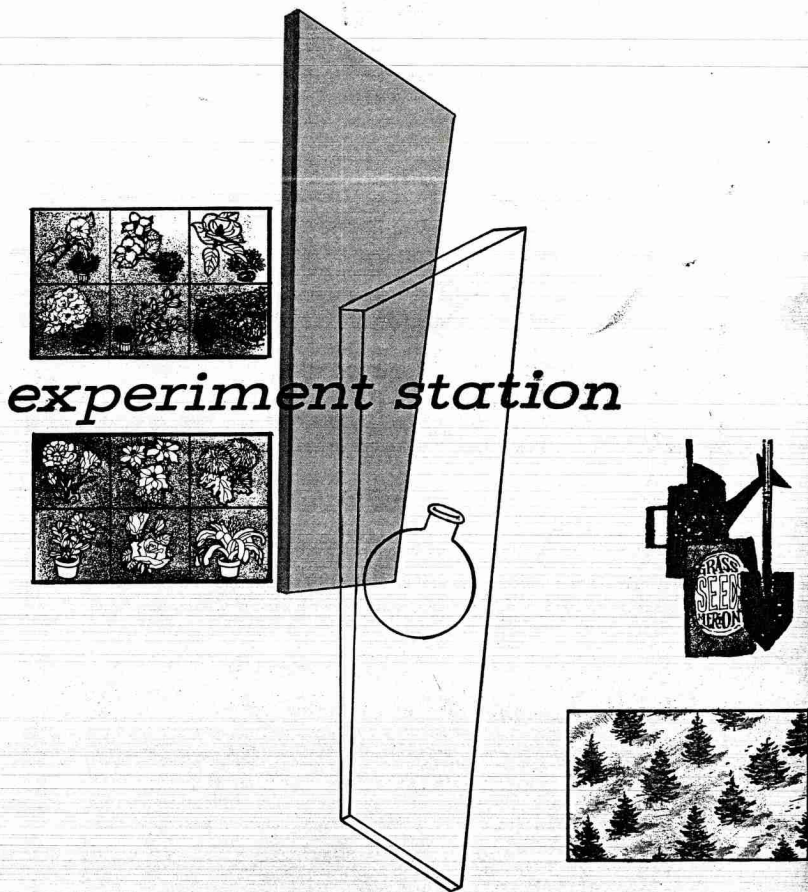


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OCTOBER 1972

COMPREHENSIVE RESEARCH REVIEW ORNAMENTAL CROPS, CHRISTMAS TREES AND TURF

TASK FORCE 9



N. C. Agricultural Experiment Station
N. C. State University
RALEIGH, N. C.

COMPREHENSIVE REVIEW SCHEDULE FOR ORNAMENTAL CROPS, CHRISTMAS TREES AND TURF

(TASK FORCE 9)

OCTOBER 23 (Monday)

- 8:15 - 9:15 Reviewers meet with SALS Administration
- 9:15 - 12:00 Reviewers tour campus facilities
- 12:00 - 1:00 Lunch
- 1:00 - 1:10 Purpose of Comprehensive Reviews - Dr. Ralph McCracken
- { 1:10 - 1:30 Review of Task Force Report #9 - Dr. R. A. Larson
- { 1:30 - 5:00 Research on RPA 906-1310 (Woody Ornamentals) - Dr. F. D. Cochran,
2:50 - 3:10 discussion leader

OCTOBER 24 (Tuesday)

- { 8:00 - 9:00 Complete Review for Woody Ornamentals
- { 9:00 - 11:00 Research on RPA III (Christmas Trees only) - Dr. C. B. Davey,
discussion leader
- { 11:00 - 12:00 Research on RPA 906-1320 (Herbaceous Ornamentals) - Dr. R. A.
Larson, discussion leader
- 12:00 - 1:00 Lunch
- 1:00 - 5:00 Continue review for Herbaceous Ornamentals

OCTOBER 25 (Wednesday)

- { 8:00 - 12:00 Research on RPA 906-1330 (Lawn & Turf) - Dr. W. B. Gilbert,
discussion leader
- 12:00 - 1:00 Lunch
- 1:00 - 5:00 Preparation of Review Team Report

OCTOBER 26 (Thursday)

- 8:00 - 9:00 Complete Review Team Report
- 9:00 - 10:30 Review Team to meet with SALS administration
- { 10:30 - 12:00 Review Team to meet with Project Leaders and Department Heads
in Room 121, Kilgore Hall

COOPERATING DEPARTMENTS
N. C. Agricultural Experiment Stations
N. C. State University
Raleigh, N. C.

Biological and Agricultural Engineering	Dr. F. J. Hassler, Dept. Head
Crop Science	Dr. P. H. Harvey, Dept. Head
Economics	Dr. W. D. Toussaint, Dept. Head
Entomology	Dr. K. L. Knight, Dept. Head
Forestry	Dr. C. B. Davey, Dept. Head
Horticultural Science	Dr. C. W. Donoho, Jr., Dept. Head
Plant Pathology	Dr. D. E. Ellis, Dept. Head
Soil Science	Dr. C. B. McCants, Dept. Head

PROGRAM PLANNING COMMITTEE

Dr. R. A. Larson, Task Force Leader	Horticultural Science
Dr. F. D. Cochran, Discussion Leader	Horticultural Science
Dr. C. B. Davey, Discussion Leader	Forestry
Dr. W. B. Gilbert, Discussion Leader	Crop Science
Dr. R. A. Larson, Discussion Leader	Horticultural Science

COMPREHENSIVE REVIEW TEAM

Dr. C. I. Harris, Chairman	CSRS
Dr. P. E. Nelson	Pennsylvania State University
Dr. J. D. Seeley	Cornell University

ESTIMATED VALUE OF ORNAMENTAL CROPS, CHRISTMAS TREES AND TURF

Production of ornamental crops, Christmas trees and turf is expanding in North Carolina. Excellent opportunities exist for both large and small growers. The size of individual operations continues to increase, but there will be continued opportunities for growers on small acreages to produce these high-valued crops.

