approximately 1,900 lots were last recorded as having survived. Collections in Brazil were made during the months of March through May 1958. Approximately 550 lots of living plant material have been numbered and are under propagation and observation at Glenn Dale. These trips were undertaken as part of the cooperative agreement between New Crops Research Branch and Longwood Gardens, Kennett Square, Penn., whereby all introductions may be made available to interested ornamental horticulturists, botanic gardens and similar agencies (CR il-13).

L. O. Williams (NCRB) and N. W. Gilbert (OICRB) spent the months of February-May 1958 mostly in the Belgian Congo and Angola, although a brief stop was made in French West Africa enroute, and a two-week visit to Southwest Africa before returning home. This expedition was originally planned as rather general in nature since the area had not been covered in recent time. However, specific emphasis was placed on legumes and grasses, citrus, vegetables, oilseeds and specialty crops. Approximately 550 collections were made among which Sesamum spp. and Tephrosia vogelii may be most significant (CR il-11, CR il-12, CR il-13).

In view of the extreme importance and benefits derived from the germ plasma collection of Solanum spp. built up at Sturgeon Bay, Wisconsin, every opportunity is being taken to make additions. D. S. Correll, formerly with the Branch and now at the Texas Research Foundation in Renner, spent the months of February-April 1958 in Chile, Ecuador and Colombia. As a collaborator, many of his collections will become available to USDA and State cooperating research specialists. 320 interesting lots are being processed through Glenn Dale quarantine facilities as a result of Dr. Correll's efforts (CR il-12).

In the summer of 1956, H. S. Gentry (NCRB) and H. A. Schoth (Oregon) collected in Central and Northern Europe principally for forage legumes and grasses.

A second phase of this work is presently under way with Dr. Gentry again the collector. He will visit Portugal, Spain, Crete, Greece, Yugoslavia and probably a portion of Austria. He has also been asked to make a preliminary survey of vegetable research. Three of the four cooperating projects had earlier indicated that we should consider special exploration for disease-resistant vegetable breeding stocks. It had also been suggested that a pathologist be considered for the trip. The Branch is awaiting definite proposals that will have Technical Committee approval (Cr 11-11 and CR 11-12).

P. F. Knowles of the University of California and Collaborator for the NCRB is presently covering the Near East and Mediterranean countries as an oilseed specialist. We are specifically interested in getting wild species and ecotypes of safflower to supplement active research underway with this crop plant. It is also expected that additional germ plasm will be obtained for other oilseed crops like flax, castorbeans and sesame. Good collections have already been received from India, Pakistan and Afghanistan (CR 11-13).

Two explorations will be underway during the fall and winter months of 1958-59. Dr. W. C. Gregory of North Carolina State College will be on assignment in Central South America as a Collaborator for the Branch. He will specifically survey and collect intensively for wild peanut species and types. The second exploration will be in Australia where George H. Spalding of the Los Angeles County Arboretum will be collecting ornamentals for the cooperative New Crops-Longwood project.

#### Plant Resources Investigations

This is a relatively new field of research directed toward locating new chemical and industrial uses of plant materials which can result in leads for potential new crops. The work requires bibliographic studies of economic utilization of plants, collating data on plant-derived materials currently used or known to industry, assessing this information in relation to present or future needs of industry and as a basis for subsequent crop development programs, and the procurement and placement of economic plants for chemical and industrial evaluation. Close cooperation is maintained with the four regional utilization laboratories, the National Institutes of Health, and the Kansas, Nebraska and Texas State Experiment Stations. Projects developed to date include investigations on food, feed and drug plants; raw materials for industry; alkaloid-containing plants; and waxes and gums (CR-11-9, CR 11-10, CR 11-14, and CR 11-16 respectively).

Processing studies at the WURDD of new or little used fruit and vegetables have indicated encouraging results with pistachio nuts and Chinese water chestnuts. A screening program at the NURDD for new sources of seed protein revealed 272 accessions of 700 so far analyzed were found to have 30% or higher protein content. Arrangements have been completed whereby various state experiment stations will provide forage plant materials for a similar screening program to locate high protein feeds (CR 11-9).

The search for raw materials has been confined to seed oils and fiber producing plants for pulp. Oils with unusual properties are in demand for various industrial processes, and of 700 accessions screened so far by the NURDD, 90 were reported to contain more than 20%, and 27 of the

latter group carried other potentially valuable characteristics. Studies for potential pulping materials have progressed through a compilation of bibliographic references, and initial laboratory screenings which indicate kenaf, hemp and sunn hemp have promise. A modest screening program has been under way during the past year to locate plant constituents of value for insect control. Most research has been confined to the genus Angelica due to its effectiveness as an attractant for the Mediterranean fruit and Melon flies (CR 11-10).

Continued screening of alkaloid-containing plants, through cooperation with the National Heart Institute, reveals new sources which require fundamental research before determining their full value. Special collections of plant materials from Costa Rica and Mexico show these areas to be especially promising. From 157 samples collected in early 1957, twenty-four gave indications of alkaloid presence, some reactions being quite strong (CR 11-11).

### Taxonomic Investigations

An efficient program of plant introduction is largely based on the knowledge of where types or species are known to occur, their accurate identification after procurement, the preparation of keys or guides for classification of the more economically important crop groups, and a constant review of literature to make certain that research workers throughout the world are in agreement when using plant scientific names.

The importance of this work to the Agricultural Research Service and its cooperating Federal and State agencies can best be judged by the 6,750 plant specimens identified during the past year and approximately 4,500 seed samples checked before addition to the seed type collections (CR 11-1).

Taxonomic research and botanical reviews made definite contributions through reporting new plant species in Costa Rica, Peru, Venezuela, and Mexico, and for the states of California, Nevada, and Wyoming as well. In addition, scientific names were checked in 132 manuscripts preparatory to releasing them for publication (CR 11-2).

Additional collections of wild potato species are being made from Chile, Peru, Ecuador, and Colombia to supplement taxonomic classifications already established. This is the first step taken since 1948 to obtain new types from the centers of origin and will greatly enhance the known literature (CR 11-7).

### Publications

"Synopsis of Rudbeckia subgenus Rudbeckia," R. E. Perdue, Jr., *Rhodora*. Dec. 1957.

"The Juncaceae of Wyoming," F. J. Hermann, *Rocky Mt. Herb. Leaflet* 25. Jan. 1957 (Processed).

"New Carices from the Canadian Rocky Mountains," F. J. Hermann, *Leaflet Western Botany*. Jan. 1957.

- "Gum Tragacanth in Iran," H. S. Gentry, Economic Botany. Jan.-Mar. 1957
- "Alkaloidal Plants of the Apocynaceae," J. J. Willaman and B. G. Schubert, Amer. Journ. Pharmacy. July 1957.
- "Leguminosae of Nevada." Part III (Exclusive of Lupinus, Astragalus and Oxytropis), C. L. Porter, Contrib. Flora Nev. No. 42. July 1957.
- "Umbelliferae of Nevada," M. E. Mathias and L. Constance, Contrib. Flora Nev. No. 44. Sept. 1957.
- "Medicinal Uses of Plants by Indian Tribes of Nevada," Contrib. Flora Nev. No. 45 Nov. 1957.
- "Ginseng," L. O. Williams, Economic Botany. Oct.-Dec. 1957.
- "Steroidal Sapogenins XLIII. Survey of Plants for Steroidal Sapogenins and Other Constituents," M. E. Wall, et al., Journ. Amer. Pharm. Assoc. Nov. 1957.
- "New Crops Research--a Cooperative Program," I. A. Wolff and Q. Jones, Chemurgic Digest. March 1958.
- "Plant Explorations. Ornamentals in Southern Japan," J. L. Creech, ARS Crops Research 34-1 (Processed). Sept. 1957.
- "Plant Inventory No. 159. Plant Material Introduced Jan.-Dec. 1951," P. G. Russell. April 1957
- "Plant Inventory No. 160. Plant Material Introduced Jan.-Dec. 1952," P. G. Russell. Sept. 1957.

## Crop Development Section - Report by W. E. Whitehouse

### Fruits and Nut Evaluation

Apple breeders are interested in developing varieties suitable for processing. The Japanese variety Mutsu PI 195834, a Golden Delicious type introduced in 1931, has proved to be a good processing apple for commercial production (CR 12-1).

The search for virus free, cold hardy apple species or varieties for use as interstocks in building body and trunk of trees planted in Northern orchards has been underway for years. Of some 85 tested at the Maine Experiment Station, most of them from foreign sources, one Manchurian, PI 161091, and five Russian apple introductions, PI 90524, 107197, 107202, 107204, 107310, are now considered the most promising for use as interstocks (CR 12-1).

There is need of cold tolerant apricot varieties that will produce medium to good sized fruit in the Northern fruit areas of the United States. The Mantoy apricot, a Northern Great Plains Field Station seedling selection made from seed introduced from Yaomin, Manchuria, PI 65075, in 1925, produces medium sized, good quality fruits; the tree, however, is lacking in bud and blossom hardiness (CR 12-1).

American sour cherry growers have needed a substitute for the weak growing, open-headed, English Morello variety, the fruits of which lack good size. After twenty years of test in this country the vigorous growing, upright Russian sour cherry variety Krassa Severa PI 105207, which bears heavy crops of good sized cherries similar in skin, flesh color and taste to those of English Morello, now promises to be an excellent replacement (CR 12-1).

The Chinese jujube is environmentally suited to arid areas, unadapted to most fruits. Fruits of the early jujube variety introductions tested in California require processing to appeal to the American consumer. In the program to develop varieties bearing fruits of good quality which can be eaten out of hand, eight of the 369 seedlings tested to date have shown considerable promise, two having outstanding merit (CR 12-4).