The rapidly increasing population, the increase in new homes and buildings, and the emphasis on the environment and beautification insures an expanded market for fruits, vegetables and ornamental crops. These crops must be produced somewhere--North Carolina growers will be very much involved in expanded production of these crops.

Ornamental crops and Christmas trees accounted for \$25,400,000 of North Carolina's farm income in 1970. An increase of 43 per cent in five years is predicted--with cash receipts from these crops of \$38,300,000 in 1976.

I. ORNAMENTAL CROPS

Urbanization and affluence will continue to benefit the growers of ornamental crops, which include nursery crops, greenhouse crops, and flowers grown out of doors. Growers of these specialty items received \$23.4 million for their efforts in 1970. In 1976 it is predicted they will receive \$33.3 million--an increase of 42 per cent.

Nursery crop income is expected to increase from \$9.6 million to \$15 million. In addition to plants sold, considerable additional income for the 15,000 nursery operators in the State will come from landscaping and other services provided.

Income from flower crops is expected to rise from \$13.7 million in 1970 to \$18.2 million in 1976.

II. CHRISTMAS TREES

The rapidly expanding Christmas tree industry is made up of more than 600 small private landowners, many with limited financial resources, and few with any experience with this intensive culture crop. There is need for weed control, and marketing.

Despite the problems the new industry grew up fast, with 350,000 trees valued at more than \$2 million sold in 1970--five times as many as were produced in 1965. Continued expansion is predicted during the next five years--to 750,000 trees valued at \$4 million by 1976.

III. TURF

Presently there are 550,000 acres of turf grown in North Carolina. This includes lawns, playgrounds, athletic fields, highway rights-of-way, airports, cemeteries and golf courses. The intensity of use is different for each of these classes and directly governs the degree of management required to keep the turf in good condition.

As population rises and income and leisure increase, additional stress

RESEARCH FACULTY

<u>Name</u>	<u>Rank</u>	<u>Degree</u>	<u>Date</u>	<u>University</u>
<u>TASK FORCE 9 (ORNAMENTALS)</u>				
<u>Hort. Sci.</u>				
Thomas F. Cannon	Asso. Prof.	Ph.D.	1958	Ohio State Univ.
Fred D. Cochran	Prof.	Ph.D.	1942	Univ. of Calif.
R. Gordon Halfacre	Asso. Prof.	Ph.D.	1968	V.P.I.
John M. Jenkins, Jr.	Prof.	Ph.D.	1946	Univ. of Minn.
Roy A. Larson	Prof.	Ph.D.	1961	Cornell Univ.
Joseph W. Love	Prof.	Ph.D.	1962	Ohio State Univ.
Paul V. Nelson	Asso. Prof.	Ph.D.	1964	Cornell Univ.
Ronald L. Spangler	Asst. Prof.	Ph.D.	1971	Mich. State Univ.
<u>Bio. & Ag. Eng.</u>				
Eustace O. Beasley	Asst. Prof.	M.S.	1962	N. C. State Univ.
Ronald E. Sneed	Asst. Prof.	Ph.D.	1971	N. C. State Univ.
<u>Crop Sci.</u>				
Carl T. Blake	Prof.	Ph.D.	1963	Penn State Univ.
William B. Gilbert	Asso. Prof.	Ph.D.	1956	N. C. State Univ.
W. M. Lewis	Prof.	Ph.D.	1957	Univ. of Minn.
<u>Econ.</u>				
Gerald A. Carlson	Asst. Prof.	Ph.D.	1969	Univ. of Calif. (Davis)
Richard A. King	Prof.	Ph.D.	1951	Harvard Univ.
Hugh L. Liner	Asso. Prof.	Ph.D.	1967	N. C. State Univ.
Richard K. Perrin	Asso. Prof.	Ph.D.	1968	Iowa State Univ.
Edwin A. Proctor	Prof.	M.S.	1957	Univ. of Ky.
<u>Ent.</u>				
James R. Baker	Asst. Prof.	Ph.D.	1972	Univ. of Kan.
Maurice H. Farrier	Asso. Prof.	Ph.D.	1955	N. C. State Univ.
<u>Forestry</u>				
Charles B. Davey	Dept. Head	Ph.D.	1955	Univ. of Wisc.
Joe O. Lammi	Prof.	Ph.D.	1954	Univ. of Calif.
<u>Plant Path.</u>				
Robert Aycock	Prof.	Ph.D.	1949	N. C. State Univ.
Larry F. Grand	Asso. Prof.	Ph.D.	1967	Penn State Univ.
Ronald K. Jones	Asst. Prof.	Ph.D.	1971	V.P.I.
David L. Strider	Prof.	Ph.D.	1959	N. C. State Univ.
<u>Soil Sci.</u>				
J. Paul Lilly	Res. Asst.	M.S.	1971	N. C. State Univ.

ROBERT AYCOCK

Education:

B.S. - Louisiana State University 1940
M.S. - North Carolina State University 1942
Ph.D. - North Carolina State University 1949

Professional Employment:

Associate Plant Pathologist	Clemson College	1949-52
Plant Pathologist	Clemson College	1952-54
Associate Professor	North Carolina State University	1954-60
Professor	North Carolina State University	1960-

Professional Responsibilities:

Research - Diseases of ornamental plants - Project NC 03260 - 100%
Teaching - PP 501 - 0%
Extension - 0%

Research Publications Since 1966 (Task Force subject matter only):

Porter, D. M., and R. Aycock. 1966. Snapdragon leaf spot caused by Cercospora antirrhina. N. C. Agr. Exp. Sta. Tech. Bul. 179.

Aycock, R. 1966. Stem rot and other diseases caused by Sclerotium rolfsii. N. C. Agr. Exp. Sta. Tech. Bul. 174. 202 p.

Aycock, R. 1972. Major diseases of azalea. Azalea Manual (In press).
Univ. Calif. Press.

JAMES R. BAKER

Education:

B.S. - North Carolina State University 1966
M.S. - North Carolina State University 1968
Ph.D. - University of Kansas 1972

Professional Employment:

Extension Assistant Professor North Carolina State University 1972

Professional Responsibilities:

Research - 0%
Teaching - 0%
Extension - Insect pests of floriculture, bulb, ornamental and Christmas tree culture - 100%

Research Publications Since 1966 (Task Force subject matter only):

Baker, R. J. 1972. Leaf minor of ornamental plants. N. C. Nursery Notes 5(4)3-5.

This researcher is also junior author on two research publications cited in this report by other project leaders.

E. O. BEASLEY

Education:

B.S. - North Carolina State University 1958
M.S. - North Carolina State University 1962

Professional Employment:

Research Instructor	North Carolina State University 1958-64
Extension Assistant Professor	North Carolina State University 1967-

Professional Responsibilities:

Research	- Mechanization of Horticultural Crops (cucumbers, tomatoes, sweet potatoes, cabbage) - Project 5073 - 40%
Teaching	- BAE 590 - 5%
Extension	- Mechanization of Horticultural Crops, 4-H Safety, and miscellaneous Extension work - 55%

Research Publications Since 1966 (Task Force subject matter only):

None

THOMAS F. CANNON

Education:

B.S. - North Carolina State University 1953
M.S. - North Carolina State University 1955
Ph.D. - Ohio State University 1958

Professional Employment:

Assistant Professor North Carolina State University 1958-63
Associate Professor North Carolina State University 1963-

Professional Responsibilities:

Research - Project 3111 - 40%
Teaching - 0%
Extension - Nursery Production - 60%

Research Publications Since 1966 (Task Force subject matter only):

Sasser, J. N., F. A. Haasis, and T. F. Cannon. 1966. Pathogenicity of
Meloidogyn species on Ilex. Plant Disease Reporter 50:664-668.

G. A. CARLSON

Education:

B.S.	- Oregon State University	1963
M.S.	- University of California	1967
Ph.D.	- University of California	1969

Professional Employment:

Assistant Professor	North Carolina State University	1969-71
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Professional Responsibilities:

Research	- N. C. Experiment Sta. Projects - 3328, 3284, NSF IBP, and other	50%
Teaching	- EC 650, and Grad. students thesis	- 50%
Extension	- 0%	

Research Publications Since 1966 (Task Force subject matter only):

None

FRED D. COCHRAN

Education:

B.S.	- Clemson University	1932
M.S.	- Louisiana State University	1933
Ph.D.	- University of California	1942

Professional Employment:

Assistant Professor	Louisiana State University	1936-39
Associate Professor	Louisiana State University	1939-42
Professor	Louisiana State University	1946-47
Professor	North Carolina State University	1947-56
Professor, Department Head	North Carolina State University	1957-67
Professor	North Carolina State University	1967-

Professional Responsibilities:

Research	- Azalea and Rhododendron breeding, studies of effects of gamma irradiation on selected horticultural plants, testing and propagation of dwarf loblolly pines - 40%
Teaching	- HS 201 Principles of Horticulture, HS 599, & HS 699 Grad. Res. - 60%
Extension	- 0%

Research Publications Since 1966 (Task Force subject matter only):

None

C. B. DAVEY

Education:

B.S. - Syracuse University 1950
M.S. - University of Wisconsin 1952
Ph.D. - University of Wisconsin 1955

Professional Employment:

Associate Professor	North Carolina State University	1962-65
Professor	North Carolina State University	1965-
Department Head - Forestry	North Carolina State University	1970-

Professional Responsibilities:

Research - Forest soils (microbiology and tree nutrition) - Project M-S 4040
25%
Teaching - SSC 472, SSC 632, FOR 562 - 25%
Extension - 0%
Administration - 50%

Research Publications Since 1966 (Task Force subject matter only):

None

MAURICE H. FARRIER

Education:

B.S. - Iowa State College 1948
M.S. - Iowa State College 1950
Ph.D. - North Carolina State Univ. 1955