Chinese peaches have been found of value in the breeding of better clingstone canning varieties. A seedling grown from a 1913 introduction of Yunnan, China, PI 35201, peach seed is one of the parents of nine yellow-fleshed, large sized, clingstone canning varieties, bred at the New Jersey Agricultural Experiment Station and recently released for test. The trees of these new peaches are vigorous and productive (CR 12-1).

The need for good pistachio nut rootstocks necessitated a study of the growth and yield of the better pistachio nut varieties on a wide range of Pistacia species and P. species hybrids. This work has resulted in the selection of several excellent rootstocks (CR 12-3).

### Vegetable Evaluation

A male sterile onion line discovered in recent years has been of inestimable

value in speeding up onion breeding programs. As previously reported, Canadian breeders, using a male sterile cucumber line found in a Korean introduction PI 220860 evaluated at the Northeastern Regional Plant Introduction Garden, Geneva, New York, have developed the Morecrop hybrid cucumber now in commercial production. During the past year, horticulturists at the South Carolina Experiment Station have used this true-breeding gynecious line as a female parent in breeding hybrid cucumber varieties (CR 12-5).

A male sterile downy mildew resistant Puerto Rican broccoli variety PI 189028 under evaluation at Geneva is proving particularly valuable to breeders working on the improvement of this crop. The best resistance to downy mildew of broccoli has been found in PI 223210 from Italy (CR 12-5).

The downy mildew resistant Thaxter bush lima bean was released to seedsmen in January 1958 by the Crop Research Division. The source of disease resistance in this new variety is a colored seeded downy mildew resistant pole-lima bean PI 164155, which was introduced from India in 1948. The other parent is Early Thorogreen. The Thaxter is highly resistant to downy mildew.

An Ecuadorian tomato variety PI 129034 tested at Geneva, New York, has extruded flower styles which inhibit the natural self-pollination of this variety. It is therefore of value in the development of hybrid tomatoes (CR 12-5).

In the cooperative screening of introduced potatoes, 12 of 83 potato introductions, including 15 *Solanum* species, have been found highly resistant or immune to the virulent 1-2-3-4 race of late blight fungus. These valuable genetic stocks are now available to potato breeders (CR 12-5).

Of the 101 hybrids and variety introductions of the common potato screened for leaf roll virus disease, four have been found to be highly resistant to leaf roll virus disease and five moderately resistant (CR 12-5).

Five new potato varieties, Excel, Haig, Nordak, Norglean, and Norland, were released for commercial trial in 1957 by American potato breeders. The Polish Busola and the English Sutton's Flourball varieties are in each of their pedigrees. The German varieties Hindenburg and Jubel and the Austrian variety Petronias are also in the parentage of one or two of these new varieties (CR 12-5).

#### Forage and Range Plant Evaluation

Fourteen of the 35 improved strains and varieties of Agropyron reported in the more than 275 grass varieties under evaluation in uniform grass yield tests throughout the United States originated as foreign plant introductions; seven were developed from selections of native grass species; and eight were obtained from commercial sources. Nine varieties of Agropyron intermedium have been selected out of a 1932 introduction of this species from U. S. S. R. PI 98568. It is unusual to find a single introduction that has made such a rich contribution to the improvement of forage in a seven State area (CR 12-7).

Nine spotted alfalfa aphid resistant clones have been selected from the local African alfalfa variety Hegazi PI 58969 introduced from Egypt in 1924.

A composite of these clones was used to form the new variety Moapa which was released jointly by the Arizona, California, and Nevada Agricultural Experiment Stations in 1957. Moapa is a non-winter dormant similar to the parent African Variety and is well adapted to south-western Arizona (CR 12-7).

A 1949 introduction of yellow sweet clover obtained from the Eskisehir Seed Improvement Station, Turkey, PI 178985, has supplied the character for large seed sought by sweet clover breeders for many years since it permits greater depth of seeding and extension of sweet clover culture in areas of low rainfall (CR 12-7).

Improved early and late strains of hairy indigo resistant to root-knot and non-toxic to livestock have been developed from hairy indigo, a leguminous annual for green manure and grazing introduced from South Africa in 1908, 1914, 1916, and 1943 (CR 12-7).

Latar, a new orchard grass with low lignin content and high digestibility adapted from alfalfa-hay mixtures in the Pacific Northwest will be available for general farm use in the fall of 1958. This variety, selected from an introduction of orchard grass seed from U.S.S.R. PI 111536, was tested, named and jointly released by the Washington and Idaho Agricultural Experiment Stations and the Soil Conservation Service (CR 12-7).

Introductions of winter rye from Uruguay, Brazil and Argentina have provided a high order of disease resistance. Gator, the new variety of winter rye, recently released by the Florida Agricultural Experiment Station, has superior yield of winter forage combined with earliness, resistance to leaf rust, stem rust and powdery mildew. This variety is a single plant selection of one of these South American introductions (CR 12-8).

#### Cereal Crops Evaluation

A popcorn introduction from Peru was the only corn accession of more than 1067 tested for leaf blight at the Indiana Agricultural Experiment Station that remained completely resistant to repeated inoculations of leaf blight (CR 12-8).

A mutant corn type obtained from a Turkish introduction has an amylose percentage of 35.0 as compared to the normal range of 19.0 to 28.6 percent (CR 12-8).

Seedling stage resistance to Puccinia polysora (corn rust) has been found by the Indiana Agricultural Experiment Station in a corn introduction from Argentina (CR 12-8).

#### Sugar Beet Evaluation

California research workers, in developing disease resistant commercial sugar beet varieties, found that first generation seedlings of crosses of introduced wild disease resistant types and disease susceptible com-

mercial varieties were sterile. Crosses of the wild and apparently worthless garden leafy type introductions supplied fertile seedlings which served as a bridge to transfer disease resistant genes to commercial varieties. This is an excellent example of the value of the germ plasm collections stored at the Branch's plant testing stations and planned for the National Seed Storage Laboratory. The garden leafy types had been previously declared worthless by breeders but had been held in a germ plasm bank for just such an emergency.

#### Ornamental Plant Evaluation

The presence of an organic mulch at the time of the first frost induces severe winter injury to azalea nursery plants. Mulches must be removed one month prior to the average date of first frost to avoid injury (CR12-13).

A dwarf, globe-shaped, dark green, glossy-leaved form of the tall upright red-berried Chinese holly Ilex cornuta originated as a single seedling of a plant population raised from an introduction of seed of this species from China in 1920 PI 24638. Given the name Ilex cornuta, Rotunda, and increased and widely tested during the past thirty-five years, it has proven to be an excellent hedge or specimen plant. Southern nurserymen will sell some \$250,000 worth of plants of this holly variety during 1958 (CR 12-10).

A dense, upright form of Osmanthus ilicifolius with much-spined leaves has proven to be an excellent ornamental plant for the South. It originated at the U. S. Plant Introduction Garden, Glenn Dale, Maryland, as a seedling selection in an introduction of seed of this species from China years ago. This selection will be released shortly by the Crops Research Division under the name Gulfside (CR 12-10).

#### New Crop Development

The hundred acre bamboo planting started last year at the South Carolina Experiment Station's Edisto substation will be completed in 1958. Studies have been initiated which will provide information on the soil, moisture, and nutritional requirements of timber bamboos. A study of harvesting methods is also planned (CR 12-10).

The Dawn variety of castor bean named and released by the Texas State Agricultural Experiment Station is a pure line selection of an introduction of castor bean seed from Brazil in 1938. A short internode type, one-half the height of normal internode lines and containing excellent resistance to alternaria leaf spot and tolerance to bacterial leaf spot, this new variety is ideally suited to mechanized harvest (CR 12-10).

As a part of the cooperative screening of plant materials potentially valuable as a source of the drug cortisone, several hundred collections of wild Dioscorea seeds and roots were made in Costa Rica, Guatemala, and Mexico in 1947. In the analysis of D. speculiflora collections a number were found that contained significant quantities of the new steroidal sapogenin, gentrogenin (CR 12-11).

Repeated analyses of Dioscorea introductions, grown at the federal field

stations over a period of years, revealed wide differences in steroidal sapogenins occurring among clones and in some cases and appreciable decrease in the quantities of sapogenins from original analyses of introduced wild material as compared to that extracted from plants grown in this country (CR i2-11).

Planting material of Dioscorea, mostly seedlings, was sent to Mexico, Guatemala, Costa Rica, Louisiana, Arizona, and several locations in Florida for establishing plant growth comparison tests (CR i2-11).

Breeding work has resulted in a number of successful crosses among various promising selections. Several thousand seedlings of several species have been grown for use in future breeding work. Further experiments have been established which are designed to determine the effects of shade, supports, and various mulching practices on the sapogenin content of Dioscorea roots. Measurement, weight, and color were determined. The plants grown with no shade exhibited poorer coloration, less weight per leaf and smaller size. However, the average volume was greater, indicating that the leaves were thicker in this group than that of the shaded plants. An experiment designed to test eight species of plants for possible use as living supports for Dioscorea vines was established (CR i2-11).

A total of 312 hand pollinations were made during this year. High Diosgenin analysis was a prime consideration in making crosses; however, some crosses were made between low analysis plant considered important because of vigor or ability to produce aerial tubers (CR i2-11).

Further investigations of chemical treatments on Dioscorea root pieces with respect to effects on initiation of new roots and shoots have been completed. Of the chemicals tested only indolebutyric acid had an effect on root production. This chemical was quite effective in the stimulation of root production; however, it greatly inhibited shoot production. Another experiment was conducted to determine the effects of adenine and sodium thiocyanate in combination with IBA on the root and shoot development of root pieces. It was found that adenine and sodium thiocyanate, at the concentrations used, had no effect on root development caused by IBA nor did they enhance shoot formation either alone or in combination with IBA. In addition to various growth regulators, a number of fungicides were also used as treatments in the Dioscorea root propagation experiments. It was found that Arasan containing tetramethylthiuram disulfide was quite effective in reducing losses due to rootrots and/or diseases (CR i2-11).