Professional Employment:

Asst. to State Entomologist	Office of State Entomology, Ames, Iowa	1948-49
Entomologist	U.S. Army, Washington, D. C.	1952-54
Research Assistant	North Carolina State University	1950-52 1954-55
Associate Professor	North Carolina State University	1955-

Professional Responsibilities:

Research - Mites at Comminuting Agents of Forest Litter - Project 3276,
Taxonomy and Biology of Mesostigmata in Forest Litter and Soil,
Bibliographical Controls in Biology - 50%
Teaching - Ent 401, 301, 542, For s264 - 50%
Extension - 0%

Research Publications Since 1966 (Task Force subject matter only):

- Muma, M. H., L. J. Metz, and M. H. Farrier. 1967. New species and records of Phytoseiidae (Acarina: Mesostigmata) from North Carolina forest litter. Florida Ent. 50(3):199-206.
- Thomas, H. A., P. H. Darst and M. H. Farrier. 1967. Acarine associates of the pales weevil, Hylobius pales (Coleoptera:Curculionidae). Florida Ent. 50(4):263-266.
- Manley, C., and M. H. Farrier. 1969. Attraction of the Nantucket pine tip moth, Rhyacionia frustrana, to incandescent light and black light, and to virgin females. Ann. Ent. Soc. Amer. 62(2):443.
- Schneider, I., and M. H. Farrier. 1969. New hosts, distribution, and biological notes on an imported ambrosia beetle, Xylosandrus germanus (Coleoptera: Scolytidae). Canad. Ent. 101(4):412-415.
- Farrier, Maurice H. 1969. Some information-retrieval tools little known to entomologists. Bulletin of the Entomological Society of America. 15(4):371-372.
- Metz, L. J., and Maurice H. Farrier. 1969. Acarina associated with decomposing forest litter in the North Carolina Piedmont. Proc. 2nd International Congress of Acarology. p. 43-52.
- McGraw, James R., and Maurice H. Farrier. 1970. Mites of the Super-family Parasitoidae (Acarina: Mesostigmata) associated with Dendroctonus and Ips (Coleoptera: Scolytidae). N. C. Agricultural Experiment Station Technical Bulletin 192.

WILLIAM B. GILBERT

Education:

B.S.	- Berea College	1942
M.S.	- University of Kentucky	1952
Ph.D.	- North Carolina State University	1956

Professional Employment:

Vocational Agricultural Teacher	Richmond, Kentucky	1946-47
Vocational Agricultural Teacher	Lexington, Kentucky	1948-51
Graduate Assistant, Forages	University of Kentucky	1951-52
Graduate Assistant	North Carolina State University	1953-56
Research Agronomist, Assigned to the	North Carolina Peruvian AID	
	Contract in Peru	1956-58
Assistant Professor	North Carolina State University	1958-64
Associate Professor	North Carolina State University	1964-

Professional Responsibilities:

Research	- Turf Research Management Program - 60%
Teaching	- CS 315 Turf Management and Advisor to 49 Ag Inst. Majors in Turf Management - 40%
Extension	- 0%

Research Publications Since 1966 (Task Force subject matter only):

Davis, D. L., and W. B. Gilbert. 1970. Winter hardiness and changes in soluble protein fractions of Bermudagrass. Crop Sci. 10(1).

Gilbert, W. B., and D. L. Davis. 1970. Influence of fertility ratios on winter hardiness of Bermudagrass. Agron. J.

This researcher is also junior author on one research publication cited in this report by another project leader.

LARRY F. GRAND

Education:

B.S. - Pennsylvania State University 1962
M.S. - Pennsylvania State University 1964
PH.D. - Pennsylvania State University 1967

Professional Employment:

Assistant Professor North Carolina State University 1967-71
Associate Professor North Carolina State University 1971-

Professional Responsibilities:

Research - Ecology of forest tree diseases and wood deterioration - Project
NC 04012; Physiology of tree diseases and wood deterioration -
Project NC 03114 - 40%
Teaching - PP 318 - PP 625 - 40%
Extension - Diseases of woody plants - 20%

Research Publications Since 1966 (Task Force subject matter only):

- Grand, L. F. and R. T. Moore. 1972. Scanning electron microscopy of Cronartium spores. Can J. Bot. 50: 1741-1742.
- Suggs, E. G. and L. F. Grand. 1972. Formation of mycorrhizae in monoxenic culture by pond pine (Pinus serotina). Can. J. Bot. 50: 1003-1007.
- Grand, L. F. 1971. Tuberculate and Cenococcum mycorrhizae of Photinia (Rosaceae). Mycologia 63: 1210-1212.
- Rogers, J. D. and L. F. Grand. 1971. Coniochaeta malacotricha: anomalous asci and the conidial state. Can. J. Bot. 49: 2239-2240.
- Grand, L. F. and R. T. Moore. 1971. Scanning electron microscopy of basidiospores of species of Strobilomycetaceae. Can. J. Bot. 49: 1259-1261.
- Grand, L. F. and A. H. Smith. 1971. A new species of Boletus, section Luridi, from North Carolina. Mycologia 63: 884-888.
- Grand, L. F. and A. H. Smith. 1971. A previously unrecognized southern species of Boletus. Mycologia 63: 114-117.
- Grand, L. J. 1970. Notes on North Carolina boletes. III. Species of Suillus. J. Elisha Mitchell Sci. Soc. 86: 209-213.
- Grand, L. F. and R. T. Moore. 1970. Ultracytotaxonomy of Basidiomycetes. I. Scanning electron microscopy of spores. J. Elisha Mitchell Sci. Soc. 86: 106-117.
- Grand, L. F. 1970. Notes on N. C. boletes. II. Species of Gyrodon, Gyrosportes, Xerocomus, and Leccinum. J. Elisha Mitchell Sci. Soc. 86: 57-61.