A six-acre test planting of Tephrosia vogelii, a potential new insecticidal crop for the southern areas of the United States, was grown in South Carolina in cooperation with the South Carolina Agricultural Experiment Station. The entire planting was harvested and delivered to a commercial firm for processing. Subsequent yield of rotenone was found to be too low for commercial significance. It is evident that further trial plantings of Tephrosia vogelii will have to await development of the higher rotenone yielding lines being developed at the federal Mayaguez, P. R., station which is working in cooperation with this project (CR i2-10).

Cooperative test plantings of five Rauvolfia species to determine their value as a commercial source of the drug, reserpine, a heart stimulant,

were made at the Everglades Station, the U. S. Plant Introduction Station, Miami, Florida, and the Louisiana Experiment Station, Baton Rouge, La. Although the plants made exceptional growth, the reserpine content of their roots was only half that formed in roots of plants grown in their native habitat. Synthetic compounds recently developed by chemists will probably make the development of Rauvolfia as a commercial source of this drug impractical (CR 12-10).

#### Maintenance of Breeding Stocks

The collection and maintenance of breeding and research stocks of coffee, rubber and cacao containing factors for disease resistance and other desirable plant characters was continued at the U. S. Plant Introduction Stations at Miami, Florida, and Glenn Dale, Maryland. The collection now consists of 91 clones of cacao, 258 clones of rubber and 253 plant collections of coffee. Fourteen foreign countries have drawn on this collection for a total of 408 clones or plant collections for use in the improvement of their existing plantings of one or the other of these crops (IGA-O-3).

#### National Seed Storage Laboratory

The National Seed Storage Laboratory at Fort Collins, Colorado, is completed. Dr. Edwin James, regional coordinator for the Southern Regional Cooperative Program on New Crops for the past nine years, has been named director of the new laboratory.

The laboratory is planned as a repository for valuable breeding stocks, including many of the wild relatives and primitive varieties of our important farm crops. Many of these have useful characteristics, such as disease or insect resistance, cold hardiness, or superior growth qualities, of value to breeders trying to improve commercial varieties of crop plants.

The Crops Research Division of USDA's Agricultural Research Service will administer the new facility. Laboratory facilities will be available to carry out studies on changes in viability of stored seed which will allow predetermination of optimum storage conditions. The laboratory building is constructed on three levels. Refrigeration-dehumidification equipment, control instruments, a repair shop, a garage, general storage, and seed-cleaning rooms are at ground level. An air-conditioned office, library, and file space are on the second level, and seed storage rooms and laboratory space are on the third level. Nine of the storage rooms provide independently controlled temperatures ranging from 20 to 40 degrees F. and can be brought down to a relative humidity of 35 percent. A tenth and smaller storage room provides a controlled temperature range of 0 to 35 degrees F. at the same humidity range. A small, low-temperature, high-humidity room provides a facility for germinating hard seeds by the stratification technique.

The Laboratory's storage capacity is indicated by the fact that, if the average sample of seed stored was 1 quart, about 300,000 seed accessions could be kept in the storage rooms.

Also on the third floor are a seed-testing laboratory, laboratory supply rooms, and walk-in germinators. The seed-testing lab is equipped with 6 mobile germinators, but the large walk-in units allow germination and viability studies of seed that cannot be grown in the smaller mobile equipment.

A 6-member laboratory policy committee has already agreed on the following general policy of operation:

1. Only seed will be accepted for storage, because other types of plant material would create exceptional difficulties.
2. All seed accepted becomes Federal property and will be made available to qualified research workers without cost.
3. The criterion of seed stocks accepted will be their value as basic germ plasma for future use and comparison. Each shall be fully documented as to source and development history. A major consideration in acceptance will be proper and full records.
4. Any bonafide research worker of the U. S. or its territories and possessions may receive laboratory seed if it is not available elsewhere. Requests for seed from foreign research workers will be screened by staff members of the New Crops Research Branch of USDA's Crops Research Division.
5. The laboratory will arrange for rejuvenation of seed stocks when loss of viability becomes serious or when stocks need replenishment.

#### Publications

"Apples, Pears and Grapes. Introductions now available from the U. S. Plant Introduction Garden, Glenn Dale, Maryland." H. F. Winters, A. R. S. Series I (9), 1958. (Mimeograph).

"Late Blossoming Peach and Nectarine Varieties Tested at Chico, California," W. L. Ackerman, A. R. S. Series I (8), July, 1957. (Multilith).

"Preliminary Evaluation of New and Uncommon Pear Varieties Including Comparison with Standard Sorts." Freeman S. Howlett. North Central Regional Bulletin 75 (Ohio Agric. Exp. Sta. Res. Bull. 790). July, 1957.

"Catalog and Evaluation of the Pear Collection at the Oregon Agricultural Experiment Station." Henry Hartman. Western Reg. Res. Publ. issued as Tech. Bull. 41, Ore. Agri. Exp. Sta. Dec. 1957.

"The Pistachio Nut - A New Crop for the Western United States." W. E. Whitehouse, Economic Botany 11(4). Oct.-Dec. 1957.

"Gynecious Cucumber for Hybrid Seed Production." C. E. Peterson (to be published in Amer. Soc. Hort. Sci. Vol. 70).

"Rating Eggplant Introductions for Resistance to Verticillium Wilt". S. W. Braverman. Farm Research N. Y. 24(1). Jan. 1958.

"Screening of Solanum species for Resistance to Physiologic races of Phytophthora infestans." W. Black and M. E. Gallegly. Amer. Bot. Journ. 34:273-281. 1957.

"Reactions of Watermelon Introductions to Downy Mildew in North Carolina." Plant Disease Reporter 41(620-22). July, 1957.

"Dawn-A Dwarf Internode Castorbean Variety." Texas Agr. Exp. Sta. L-334. Feb. 1957.

"Hairy Indigo, a summer legume for Florida." Alvin T. Wallace. Univ. of Florida Cir. S-98. June, 1957.

"Gator Rye." W. H. Chapmen, D. D. Morey, A. T. Wallace, H. H. Luke. Univ. of Florida Cir. S-94. Nov. 1956.

"Hardiness in Running Bamboos." J. L. Creech, Nat. Hort. Mag. 36(4). 1957.

"Tomato Aspermy Virus in Chrysanthemums from Asia and Europe." Philip Brierly, Plant Disease Reporter, 14(1). 1958.

"Carex morrowi." E. Griffith. Nat. Hort. Mag. 37(1). 1958.

"Trees for Ornamental Planting." Ira J. Condit, Nat. Hort. Mag. 36(3): 2. 1959, July 1957.

"An Interim Report on Metasequoia glyptostroboides." E. Griffith, Nat. Hort. Mag. 36(4). 1957.

"Propogating Hollies." J. L. Creech, In Handbook of Hollies. Amer. Hort. Soc. Jan. 1957.

"Spilanthes oleracea." J. L. Creech, Nat. Hort. Mag. 37(1). 1958.

"Activities of the United States Plant Introduction Garden at Coconut Grove, Florida." J. E. Shrum, Jr. American Nurseryman, July, 1957.

"New Germ Plasm - The Merits and Uses of Some Plant Introductions." Desmond D. Dolan. Economic Botany 11(3). July-Sept. 1957.

"Pepper Introductions - How Do They Rate?" D. D. Dolan. Farm Research 23(4). October, 1957.

## STATE REPORTS

Alabama - Alabama does not have a supporting project to the plant introduction program, but several research workers at Auburn and a few commercial seedmen in the state obtained new plant material from the Plant Introduction station. Material obtained by experiment station personnel includes forage species, turf grasses, ornamentals and horticultural plants.

Thirteen accessions of Trifolium and Medicago sp. received in 1957 were grown in nursery rows at Auburn. None of these appeared superior to the material now available commercially. Israel sweetclover was planted at three locations last September for observation under different climatic and soil conditions.

Forty-three accessions of summer legumes and grasses were planted during April, 1958; and they are being observed for possible use as forage crops. It is too early in the season to place an evaluation on these accessions.

Four accessions of cynodon received last March are being increased for experimental plantings in the field. Uganda Bermuda is highly susceptible to sunscald and it is being discarded. Two other Bermudas, Royal Cape and Franklin, will be retained for further evaluation. Thus far they have not been affected by diseases.

Agrostis tennis, P.I. 172698, shows promise of being a year-around lawn grass in central Alabama. It has been relatively free from diseases, but has not produced seed in this area.

Many of the species in the collection of ornamentals are too small to rate as to commercial ornamental possibilities. These species will be interesting for comparison with established similar species and to evaluate for landscape usage.

Two blocks of U.S.D.A. chrysanthemums consisting of numbers 231100-lavender, 231099 - yellow, 231102 - white, 231097 - yellow (very dwarf), 231094 - bronze centered white, 231098 - yellow, and 231096 - white, were planted in late summer of 1957 in an area exposed to full sun. Due to late planting, none of these plants branched or bloomed well. As many of these varieties were listed as summer flowering, they were allowed to remain in this location after cutting the old stems to the ground. All plants set buds in the spring of 1958 and bloomed very unevenly around the second week of June. Blooms were small, opened poorly, and sunburned badly.

Two variations of Osmanthus illicifolius, P.I. 213308 and P.I. 205644 were planted in the semi-shade provided by Albizia julibrissin, Silktree. The former grows upright, pyramidal, in tiers -- each cycle of growth having a void between it and the previous cycle. With a small amount of trimming this species would make a very good plant for upright specimen use. The latter species has an upright spreading habit of growth and may be valuable for espalier use. Presently it is rather unshapely.

Acer davidi, P.I. 10-5646 is a vigorous grower with attractive light and medium green stems. It is now around 12' in height and has possibilities as a rapid-growing tree for this area.

Clethra alnifolia, P.I. 190213 has developed into a well-branched shrub 4-5' in height. It is covered with effective clusters of spike flowers, 5-6" in length and fragrant.

Rosa sp. P.I. 204608 plants are unsatisfactory as landscape specimen but might be usable in mass-group plantings for wild life protection. These plants are heavily covered with large hips ( $\frac{1}{2}$ - $\frac{3}{4}$ " in length).

#### Arkansas -

Horticultural Crops - During the past year 113 PI numbered introductions have been received. These have included ornamental as well as fruit and

vegetable accessions. Most are still being screened for usefulness, primarily as sources of disease resistance in tomatoes, cucumbers, watermelons, cantaloupes, southern field peas. One principal accession, P.I. 172790, received in 1950, segregated a distinctive rind pattern which is now being incorporated into an ice box sized melon. L. pimpinellifolium U.S.D.A. ACC 2116 is being used in anthracnose work. Ornamental plants recently received consist of a collection of chrysanthemums and several shrubs. P.I. 220407, Grewia asiatica remained dormant until mid-June before sprouting from crown. It is now 18-24 inches tall.

Turf Grasses - Good acceptance of "Sunturf" Bermuda grass, P.I. 184339, is being experienced. Of the nine Bermuda grasses received in September 1957, P.I. 224140 is showing rapid coverage and good foliage color.

Forage Crops - Alfalfa lines from the Northeastern Plant Introduction Station have shown little promise at Fayetteville even though considered outstanding in their area. Other species of Medicago studied are not superior in forage production to wild types growing in the area of Fayetteville. All orchard grass lines studied to date are more susceptible to foliage diseases than commercially available varieties. Accessions received from the Northeastern area have been particularly susceptible to rust.

Small Grains-Sorghum-Corn - Several lines of these crops are now being maintained and selections from them being made. Some progress in forage sorghum breeding is being made, using Plant Introduction material as a source of material to improve the leaf head ratio.

Sesame - Only P.I.'s from 1957 harvest were retained to be grown in 1958. P.I. 159801 was single plant harvest and is being grown this year as single plant progenies. This and P.I. 202722 are the P.I.'s selected in 1957 as having some promise in the Ozarks area.

Florida - Over 1000 introductions were received during the past year. Many of these introductions are still in the process of being screened for desirable characteristics. Agronomic and horticultural crops were about equally divided and comprised the bulk of new material.

Sorghums and millets are under test and used in breeding program. Sesame and castorbeans are under test. Forestry, ornamentals and drug plants are being grown. New Zealand Ryegrasses yielded well and were disease free. 1957-58 was a good season for ryegrass.

Plans are still in the making for a more permanent installation for handling and testing new plant material at Gainesville.

Georgia - During the 1957-58 year research men in Georgia obtained a total of 190 introductions. These were about evenly divided between agronomic and horticultural crops including ornamentals. During the past year Dr. Hammons with labor supplied by the Station provided gratis increases and evaluations of all new peanut introductions. The Agronomy Department has also accepted the responsibility of obtaining increases and notes on all lupine introductions in return for an opportunity of a first look at these introductions. This season, however, peanuts are being increased on a contract basis. The amount involved is merely sufficient to defray the labor expense involved.

Advanced screening of some older lupine introductions have shown eight of these to be resistant to gray leafspot disease. (Published in Plant Disease Report 41:1037-38, Dec. 15, 1957)

The "Blanco" variety of blue lupine was released in 1957. This is a white-seeded sweet blue lupine having as one of its parents the "Borre" P.I. 189191.

Work toward the development of a crack resistant tomato using many introductions has been accelerated at the College Experiment Station.

The Plant Materials men of the Soil Conservation Service continue to be highly cooperative in testing the better foreign crop introductions.

"Canbake", a new sweet potato variety was released in January 1958 by the Georgia Experiment Station. It is an open-pollinated seedling from Australian Canner. This variety is resistant to blackrot and it has tolerance to fusarium wilt. CANBAKE has outstanding baking and canning qualities.

Kentucky - Approximately 50 accessions were brought into Kentucky from Agriculture Research Service, Plant Introduction stations for plant breeders, soil conservationist and foresters. These are being or will be evaluated for crops breeding germ plasm, conservation planting and ornamental purposes. To date no recent accession brought into Kentucky under this project has proven useful in itself though a few appear to carry desirable germ plasm for breeding purposes.

Louisiana - The period covered by this report was devoted largely to screening of material previously introduced.

Dioscorea: Of more than 2000 plants, 175 have been sent to the Eastern Research Laboratory for analysis. Other work with this crop has included cultural practices in order to determine the method best suited for commercial production.

Rauvolfia: The material extracted from this crop has now been synthesized. Interest in it is slacking off, and so no extensive efforts will be made to further propagate this crop commercially.

Ipomoea: The Ipomoea introductions are being tested for various diseases and for breeding stocks at the present time. It is encouraging to report that from introduced and local material in combination, varieties resistant to as many as three diseases are on hand. Finding such resistance is very encouraging and shows the opportunity available in introducing new germ plasm.

Only three new P.I. introductions of sweet potatoes were brought in this year. However, additional ones from New Zealand and Argentina are expected.

Pepper: Of the pepper plants introduced last year, which are being used as breeding stock, several have been found that offer great possibility as commercial peppers and as breeding stocks.

Okra: Three lines of okra were introduced, which were said to be resistant to nematodes. These are being used in crosses with the better selections and varieties.

A new variety of okra will be officially released, which will be known as Green Coast. One of the parents of this variety was introduced from the Gold Coast of Africa and is very resistant to drought and other adverse weather conditions.

The work on selection for high oil content in okra as well as breeding new varieties for commercial use is being continued. Okra was a garden crop in Louisiana only a few years ago, but it is now a commercial crop valued at better than \$2,000,000. This points the way as to what might be done in developing new crops.

One of the leading paper companies is continuing to expand their plant to process fresh okra pods to use as a spreading agent in the manufacture of onion skin paper. This offers an entirely new outlet for this crop.

Strawberry: Nine introductions of Fragaria chiloensis, which were part of the collection that Dr. Darrow made in South America, were brought in and will be used in the breeding program.

Castor Bean: Since interest in castor beans is on the increase, more time is being devoted to breeding and making new selections from the original stock which was brought in by the writer from Brazil about 16 or more years

ago. This material, which carries the dwarf character, was the foundation for breeding material used by the Baker Laboratory, the U. S. Department of Agriculture and the Texas A. & M. Experiment Station, from which the new Dawn variety was developed. The original selection, which was obtained from Brazil as mentioned, was a short day plant and had to be crossed with long day varieties, and this station is now in the process of selecting earlier maturing varieties with larger seed and the dwarf character. The dwarf plant makes it possible to harvest the crop mechanically.

Israel Sweet Clover: This is probably the most outstanding introduction obtained by this station in years. The plants grow to a height of 8 to 10 feet and offer great possibility as a cover crop or for soil improvement. Both C. R. Owen of the Crops and Soils Department and the writer have grown this clover and are very enthusiastic about its possibilities.

Mississippi - Fifty-four introductions of a Johnsongrass X durra sorghum hybrid (F1 and various filid generations) were grown for silage. Large yields of green and dry matter were produced. Silage made from these was high in fiber and low in carbohydrates. No seed were produced and none were perennial.

All English pea, Pisum sativum, introductions received since the initiation of the project have been screened for ascochyta resistance. No resistance has been found. Such resistance evidently must come from the genus Lathyrus.

Selfing and artificial inoculations have raised the crown rust resistance of Lolium sp. as follows:

P.I. 201980	74.3	P.I. 193145	96.2
P.I. 194395	91.2	T.D. 1882	93.3
P.I. 194394	94.6		

Four S4 lines will be placed in regional tests in 1958.

Introductions are observed for desirable characteristics for use in breeding programs.

North Carolina - North and South Carolina have a plant introduction of which we are not at all proud, namely, striga or witchweed. Since this unwanted pest has been found in our area, Dr. E. L. Robinson in cooperation with Dr. W. M. Lewis is testing 171 sorghum strains for possible resistance to witchweed. In this collection are several introductions from South Africa, some of which are supposedly resistant. Dr. Robinson also has 40 sugarcane strains under trial in the witchweed infested area.

Dr. W. C. Gregory has been investigating his collection of peanuts (*Arachis species*) and also Dr. Hammons' collection at Tifton, Georgia. The introduction of peanut collections is of interest to those states working with peanuts both as a nut crop and a potential forage crop.

North Carolina is continuing the study of new plants and this year has under trial castorbeans, sesame, bamboo, safflower, and guar. Several farmers in the state are planting up to two acres of castorbeans to see how well they perform under general farm conditions. From our castorbean variety trials over the last five years, it appears that central North Carolina has the possibility of producing from 1000 to 1500 pounds per acre which would make the crop competitive with soybeans at current prices.

In cooperation with the New Plants Section we are attempting to grow 11 genera. We have had considerable difficulty in getting germination of the seed supplied to us by Dr. Quentin Jones. We have secured a stand of Chrysanthemum coronarium on one-quarter acre. Several of the species are fall annuals or perennials which we will attempt to handle as fall planted crops.

The plant breeders in both Field Crops and Horticulture are continuing to use plant introductions in their breeding programs. At the present time the horticultural work is at a low ebb due to the loss of staff members.