R. Gordon Halfacre

Education:

B.S. - Clemson University 1963
M.S. - Clemson University 1965
Ph.D. - Virginia Polytechnic Institute 1968

Professional Employment:

Assistant Professor North Carolina State University 1968-71
Associate Professor North Carolina State University 1971-

Professional Responsibilities:

Research - Propagation of Mountain Laurel and Other Related Species - Project
NEW - 20%
Teaching - HS 343 Landscape Horticulture, HS 414 Residential Landscape Design,
HS 411 Nursery Management - 80%
Extension - 0%

Research Publications Since 1966 (Task Force subject matter only):

- Halfacre, R. G., J. P. Fulmer, and A. J. Kish. 1966. The Microclimatological Relationship of Shading and Mulching to Winter Injury of Container-Grown Ornamentals. Proc. Amer. Soc. Hort. Sci. 88:684-689.
- Halfacre, R. G., A. M. Walton, and J. C. Osborne. 1967. A Rapid Method for Preparation of Plant Material for Paraffin Embedding. HortScience 2(3):116.
- Halfacre, R. G., and J. A. Barden. 1968. Anatomical Responses of Apple Leaf and Stem Tissues to Succinic Acid 2,2-Dimethylhydrazide (Alar). Proc. Amer. Soc. Hort. Sci. 93:25-32.
- Halfacre, R. G., J. A. Barden, and H. A. Rollins, Jr. 1968. Effects of Alar on Morphology, Chlorophyll Content, and Net CO₂ Assimilation Rate of Young Apple Trees. Proc. Amer. Soc. Hort. Sci. 93:40-52.

JOHN M. JENKINS, JR.

Education:

B.S. - Clemson University 1929
M.S. - Louisiana State University 1931
Ph.D. - University of Minnesota 1946

Professional Employment:

Professor North Carolina State University 1949-

Professional Responsibilities:

Research - Floriculture and vegetable crops - Project 3322, Gladiolus
breeding, variety tests. 100%
Teaching - 0%
Extension - 0%

Research Publications Since 1966 (Task Force subject matter only):

- Jenkins, J. M. Jr. 1967. Breaking dormancy and controlling cormborne diseases in a gladiolus breeding program. North American Gladiolus Council Bul. No. 91: pp 52-56.
- Jenkins, J. M. Jr., E. E. Chambers, and F. G. McGee. 1968. Chemical weed control in gladiolus. Weed Sci. 16: 86-88.
- Jenkins, J. M. Jr. 1969. Spacing tests with gladiolus. Florists' Review. 144:3719 (March 13): 60-61-118.
- Jenkins, J. M. Jr., Robert D. Milholland, J. Paul Lilly and Marvin Beute. 1970. Commercial Gladiolus Production in North Carolina. N. C. Ext. Cir. 448.
- Jenkins, J. M. Jr. 1970. Brown tip of gladiolus induced by applications of fertilizer materials. HortScience5:395-396.
- Jenkins, J. M. Jr. 1971. Preventing losses in commercial gladiolus plantings. North American Gladiolus Council GladioGrams, Sept. 1971.
- Jenkins, J. M. Jr. 1971. Breeding for disease resistance. North American Gladiolus Council Bul. 108:88.
- Jenkins, J. M. Jr. 1972. Breeding gladiolus for resistance to Fusarium. (Being submitted to HortScience for publication).

RONALD K. JONES

Education:

B.S.	- Virginia Polytechnic Institute	1961
M.S.	- University of Delaware	1963
	- University of Florida	1965
Ph.D.	- Virginia Polytechnic Institute	1971

Professional Employment:

Extension Specialist	Clemson University	1965-68
Instructor	Virginia Polytechnic Institute	1968-70
Assistant Professor, Ext. Spec.	North Carolina State University	1970-

Professional Responsibilities:

Research	- Diseases of ornamental flowering bulbs and field-grown cut flower crops - Project 5076 - 50%
Teaching	- 0%
Extension	- State-wide responsibilities for disease and their control on woody ornamentals, floriculture crops, Christmas trees, blueberries, strawberries, and grapes - 50%

Research Publications Since 1966 (Task Force subject matter only):

Dowler, W. M., R. K. Jones, and R. J. Ferree. 1968. Stem pitting of peach in South Carolina. Plant Disease Reporter. 52:9-7

Jones, R. K. and S. A. Tolin. 1972. Concentration of maize dwarf mosaic virus in susceptible and resistant corn hybrids. Phytopathology. 62:640-644.

Jones, R. K. and S. A. Tolin. 1972. Factors affecting purification of maize dwarf mosaic virus from corn. Phytopathology. 62:812-816.

Jones, R. K. and L. F. Grand. 1972. Dutch elm disease. Dept. Plant Pathology, N. C. State University, Plant Pathology Info. Note 95. 3 pp.

This researcher is also junior author on one research publication cited in this report by another researcher.

RICHARD A. KING

Education:

B.S.	- University of Connecticut	1946
M.S.	- University of California	1947
M.P.A.	- Harvard University	1948
Ph.D.	- Harvard University	1951
	Post doctoral study, University of Chicago	1954-55

Professional Employment:

Field Assistant, Farm Management,	University of Connecticut	1944-45
Assistant Professor	University of Connecticut	1948-50
Associate Professor	North Carolina State University	1951-55
Professor	North Carolina State University	1956-
M.G. Mann Professor	North Carolina State University	1957-
Visiting Lecturer, Graduate School of Business Administration	University of Virginia	1961-63
N. C. Agricultural Mission to Peru		1964-65
Visiting Professor	University of California (Spring)	1969

Professional Responsibilities:

Research	- 50%
Teaching	- 50%
Extension	- 0%

Research Publications Since 1966 (Task Force subject matter only):

King, R. A. 1967. "Marketing Efficiency: Technical, Price and Economic,"
Proceedings, Marketing Section, Association of Southern Agricultural Workers.

Bressler, R. G., Jr., and R. A. King. 1970. Markets, Prices and Interregional Trade. John Wiley and Sons, New York, N. Y. p. 426.

King, R. A., and Foo-Shiung Ho. 1972. Reactive Programming: A Market Simulating Spatial Equilibrium Algorithm. ERR No. 21.

ROY A. LARSON

Education:

B.S.	- University of Minnesota	1953
M.S.	- University of Minnesota	1957
Ph.D.	- Cornell University	1961

Professional Employment:

Assistant Professor	North Carolina State University	1961-65
Associate Professor	North Carolina State University	1965-68
Visiting Associate Professor	University of California	1967-68
Professor	North Carolina State University	1968-

Professional Responsibilities:

Research	- Floricultural crops, growth regulators, dormancy and flower bud differentiations - Projects 3139 & 5014 - 50%
Teaching	- HS 41 Flower Production, HS 441 Floriculture, HS 442 Floriculture II, HS 599 Research Principles - 50%
Extension	- 0%

Research Publications Since 1966 (Task Force subject matter only):

- Larson, Roy A. and Joseph W. Love. 1966. Høydekontroll av julestjerner. Gartneryrket 31:726-727.
- Larson, Roy A. 1967. Chemical growth regulators and their effects on poinsettia height control. N. C. State Tech. Bul. 180.
- Larson, Roy A. and Martin L. McIntyre. 1967. N. C. State studies on chemical pinching of azaleas. Flor. Rev. 141(3653):21, 22, 82.
- Larson, Roy A. and Martin L. McIntyre. 1967. "Out-of-season" flowering of quality azaleas. Quart. Bul. Amer. Rhododendron Society 21(2):67-70.
- McDowell, T. C. and R. A. Larson. 1966. Effects of (2-chloroethyl) trimethyl ammonium chloride (Cycocel), N-Dimethyl Succinamic acid (B-Nine), and photoperiod on flower bud initiation and development in azaleas. Proc. Amer. Soc. Hort. Sci. 88:600-605.
- Larson, R. A. and M. L. McIntyre. 1968. Residual effects of Cycocel in poinsettia height control. Proc. Amer. Soc. Hort. Sci. 93:206-212.
- Larson, R. A. 1970. The effects of accurately controlled environmental conditions on the growth and flowering of Eckespoint C-1. Florists' Rev. 146:34-35, 69-70.
- Larson, Roy A. 1971. N. C. State University research on seedling geraniums: Influences of cultural procedures on growth and flowering. Hort. Res. Series No. 11. 24 p.
- Larson, Roy A. 1971. Water - Guest editorial in summer issue of American Horticultural Magazine.

W. M. LEWIS

Education:

B.S.	- Texas A&M University	1952
M.S.	- University of Minnesota	1956
Ph.D.	- University of Minnesota	1957

Professional Employment:

Assistant Professor	North Carolina State University	1957-61
Associate Professor	North Carolina State University	1961-69
Professor	North Carolina State University	1969-

Professional Responsibilities:

Research	- Turf Weed Control - Project S-3298 - 25%
Teaching	- 0%
Extension	- Weed control in agronomic crops and turf - 75%

Research Publications Since 1966 (Task Force subject matter only):

- Lewis, W. M., and W. B. Gilbert. 1966. The effect of siduron on crabgrass and goosegrass control and the establishment of five warm-season and three cool-season turfgrasses. Proceedings of the Southern Weed Conference 19:150-154.
- Lewis, W. M., and J. P. Lilly. 1966. Retreatments of preemergence and post-emergence crabgrass herbicides and their residual effects on the establishment of three turfgrasses. Proceedings of the Southern Weed Conference. 19:161-167.
- Lewis, W. M. 1967. Comparison of herbicides on dry and fertilizer carriers for preemergence crabgrass control in turf. Proceedings of the Southern Weed Conference 20:61-63.
- Lewis, W. M. 1970. Pre and postemergence Poa annua control in common bermudagrass turf. (Abstract) Proceedings of Southern Weed Science Society 23:121.
- Lewis, W. M. 1971. The effects of preemergence crabgrass herbicides on the vegetative development of four bermudagrasses. Weed Science Society of America. (Abstracts)