Oklahoma - The cooperators in Oklahoma wish to express their appreciation to the various agencies involved in making new germ plasm available. Approximately 232 plant introductions were requested since early 1957 by personnel at experiment stations, foundations and private individuals. About 106 of these were received in 1958.

The work in the forage crops section at Stillwater has been progressing and concentrating on the apomitic complex and hybridization with some accessions of Bothriochlea and Dichanthium. Several other accessions of forage grasses and legumes have been established for observation. An annual report of progress was distributed early this summer to each station and gives the details on performance.

At the Samuel Robert Noble Foundation near Ardmore, Chessmore and Bates plan to continue evaluating plant introductions as time permits under their present program. They plan to try some of the more promising plant introductions on individual farms in South Central Oklahoma. The more promising accessions in Ardmore tests include the following:

- P.I. 203728 - Tall fescue - very vigorous, palatable.
- P.I. 206710 - Very good winter and early spring growth.
- P.I. 226072 - Eragrostis curvula - Two plants with tender wide leaves.
- P.I. 220026 - Panicum antidotale - Fine stem, leavy, many tillers.
- P.I. 206992 - Secale anaticicum - Leaf rust resistant, late maturity, used in crosses.
- P.I. 220893 - Vicia dasycarpa - Winter hardy and early growth.
- P.I.'s 189393, 193291 and 199305 - Medicago - Very good seedling vigor, semi-upright growth, good fall and spring growth. Non-winter hardy but shows promise for selecting and hybridizing.
- P.I.'s 121437 and 205139 - Vigna sinensis - Good forage and seed producer, good regrowth, resistant to mosaic. The F<sub>2</sub> material of these crossed with adapted forage strains is being studied.

At Stillwater we have located a soil infested with fusarium wilt and have planted 300 domestic selections, varieties, and plant introductions for screening. Wadsworth, in Plant Pathology, is working on the disease phase.

To date none of the plant introductions have appeared superior to Victor K-798, Iron K-329 and Improved Brabham for forage production and disease resistance but many of them contain specific characteristics which make them valuable to the cowpea improvement program. Ligon's cowpea classification bulletin should be published very soon.

Horticultural Crops - Dr. Cordner is continuing his work with the Caribbean collection of sweet potatoes. He is also working with lima beans. Dr. Ealy is interested in ornamentals and feels a real need for materials for planters and low foundation shrubs. Professor Kays is working with strawberry and *Rubus* spp.

Mungbean - Banks has completed M.S. thesis on an agronomic grouping of 138 strains, accessions and selections. In general, most of the introductions are late and very leafy but are low seed producers. These should be valuable for crossing with domestic strains.

Guar - Approximately 150 guar introductions and domestic selections were grown and observed in 1957. An extremely wet harvest season was conducive for the development of *Alternaria* leafspot. The plants were scored (1 = none, 5 = severe) for the presence of the disease on stems, leaves and pods. Three strains were free of disease (Guar 9-5 selection, P.I. 176,378 and P.I. 179682). One accession (P.I. 183400) appeared promising and was advanced to the variety test this year. The plants were fairly free of disease, glabrous, branching and medium early, but had coarse stems.

Other crops tested under the cooperating project include peanuts, sesame, safflower, crotalaria, and sunflower. Several sunflower varieties and lines from Chile are being tested this season.

Seed of Jojoba are being planted to establish seedlings for transplanting in three latitudes in Oklahoma to evaluate for possible adaptation.

Puerto Rico - Through the cooperation of the S-9 Regional Project, the U.S.D.A., government agencies, local and foreign, 346 accessions of plant material and seeds have been obtained. Most of these accessions have been planted for evaluation and/or seed increase. The following is a summary of the work conducted under each specific crop:

Coffee - A large collection of coffee varieties from different parts of the world is being maintained at Castaner. During the year, 35 varieties were obtained from the U.S.D.A. and kept under quarantine for 6 months, after which they were transplanted to Castaner.

Oil Crops: Permanent plantings of aceituno, Simaruba glauca, have been established at different locations for evaluation as an oil crop. These have been taken care of as regards replantings, fertilizer, etc.

Fruits: Progenies of 13 hybrids of strawberries in production are now growing at 3 locations, Corozal, Castaner, and Aibonito. A new planting of progenies of another 10 strawberry hybrids has just been planted at Corozal. These are being studied for evaluation as to fruit characters, disease behavior, yield, etc. Accessions of papaya, pineapple, grape, avocado, mango, and peach have been obtained during the year and are now planted in seedbeds, or already in the field.

Legumes: Forty nine accessions of legumes have been obtained during the year, consisting mainly of beans, Ph. vulgaris. These have been handled to the bean breeder for evaluation. Others in this group are pigeon pea, cow-pea, crotalaria, and Pueraria accessions.

Ornamentals: Eighteen flower and foliage plants were introduced and are now growing in the nursery for future evaluation.

Grains: A number of sorghum introductions were also obtained. Some of them have been tried at Lajas Substation either for production of grain or forage. The results of these tests are presented in tables 1 and 2. A

perennial sorghum, Sorghum aluum, has been introduced for testing at Lajas and Gurabo Substations. Seed is being increased at the present.

Grasses: A hundred and twenty six grass accessions were obtained from the U.S.D.A. and one from Cuba, and these are being handled under the grass breeding program as to their adaptability for utilization as soilage or pasture grasses.

USEFULNESS OF FINDINGS: Promising selections of strawberries have been obtained among the hybrid progenies under test at various locations. Results from yield trials indicate possibilities of producing imported sorghums for forage and grain at the Lajas region.

WORK PLANNED FOR NEXT YEAR: 1. Continue the introduction and trial of new plant material for adaptability to different parts of the Island.

2. Continue the preliminary evaluation of varietal introductions thus far obtained.

Table 1. Results of grain sorghum variety trial at Lajas Substation

Variety or hybrid	Days to bloom	Days to harvest	Plants per plot, ave.	Mean yield of grain in cwt. per acre
Blanco del Pais	132	186	422	42.89
R.S 610 Hybrid	46	96	255	37.26
Westland	48	96	289	29.09
R S 650 Hybrid	53	96	265	29.09
R S 590 Hybrid	53	96	260	28.82
Colley	29	96	298	27.10
Redland	53	96	261	26.95
Plainsman	48	96	283	26.50
Midland	48	96	301	21.83
R S 501 Hybrid*	29	96	230	13.98
Reliance*	29	96	219	3.59

\*Bird damage observed

Least significant difference between the variety means:

At the 5-percent level = 7.68

At the 1-percent level = 10.29

Date Planted: June 6, 1957

Date Harvested: All varieties except Blanco del Pais, October 9;  
Blanco del Pais, December 30, 1957.

Size of Plots: 1/181.5 acre Soil: Santa Isabel Clay

Table 2. Results of forage sorghum variety trial at Lajas Substation

Variety or hybrid	Days to harvest	Plant per plot, ave.	Mean yield of green forage in cwt per acre
Blanco del Pais	97	443	708.12
Sugar Drip	62	327	469.72
Tracy	58	280	400.44
Kansas Orange	58	248	347.90
Atlas	58	217	288.82
Ellis	58	150	170.39

Least significant difference between the variety means:

At the 5-percent level = 84.23

At the 1-percent level = 116.50

Date planted: August 8, 1957

Date harvested: Varieties Tracy, Kansas Orange, Atlas, Ellis, October 5; Sugar Drip October 9, Blanco del Pais, November 13, 1957.

Size of plots: 1/181.5 acre

Soil: Santa Isabel Clay

South Carolina -

Peppers - Evaluation of several hundred P.I. accessions of peppers are being made to determine the various plant characteristics, initial color and its retention ability, pungency, disease and nematode resistance, and ornamental value. Most of these P.I. accessions have been divided into their respective taxonomic classification as to species as follows: Capsicum frutescens, L., C. Annum L., C. Pubescens R. and P., and C. pendulum Willd..

In the commercial group ( C. frutescens L.) there are several outstanding P.I. accessions which have shown consistent high levels for red color ratings from year to year as well as retaining the color for long periods of time. P.I. 159236 continues to show best level of red color and retention for a long period of time, (year or better). P.I. 198637, P.I. 213917, P.I. 215735, P.I. 159241, P.I. 159208 and P.I. 159261 are also good.

P.I. accessions 159208, 159241, 159273 and 215735 possess high levels of pungency (Scoville method).

A new project on the fundamental chemistry of capsaicin has been initiated in cooperation with the Agricultural Chemistry Department and it should lead to the development of better methods for the determinations of pungency; better methods of selections for specific varieties in plant breeding work, as well as better understanding of the proper methods of processing for use. This project is sponsored by Gentry, Inc., Los Angeles, Calif., processors of pepper products.

The Clemson Nutrition Department has been and is cooperating in making color determinations of all samples submitted as well as color retention for long periods of time.

Much interest has been shown in the ornamental accessions. It is hoped that we can get some of these accessions planted in public areas where we can obtain consumer ratings as to best types to introduce.

Okra: The okra accessions have been evaluated and tested for a number of plant characteristics. With the discovery of root-knot resistant P.I. accessions (P.I. 120833, 109215, 172674, 175567, and 178808) breeding work has been initiated to transfer the resistance to our popular variety, Clemson Spineless. Progenies from the back-crosses are now being grown for selections and further testing.

Several late maturing varieties may offer potentialities for fiber and paper pulp. Some work is planned along this line to furnish material to utilization laboratories for testing.

Chufas: The 15 strains of chufas which have been selected as most promising from the P.I. 184949 (from Nigeria) are still alive in both the two and four year old nurseries. Growth started very late in the spring following one of

the coldest winters in years. Observations of the tubers at various soil levels showed that the topmost tubers were killed by low temperatures - leaving the lowermost tubers for growing and thus requiring a longer time for growth to appear. Some work will be initiated this fall to study the effects of bedding on survival of tubers at different soil levels.

Sunturf Bermuda: The Sunturf Bermuda grass has given a good account of itself as far north as the southern tip of Illinois where the temperatures have dropped to 0° F. for sometime. It produces a dark green fine textured lawn which is much easier to maintain than coarse textured lawn grasses.

Sesame: Evaluation and testing sesame accessions are underway with all materials which are available. Pre-emerge weed control and fertilizer studies have been initiated this year. So far Chloro I.P.C. at the rate of 2 pounds per acre in 14" bands has given good control of most weeds. This work will be expanded in the future as the introduction of the new crop to farmers will depend on how well production costs can be kept down. The breeding work is continuing for better indehiscent types, disease resistance, and higher production.

Tephrosia vogellii: Six acres of Tephrosia vogellii grown in Anderson County, S. C., produced 9,890 pounds of dried material for making a pilot run by Chemical Insecticide Corporation, Metuchen, New Jersey. According to reports, a total of 412 pounds of extractives were obtained from the above which contained 131 pounds of rotenone - a yield of 1.33% rotenone, which is too low to justify extraction. However, work towards selection for higher rotenone contents may show promise.

Ornamental Plants: Approximately 110 species of ornamental plants have been received since April 1, 1957. Mortality has been high due to extreme low temperatures which prevailed through winter months. Plants are grown under shade house for first season and then a few planted to the field to determine

whether or not they are sun tolerant.

At the present time 25 to 30 species are planted to field. It is too early to make many comments on existing plants, but of the 1 year plants, Cercis siliquastrum, Prunus spinulosa, and Serissa foetida look promising. Several of the species received in October 1957 and April 1958 look very promising. These plants are still in liner stage. Two oak species, P.I.'s 229886-87 were transferred to the Forestry Department.

Both Mr. J. P. Fulmer and Mr. F. W. Thode are cooperating in the evaluating and testing of ornamentals. A large shade house has been constructed (80' x 30') and facilities are being made available as needed. Orchardgrass: Fifty-five accessions were obtained, evaluated and tested. Only five (P.I. Nos. 199245, 200319, 202697, 217416, and 222761) of the fifty-five grown in the field rows have even approached the general adaptability and vigor of common orchardgrass. The balance appear unadapted. Stagonospora appears to seriously damage many of them. A number of plants which appear to have some resistance to rust have been isolated from several accessions which were screened for rust resistance as seedlings in the greenhouse. Field observations indicate some resistance to Sclerotrichum in a few accessions, but the evidence is not at all conclusive.

Pennisetum glaucum and P. Spicatum: One very late accession of P. glaucum (143855) crossed with an accession of P. spicatum (213531) produced an exceptionally vigorous and lodging resistant F<sub>1</sub>. Most of the P. glaucum accessions failed to germinate in the field.

Sorghum vulgare: Germination in the field was very low. None of the accessions which did germinate showed any promise as forage varieties. Some accessions appeared to possess superior lodging resistance.

Tennessee - Ninety-six new P.I. accessions were received during 1958 for studies in agronomic or horticultural adaptation and for use in breeding

programs.

P.I. 182989, a *Rubus* species obtained several years ago by Dr. B. D. Drain was crossed with Tennessee selections of *Rubus occidentalis* and some very promising progenies are now appearing.

One pear accession, P.I. 83814, showed no fireblight but was of poor quality.

Of 15 apple accessions obtained since 1953, T. R. Gilmore reports good growth in P.I. 127009 (Laxton's Fortune), 224198 (Oretorp Rerretl) and 224609 (Gjallen). Promising fruit was reported from P.I. 175034 (Kimball McIntosh) and 176819 (Laxton's Reward).

Three accessions of *Fragaria chiloensis* seed were received for use in the Tennessee strawberry breeding program. These will be seeded in September.

Seventeen P.I. grasses or legumes were received in 1957 by J. K. Underwood. Hardiness observations on two promising *Pennisetum ciliare* lines, P.I.'s 229662 and 226088, were lost due to new building operations. Good stands of *Agrostis tenuis* were obtained from fall seedings but were lost in the same manner.

*Crotalaria intermedia* (PQ X 56206) from Southern Rhodesia was free of nematodes in heavily infested soil. It showed vigorous growth and heavy natural nodulation. This species should develop a heavier tonnage of excellent forage than many other high yielding legumes. It does not seed under our day length which would necessitate an outside seed source annually.

Mr. J. S. Alexander reports that out of 66 chrysanthemums cuttings established in pots and transplanted to the field on June 10, 1958, and pinched, the following rated good to excellent for foliage characteristics, number of breaks, growth, and freedom from diseases as noted on July 9, 1958: P.I.'s 231095, 235628, 236037, 236778, 236902, 236044, 236059, 236063.

Seven clumps of chrysanthemums of Japanese origin were received in excellent condition June 21, 1957. These were grown in the open in full sunlight without temperature or light conditioning, pinching or disbudding.

Three vigorous shoots per clump were allowed to develop. Branching of all varieties tended to be rather short and concentrated in upper half or less of the shoot, giving a compact and firm though not crowded spray. Branching of Daigyokuden was somewhat longer and more dispersed than of the others. Heights varied little, from 18 to 22 inches. Foliage was abundant, dark green, and of good quality.

Size of flowers of all varieties was approximately 2 inches. Color of all was clear, and little fading was noted except in Hinomaru, a lavender-pink which faded to lavender. These were grown and noted by R. B. Thompson.

P.I. No.	Name	Color	Blooming Period		
			First	Peak	Last
231093	Daigyokuden	Golden yellow	Oct. 1	Oct. 15	Nov. 1
231094	Fuku-un	No bloom			
231096	Hinomaru	Lavender pink	Oct. 15	Oct. 30	Nov. 9
231097	Kinbyobu	Golden yellow	Oct. 8	Oct. 20	Nov. 6
231099	Kinkazan	Deep Gold	Oct. 18	Nov. 1	Nov. 8
231100	Shinosome	Red-Violet	Oct. 20	Nov. 1	
231102	Tsukase	White	Oct. 20	Nov. 5	

Among older selections P.I. 143795 (*Ilex cornuta* var. *rotunda*) has been evaluated as definitely promising for hedge planting.

P.I. 161688 (*Metasequoia glyptostroboides*) is growing vigorously and appears hardy.

Forty tomato accessions showed some resistance to buckeye rot in screening tests by E. I. Felix.

P.I. 168939 (*Quercus acutissima*) is now being used in landscape work on the campus.

Requests were made for collections in *Lotus*, *Dactylis*, *Poa*, *Panicum*, *Trifolium*, *Pinus*, *Fragaria* and *Lycopersicon*, to be made on the Mediterranean exploration in 1958.

Nine members of the station staff are presently actively collaborating. They are: R. B. Thompson, ornamentals; J. S. Alexander, ornamentals; B. D. Drain, small fruits and tree; T. R. Gilmore, tree fruits; J. K. Underwood, grasses and legumes; H. A. Fribourg, legumes and grasses; E. L. Felix, disease resistances; E. R. Buckner, forest trees; W. E. Roever, small fruits and tomatoes.

Texas - Release of two accessions has been completed since our last meeting, Gulf Ryegrass ( P.I. 193145), a rust-resistant variety, and Israel Sweet Clover (P.I. 200355).

Additional grass introductions which have shown up exceptionally well in replicated field experiments for about four years are Andropogon barbinodis (P.I. 216092 and 216138), Bouteloua curtipendula (P.I. 216244 and 216221), Bouteloua gracilis (A group of similar accessions collected in the state of Durango, Mexico), and Setaria macrostachya (P.I. 216555). Among some 3000 grass accessions introduced in 1953 and 1954, these are superior for the usually desirable forage characters and for high seed production.

Among 56 accessions of Bothriochloa and Dicanthium obtained from the Oklahoma Station, 8 are rated as worth of further trial. Crotalaria juncea (P.I. 213378), C. retusa (P.I. 189043), C. mucronata (P.I. number unavailable) were rated, on the basis of one year of observation, as being equal, or superior in some characters, to existing varieties. All of them are good in forage production, seed production and leafiness. Hard seed content of Trifolium resupinatum (P.I. 180492) has been increased by selection from 0.5% in 1953 to 29% in 1957. This accession needs further selection and testing, but its past performance suggests that eventually it might become useful.

Peanuts - A cross of Spantex with P.I. 161317 resulted in three outstanding segregates with medium-size pods. These segregates show promise

of meeting the demand for a variety with kernels slightly larger than the small Spanish types most commonly grown. From a cross of small Spanish No. 26 with P.I. 152125, a large pod Spanish type has been selected, that has promise of being suitable for roasting in the shell.

Sesame - Two accessions (P.I. 234426 and 234427) from Formosa appear to be a source of resistance to *Alternaria* leaf blight and stem blight. These have been crossed with other lines and are entering a breeding program.

It is estimated that 2500 accessions, including both old and new, have been under study in the Texas Station since our last meeting.

In collaboration with the New Crops Research Branch, about 70 collections of seeds of wild plants have been made, and the collecting is being continued. The samples are being sent to the Northern Regional Laboratory at Peoria, Illinois for assaying as to their possible industrial utilization. Prominent among the families represented in these collections are Leguminosae, Euphorbiaceae, Labiatae, Umbelliferae and Compositae.