J. PAUL LILLY

Education:

B.S. - North Carolina State University 1965
M.S. - North Carolina State University 1971

Professional Employment:

Research Assistant North Carolina State University 1968-

Professional Responsibilities:

Research - "Nutrition and Soil Management Studies on Muscadine Grape and Rabbiteye Blueberry". Boron and soil pH requirements of muscadine grape; and soil pH requirements and N-P-K nutrition of rabbiteye blueberry, - Project 3337, "Nutrition and soil management studies on commercially grown flower crops." The main emphasis is on Gladiolus nutrition, - Project 3338. - 100%

Teaching - 0%

Extension - 0%

Research Publications Since 1966 (Task Force subject matter only):

None

This researcher is also junior author on one research publication cited in this report by another project leader.

HUGH L. LINER

Education:

B.S. - North Carolina State University 1956
M.E. - North Carolina State University 1957
Ph.D. - North Carolina State University 1967

Professional Employment:

Assistant County Agent North Carolina State University
Associate Professor (Ext. Econ) North Carolina State University 1960-71

Professional Responsibilities:

Research - 0%
Teaching - EC 303 Farm Management, EC 523 Planning Farm and Area Adjustments-30%
Extension - Farm Management with a commodity interest in horticulture and an economic emphasis on credit and farm growth - 70%

Research Publications Since 1966 (Task Force subject matter only):

- Hammond, L. H., H. L. Liner, et al. The Feasibility of Producing and Processing Certain Vegetables in Southeastern North Carolina. Economics Research Report No. 4, N. C. State University. 1967 (7).
- Liner, Hugh L., and Henry Covington. 1967. Producing Vegetables for Processing in Southeastern North Carolina - Will It Pay. Ext. Circ. 473. N. C. S. U. (7)
- Liner, Hugh L., and George R. Hughes. 1968. Costs and Returns from Producing Snap Beans for Processing. Ext. Cir. 492. N.C.S. U. (7).
- Liner, Hugh L., and George R. Hughes. 1971. Planning for Profits - Vegetables. Ext. Cir. 520. N.C.S. U. (7)
- Liner, Hugh L., and George R. Hughes. 1971. Planning for Profits - Fruits. Ext. Cir. 521. N.C.S.U. (8)
- Liner, Hugh L., and E. A. Proctor. Blueberry Harvesting and Packing Costs-- Machine vs. Hand Systems--A Case Study. Economic Information Report No. 30. N.C.S.U. (8)

JOSEPH W. LOVE

Education:

B.S.	- Louisiana State University	1957
M.S.	- The Ohio University	1959
Ph.D.	- The Ohio University	1962

Professional Employment:

Assistant Professor	Rutgers, The State University	1962-63
Extension Assistant Professor	North Carolina State University	1963-66
Extension Associate Professor	North Carolina State University	1966-70
Extension Professor	North Carolina State University	1970-

Professional Responsibilities:

Research - Floricultural crops - 15%
Teaching - 0%
Extension - Floricultural crops - 85%

Research Publications Since 1966 (Task Force subject matter only):

- Love, J. W. and R. A. Larson. 1966. Hoydekontroll av julestjerner ved hjelp av kjemiske mildere. Gartner Yrket (1) 726-727.
- Love, J. W. and R. A. Larson. 1966. North Carolina poinsettia height control trials. Florists' Review 3565 (138) 17-18.
- Love, J. W., R. A. Larson and B. G. Hilliard. 1970. The effects of growth retardants and temperature on the growth and flowering of Poinsettia Cvs. "Annette Hegg" and "Eckespoint C-1." Horticultural Science Vol. 5, No. 6.

PAUL V. NELSON

Education:

B.S.	- University of Massachusetts	1960
M.S.	- Pennsylvania State University	1961
Ph.D.	- Cornell University	1964

Professional Employment:

Assistant Professor	North Carolina State University	1965-68
Associate Professor	North Carolina State University	1968-

Professional Responsibilities:

Research	- Active Nutrient Uptake by Horticultural Plant Foliage - Project 3369, Foliar Analysis Standards and Improved Nutritional Evaluation Procedures for Florists' Crops - Project proposed - 50%
Teaching	- HS 22 Greenhouse Operations - HS 622 Mineral Nutrition in Horticultural Plants - 50%
Extension	- 0%

Research Publications Since 1966 (Task Force subject matter only):