Further Developments Resulting From The Work Of The  
Task Group On New And Special Crops - R. D. Lewis

Since our last meeting I would like to present some of what I think are the main developments. At the last session of Congress, and in the present session, there have been some 18 or 20 bills that have been presented to Congress in connection with increased industrial use of agricultural products. At the November meeting of the Land Grant Colleges Association the Southern Directors prepared a resolution concerning the research activities in connection with the increased industrial use of agricultural products, including new crops for industrial use. That resolution was accepted by the rest of the Directors and went on through to the Association as a whole. It primarily states that we not only have an opportunity, but we also have a responsibility, and I believe that these programs can best be accomplished within the framework of existing institutions without creating a lot of additional agencies and institutions to carry on the work. The next development, I believe, particularly was that in connection with the annual Collaborators' conference at the Southern Utilization Research and Development Division at New Orleans. The annual meeting of Collaborators of that group and Directors had a joint meeting in March of this year. The main discussion again was on increased industrial use of agricultural crops in which Dr. Erlanson and I each had an opportunity to present considerations with regard to new crops. Ahead of that, however, I also had the opportunity of representing the Directors at the annual Industry and Seed Group Conference on research in January at Chicago and I spoke there again on the new and special crops, utilizing particularly material that I have reviewed with you before and which most of this Committee have copies of in an Abstract of the Task Group on New and Special Crops. Many of you who were on this Technical Committee at that time have a copy of

that special report and I'd like to remind you that it has a wealth of information in there to which you might turn. A great deal of that material was assembled by the cooperation of what is now the New Crops Research Branch.

During the past year essentially, as Dr. Whitehouse has pointed out to us, we have the New Crops Research Branch which has been part of the reorganization of the Department, the continuing reorganization.

Along about Christmastime I was informed by Senator Curtis of Nebraska that probably early in the present session of Congress they were going to have hearings on some of these bills and he wanted to know if I would be willing to come and testify on the new crops phase. I didn't hear much about that for quite sometime and then along about May we got a hurry-up call that they were going to have a hearing around June 4th. I was serving as administrator and advisor of the S-12 group at that time and he indicated that if I couldn't be there, I could do like most of the folks did - I could prepare a statement and submit that statement. Just recently I have received a copy of the hearings on the title, "Long Range Farm Program Hearing Before the Committee on Agriculture and Forestry United States Senate, the 85th Congress, Second Session, Part III." This is the hearing that relates to six bills that were pending in the Senate that relate to legislation concerning increased industrial use of agricultural products and, of course, new crops or crops for industrial use was a rather significant part of that total. You can get copies of this by writing either your senator or your congressman. I think it deserves study. I certainly don't agree with a lot of the testimony that was given and a lot of the recommendations that were given in here and a lot of the wishful hoping in connection with solution of all our agricultural problems. There are some very profound, very sane statements in here. One of the best, I think, actually is the last three pages, summary of the testimony by the Farm Bureau representative, John Glynn. I think you

will get quite a kick out of reading a lot of this. I have just had a chance today to glance through some of it and was amazed at the testimony of former ARS Director Vince Lamberth who was director of the Nebraska station. Well, the Senator comes from his state is one reason for some of it. The statement on New Crops is a summary essentially of the reports of the Task Group on New and Special Crops before the President's Commission. That's all it is - a summary of that. It is also taken from several talks that I have given on summarizing the thing at several different locations during the past year. That appears on pages 424 to 428. I would like to just emphasize, I think, two points. I'm not going to go into detail on this. In connection with the activity of a group of this sort and the activities in connection with new crops for industrial use, that is industrial use we mean non-feed non-food uses. Now don't misunderstand me, there is practically no crop that, even so-called industrial crops, but what the by-products are going to be used for feed or food but where the prime use is for something non-feed non-food use. One of the things that I am convinced more and more of that holds us back from going forward on this is that nobody has set us, really, an objective. We don't know for what we are working. We don't know what sort of an end product we want to obtain. Now we are making progress in that area. There is a number of them that are identified. Here is a whole list of about 13 of them on page 425 in here, where they are discussed in greater detail; pulp and corkage fibers, gums and mucilage, proteins for industrial uses, etc., vegetable oils as lubricants, plasticizers, resins and coatings, etc., waxes, pharmaceuticals, tanning agents, insecticides, anti-oxidants, films and fibers, soil conditioners. New foods and seeds, however, are down here at the end of that group. There are a lot of others that are possible uses but most of them

are covered there in many ways. But, let me just give you a statement that the Committee developed: One of the major gaps in the knowledge of those who are or would be working with new and special crops is the new and comparatively small amount of objective information on specific needs of industry for plant derived raw materials.

The lack of an inventory holds up interest by industry. A plant materials inventory would be most useful to industry in setting up objectives, and in searching for plant derived raw materials. Specific needs have not been identified for industrial use of plant derived materials which has deterred the New Crops program. Soybeans have been in this country 100 years and it took 70 years to get the crop going.

A representative is being sent to Europe to gather information on industrial utilization of crops. The cooperative program with Quentin Jones is an attempt to screen promising new crops. Texas and North Carolina are growing material for screening by Dr. Jones. Production information should be collected on best methods of production when growing samples for analyses. Directors were polled in March 1958 to determine how many had Interdepartmental Committees to study industrial utilization of agricultural products.

3 States had committees

3 Planned to have one

7 States had initiated projects on industrial utilization of agricultural products.

Ways to Develop Interest in Industrial Utilization of Agricultural Products  
on a State Level by Technical Committee Members

1. Set up committees to survey major industries in State which might use agricultural crops.
2. Formulate or revise projects to include service departments or utilization laboratory.
3. Obtain promising materials and plant on small acreage for pilot plant operation.

4. Request help of other departments in screening - Chemistry Department.
5. Organize interdepartmental committees to study the problem.

Phases of Research to be Considered in Utilization Research

1. Basic plant inventory.
2. Botanical research.
3. Production research and studies on mechanization.
4. Production of material for analyses and pilot plant operation.
5. Chemical and biological screening.
6. How to interest industry after crop is past awkward stage.

There was considerable discussion about which comes first, the agricultural product or the need and then finding a crop to satisfy that need.

W. C. Kennard, State Experiment Stations Division, U.S.D.A., Washington, D. C.

There were perhaps a couple of points that might be worth mentioning of some things which occurred at the other Technical Committees.

First, you know of the interchange of annual reports and minutes of the meeting of the four New Crops Committees, and so perhaps you are already familiar with these. One of the things which I thought was worth mentioning was the contract evaluation which the North Central voted to put in last year and this means where they have, say, 100 carrot accessions which they would like to have evaluated for disease resistance. This then is put out on contract at one of the State stations at so much per accession, 50¢, \$1.00 or \$5.00 or whatever the cost. Then they have a committee to decide which of the crops is most pressing for evaluation. They will set up a priority of carrots, beets, melons, or what-have-you. That will be done as funds are available and they expect from the group of representatives from the various states that they will have someone who will volunteer to do the job. They think that this is an effective way to use some of the money which they have

which was not adequate to support a research project but which permitted them to get some plants evaluated that they could not get done in any other manner. This will be discussed under your Item #8.

Dr. Larsen who is chairman of the N.E.-9 group and is chairman of the committee of the National Advisory New Crops Committee is concerned primarily with the asexual propagation repository or repositories and he continues to be very much interested in what any of the other groups decide on this. This New Crops Advisory Committee will have a meeting in March of next year and he is anxious to secure the comments from all the various Technical Committees. Dr. Lewis will probably mention this and I am probably stealing some of his thunder.

There was something that came up this year in the minutes of the Committee of 9 which directly affects this Committee and I thought you would be interested in this so I will just read it to you: "General Recommendations of the Review Sub-committee. The Regional Association of Directors are encouraged to review progress and plans on all regional research projects in operation 10 years or more. This includes revised and re-numbered projects; to evaluate accomplishments and to delineate problems requiring further research. Administrative advisors should logically be expected to present progress reports for proposed work as developed by technical committees." In that same regard, technical committees are requested to give more complete and detailed information on work plans for next year to provide a more realistic basis for evaluation and approval and this project, I believe, is 10 years old next year. It started in November 1949.

## RECOMMENDATIONS BY THE RETIRING COORDINATOR OF REGIONAL PROJECT S-9

It is unfortunate that the present coordinator was transferred to another position before the incoming coordinator took over official duties. In lieu of an opportunity to discuss further improvements of the physical plants, I am outlining some recommendations below for the future expansion of the Station. This is based on eight and a half years of experience as the coordinator and the incoming coordinator may accept them or reject them as he sees fit.

It is hoped that by the time the new coordinator takes over that a pathologist will have been appointed to assist in the evaluation of incoming introductions and to also screen many of the introductions which are now in storage. An attempt has been made to buy most of the large items of equipment for the pathologist but undoubtedly there will be some smaller items of capital outlay which will have to be bought and also a fairly large amount of supplies. In the budget for 1958-59 I have tentatively set up \$3300.00 for capital outlay. This amount would cover a two-bay addition to the present greenhouse for the use of the pathologist and the building of a laboratory table and installation of a sink in the pathologist's office. I would expect that, on the basis of present prices, these two items would come to approximately \$2000.00. This would allow \$1300.00 for other items of capital outlay as they arise. If this is not necessary, a budget amendment can be made to transfer any excess over to either operating expense account or labor account.

Arrangements have been made with one of the members of the agricultural engineering department to determine whether or not the peanut stoner at the present time in the seed-cleaning room of the Plant Introduction Building could be modified into a gravity seedcleaner. I feel as though we are pretty well set up for seedcleaning with the exception of a gravity cleaner which

would separate clover seed from sand. We have not been able to do this operation up until the present time. If the stoner cannot be modified, an investment of approximately \$500.00 would be necessary to obtain a small gravity separator.

J. H. Massey, who has been the technical assistant since 1952, is presently on leave at LSU working on his doctor's degree. I do not know Mr. Massey's future plans but I rather expect he will return to the Station and resume his duties as assistant. At the present time, W. L. Corley is acting as a temporary assistant and it is hoped that arrangements can be made to retain Corley on a permanent basis.

I have discussed Mr. Corley's status with Director Fullilove and he concurs in the recommendation that Corley be retained. He feels, however, that on the basis of other men on this station with B. S. degrees that Corley is underpaid and that provisions should be made, if at all possible, to raise his salary to about \$4800 for the fiscal year of 1959-60. With the return of Mr. Massey and the appointment of a pathologist, Mr. Corley as a horticulturist would comprise a fine team to do a top-notch job of evaluation.

As time goes on seed storage quarters may become somewhat cramped and I have turned over to Director Fullilove a proposal for the partitioning of the present seed storage in the Horticulture Building. I believe the plan that I turned over to him would suffice to expand our seed storage so that the present facility could be used for at least 3 or 4 more years. I feel, however, that plans should be made toward the building of a new storage in one of the garages in the Plant Introduction Building. I have also discussed this possibility with Director Fullilove.

It is my feeling, and I have conveyed the same to Director Fullilove, that Plant Introduction should not have to stand the cost of developing a new

seed storage, considering the fact that we have over a \$3,000 investment in the present cold room in the Horticulture Building. I suggested to Director Fullilove that perhaps the Experiment Station could use some of their cash sales money or state money and have the Horticulture Department buy out a portion of the seed storage in the Horticulture Building so that there would be approximately \$3000 available for the development of a new seed storage in the present Plant Introduction Building. It is felt that this would be much more convenient than having the seed storage in the Horticulture Building and the remainder of the work in the Plant Introduction Building.

In the event that a seed storage is developed in the Plant Introduction Building, shelter for the truck could be provided by the erection of a small carport or shed-roof alongside of the seedcleaning room between the seedcleaning room and the greenhouse. This would in no way affect the light of the greenhouse. The cost of such a carport or cover would be nominal because the Experiment Station buildings and grounds man could easily erect such a structure.

I have gone over with my secretary and Mr. Corley the manner of recording data on the punch cards system and I believe at the present time they are quite familiar with the procedure. I did not have sufficient time to look into the matter of obtaining a filing cabinet for these cards and it is entirely possible that you may wish to contact some of the Atlanta concerns to determine the cabinets that they have available. I have checked with the local office supply houses and find that they do not have the correct size. On the other hand, the cabinets offered by the Royal McBee Corporation appear to be rather flimsily constructed and as a result I did not order a cabinet from them. In the absence of the possibility of obtaining the correct size, it may be that the order will have to be placed with the Royal McBee Corporation.

My future address will be the National Seed Storage Laboratory at Fort Collins, Colorado on the Colorado State University campus. If at anytime in the future you run into any difficulty, please send me an airmail letter and I will attempt to clear up any difficulty in the same manner.

Trusting that you will find most things in order and wishing you success in your new position, I am

Sincerely yours,

S/ Edwin James

EJ:LS

#### REPORT OF COMMITTEE ON

#### Ways and Means of Increasing Regional and State Research on Industrial Uses of New Crops

It is realized that much can and should be done and that the first step is to obtain supporting funds and, secondly, to decide how much effort should be put into the production end of some of these crops without more or less simultaneous analytical and pilot plant determinations upon which to base future action.

Each member of the committee has offered certain suggestions in his own respective field, and it is thought best to organize state projects in cooperation with the S-9 project and the regional research laboratories.

After consulting with some of the staff members of the regional research laboratories, it was learned that they feel that protein, oil, fiber, wax, gum and medicinal plants, which do not compete with other domestic crops, would be the approach. This certainly sets a limitation, but it does not mean that new crops that fall in this category cannot be found. For example, castor bean is one that is most discussed. However, if it is going to develop into a commercial enterprise, there should be some form of assistance

in the awkward stage to encourage growers to produce it, as the present price does not make it attractive or as remunerative as other cash crops.

Any new crop, which is investigated, will require a great deal of educational groundwork in establishing its acceptance by industry. For instance, bamboo was discussed at the previous meeting. Julian C. Miller, a member of this committee, made inquiries of practically all of the major paper mills but could not arouse any interest in bamboo at this time. This means that one organization will have to be convinced of its possibilities before others will fall in line. It is felt that there is a definite place for bamboo, but it will take considerable time to get it fully accepted by industry. The same thing had to be done with the southern pine for newsprint paper. Its suitability first had to be proven by a laboratory. The paper companies gradually accepted the experimental evidence, and it is now a leading industry. This is an excellent example of what might be done in utilizing some of our new crops.

At the special conference to be held before this meeting, the committee should come up with some new ideas as to how to best approach the problem of new crops. Certainly, financial support will be needed, either from the individual states or the federal government, if anything of value is to be accomplished. It will take a lot of new crops or enterprises to take up the slack in land that exists as a result of the crop control program, in order to keep local labor and industry going on an improved economic level.

Subcommittee of the S-9 Technical Committee on New Plants

P. H. Harvey  
R. S. Matlock

J. A. Martin  
J. C. Miller, Chairman

Report of the S-9 Committee to Investigate  
Ways and Means of Maintaining Asexually  
Propagated Plants of Economic Value

After due consideration of the proposal for establishment of a National repository (or repositories) for the maintenance of vegetatively propagated plants of economic value, the committee has the following recommendations:

With major economic classes of plants that are usually asexually propagated such as apples, citrus, pears, peaches, sweet potatoes and strawberries, it is recommended that certain stations currently maintaining significant numbers of clones in a class, be subsidized in the maintenance of a basic selection of genetic stocks. It is also recommended that the choice of each of these clones be made by a committee of specialists in the given crop. It is further recommended that this work of vegetative propagation be recorded and coordinated by an S-9 Committee and that it be financed similarly to the present regional plant introduction stations. Sufficient personnel with primary responsibility for propagation, maintenance and distribution should be made available at each location. Seed of as many clones as is feasible should also be maintained in the National Seed Laboratory as a safeguard against loss of valuable genes.

Julian C. Miller  
A. H. Dempsey  
R. G. Reeves  
W. E. Roever, Chairman

There was a discussion of the above report and it was moved and seconded that the question of whether there is a true, demonstrable need for this service should be taken up at the meeting of the National Coordinating Committee.

EXPLORATIONS SUGGESTED

1. J. A. Martin - Collections of guar, tea, and chufas.
2. W. R. Langford - Legumes that will grow on low fertility soil in summer.
3. G. B. Killinger - Lupines as a source of disease resistance.
4. A. H. Dempsey - Capsicum - Resistance to Southern blight (*Sclerotium rolfsii*). Introductions from India might be a source of resistance to Ripe Rot (*Vermicularia capsici*).
5. W. E. Roever - Tomato introductions with intensity of color and good set with high temperatures. Strawberries from Yugoslavia.
6. R. G. Reeves - Wild peanut species, sesame, grasses, and legumes.

7. J. C. Miller - European greenhouse tomatoes.
8. R. D. Lewis - Australia with same general climatic conditions. Study crops being used in these countries for industrial purposes.
9. W. C. Young - Perennial lespedeza from Asia with nematode resistance and subtropical legumes for forage.

Inspection of Plant Introduction Station facilities and tour of nursery areas.

Dr. James and Mr. Corley conducted a tour of the greenhouses and nursery areas on the afternoon of July 11th. The Technical Committee had an opportunity to see many of the new introductions for the first time.

Punched Card System for Southern Regional Plant Introduction Station - E. James

The use of the Royal McBee card system was demonstrated by the coordinator. A sample card prepared by the coordinator was presented to each member of the Technical Committee for comments. The system as set up comes to a total cost of \$372.00. This figure includes 20,000 cards, electrical punch machine, and hand punch.

RESOLUTIONS:

1. A motion was made by J. C. Miller that the National Coordinating Committee for New Crops be asked to determine procedures for most effective exchange of information, including reports and minutes of the four regional Technical Committees. The motion was approved.
2. Resolved: That the S-9 Technical Committee and Administrative Advisor, individually and collectively express our appreciation to Dr. Edwin James, Coordinator, for his faithful and efficient service to the Southern Region during the past 9 years. His leaving will be a great loss to us but we extend to him our best wishes in his new capacity

as Director of the National Seed Storage Laboratory at Fort Collins, Colorado. Dr. James was presented a lifetime Shaeffer pen and pencil set by the members of the S-9 Technical Committee as a token of their appreciation for his efforts as Coordinator. It was moved and passed that this resolution be included in the minutes, and a copy sent to Mrs. James.

3. Resolved: That in order there be a minimum of disruption of the program and activities of the Southern Plant Introduction Station and activities of the S-9 New Plants regional project, we, the members of the S-9 Technical Committee respectfully request the New Crops Research Branch to make the good advisory services of Edwin James available to his successor, the Coordinator of the S-9 Project. It was moved and passed that this resolution be brought to the attention of the New Crops Research Branch.

The committee for considering future leadership for S-9 made their report.

#### ELECTION OF OFFICERS

The Nominating Committee submitted the names of J. A. Martin as Chairman and A. H. Dempsey as Secretary. The nominees were unanimously accepted and duly elected to serve for the ensuing year.

#### NEXT MEETING

It was agreed that the next meeting be called at the discretion of the Executive Committee. James invited the group to meet at National Seed Storage Laboratory, Fort Collins, Colorado. G. B. Killinger moved that we accept Dr. James' invitation to meet at Fort Collins and that Louisiana be

considered for the next meeting if it was not feasible to have the meeting at Fort Collins, Colorado. The motion was approved. Dr. Lewis agreed to consult with the Southern Directors in regard to travel arrangements for the 1959 conference.