- Nelson, P. V., and J. W. Boodley. 1966. Classification of carnation cultivars according to Foliar Nutrient Content. Proc. Amer. Soc. Hort. Sci. 89:620-625.
- Nelson, P. V., and H. H. Garlich. 1969. Relationship of chemical classification and hydrophite-lipophile balance of surfactants to enhancement of foliar uptake of iron. Agr. Food Chem. 17(1):148-152.
- Nelson, P. V. 1969. Assessment and correction of the alkalinity problem associated with Palabora vermiculite. J. Amer. Soc. Hort. Sci. 94(6):664-667.
- Nelson, P. V., and R. A. Larson. 1969. The effects of increased CO₂ concentrations on Chrysanthemum (C. Morifolium) and snapdragon (Antirrhinum majus). N. C. Agr. Exp. Sta. Tech. Bul. 194.
- Nelson, P. V., and L. Z. Poteet. 1969. A preliminary investigation of chemical pruning of plants - some common questions and answers. Florists' Rev. 145: (3752):19,50-53.
- Sill, L. P. and P. V. Nelson. 1970. Relationship between azalea bud morphology and effectiveness of methyl decanoate, a chemical pinching agent. J. Amer. Soc. Hort. Sci. 95(3):270-273.
- Nelson, P. V., R. K. Reid and L. P. Sill. 1970. Effect of methyl decanoate upon the ultrastructure of plant cells. Bot. Gaz. 131(4):290-297.
- Nelson, P. V., J. W. Love, and A. A. Banadyga. 1969. Greenhouse crop information- where to find it. N. C. Agr. Ext. Ser. Hort. Info. Leaf. 425.
- Nelson, P. V. 1970. Plant analysis: How to use it to your advantage. N. C. Flower Growers' Bul. 14(3):6-8.

RICHARD K. PERRIN

Education:

B.S. - Iowa State University 1960
Ph.D. - Iowa State University 1968

Professional Employment:

Assistant Professor North Carolina State University 1968-72
Associate Professor North Carolina State University 1972-

Professional Responsibilities:

Research - Beef Production in the South - Project 1067, Tropical Soils (AID contract) and Economics of Christmas Tree Production - Project 2500 - 50%
Teaching - EC 212, 491, and 551 - 50%
Extension - 0%

Research Publications Since 1966 (Task Force subject matter only):

None

EDWIN A. PROCTOR

Education:

B.S. - University of Kentucky 1945
M.S. - University of Kentucky 1957

Professional Employment:

Extension Professor North Carolina State University 1959-71

Professional Responsibilities:

Research - 0%
Teaching - 0%
Extension - Fruit and vegetable marketing 100%

Research Publications Since 1966 (Task Force subject matter only):

Proctor, E. A. and E. A. Jackson. "Apple Packing Costs." Economics Information Report No. 28.

This researcher is also junior author on two research publications cited in this report by other project leaders.

RONALD E. SNEED

Education:

B.S. - North Carolina State University 1959
Ph.D. - North Carolina State University 1971

Professional Employment:

Instructor	North Carolina State University	1960-70
Assistant Professor	North Carolina State University	1971-

Professional Responsibilities:

Research - Cooperator on eight projects in Fruit and Vegetable research - 0%
Teaching - BAE, Irrigation, Terracing and Erosion Control - 20%
Extension - Water management with primary interest in irrigation and home
water quality and systems - 80%

Research Publications Since 1966 (Task Force subject matter only):

None

RONALD L. SPANGLER

Education:

B.S.	- Purdue University	1966
M.S.	- Purdue University	1968
Ph.D.	- Michigan State University	1971

Professional Employment:

Assistant Professor, Extension	North Carolina State University	1971-
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Professional Responsibilities:

Research	- Weed control & growth regulators - 35%
Teaching	- 0%
Extension	- Nursery production - 65%

Research Publications Since 1966 (Task Force subject matter only):

None

D. L. STRIDER

Education:

B.S. - North Carolina State University 1956
M.S. - North Carolina State University 1957
Ph.D. - North Carolina State University 1959

Professional Employment:

Research Assistant Professor	North Carolina State University	1959-64
Associate Professor	North Carolina State University	1964-70
Professor	North Carolina State University	1970-

Professional Responsibilities:

Research - 100%
Teaching - 0%
Extension - 0%

Research Publications Since 1966 (Task Force subject matter only):

- Duncan, Harry, J. C. Wells, and D. L. Strider. 1967. Disease control for trellised cucumbers in Western North Carolina. N.C.S.U. Plant Path. Inf. Note 144. 4p.
- Hassan, A. A., D. L. Strider, and T. R. Konsler. 1968. Application of cotyledonary symptoms in screening for resistance to tomato bacterial canker and in host range studies. Phytopathology 58:233-239.
- Strider, D. L. 1966. Bean root-rot, Rhizoctonia solani. In Results of 1965 Fungicide-Nematocide Tests. Amer. Phytopath. Soc. 21:57-58.
- Strider, D. L. 1966. Tomato early blight, Alternaria solani. In Results of 1965 Fungicide-Nematocide Tests. Amer. Phytopath. Soc. 21:85-86.
- Strider, D. L. 1967. Survival studies with the tomato bacterial canker organism. Phytopathology 57:1067-1071.
- Strider, D. L. 1967. Scab and powdery mildew of cucumber. In Results of 1966 Fungicide-Nematocide Tests. Amer. Phytopath. Soc. 22:66-67.
- Strider, D. L. 1968. The foliage blight phase of bacterial canker of tomato. Phytopathology 58:731. (Abstr).
- Strider, D. L. 1969. The foliage blight phase of bacterial canker of tomato and survival of Corynebacterium michiganense in toxicants and in an air-dried condition. Plant Disease Rpt. 53:864-868.
- Strider, D. L. 1969. Bacterial canker of tomato caused by Corynebacterium michiganense: A literature review and bibliography. N. C. Exp. Sta. Tech. Bul. No. 193. 110 p.
- Strider, D. L., and R. B. Chalfant. 1966. Tomato (plant bed) pesticide phytotoxicity. In Results of 1965 Fungicide-Nematocide Tests. Amer. Phy. Soc. 21:85.