

THE ROLE OF MICHIGAN STATE UNIVERSITY IN  
TURFGRASS DEVELOPMENT IN MICHIGAN

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It is a privilege for me to have been invited to return to Michigan and participate in the 50th Anniversary of the Michigan Turfgrass Conference. It is one of the oldest turfgrass educational conferences in the world. A very strong heritage has evolved over the years in Michigan in terms of both turfgrass research and education. My responsibilities are to evaluate the research dimension, particularly in relation to the activities at Michigan State University. From an historical perspective the residents of Michigan and Michigan State University can be proud that the first published research on turfgrasses was conducted during the 1880's at Michigan State University by the noted botanist W. J. Beal. The Beal Botanical Garden in the center of campus is named in honor of this pioneering researcher in the Michigan Agricultural Experiment Station. From this modest beginning, a major research program has evolved over the years that has had a substantial impact not only on turfgrass culture in Michigan, but throughout the United States and the world.

Many professional turf managers throughout the state that have worked very hard over the years to support this program can be proud of these accomplishments and their contributions toward these activities. With this background in mind it is now appropriate to present a partial listing of the major research accomplishments generated by the Michigan Agricultural Experiment Station at Michigan State University. They are as follows:

Stress Research Contributions

- 1) Identified the major causes of winterkill and methods of prevention.
- 2) Demonstrated the role of disease and morphological factors in shade adaptation.
- 3) Identified cultural methods to enhance shade adaptation.
- 4) Developed a wear stress simulator.
- 5) Characterized the wear tolerance of turfgrass cultivars and cultural practices to enhance wear survival.
- 6) Conducted pioneering studies of flooding stress.
- 7) Advanced the concepts of heat stress and methods of avoidance.
- 8) Developed techniques to screen for stress hardiness in a breeding program.

Soils Research Contributions

- 1) Defined the nutrient requirements of the three major turfgrasses.
- 2) First pioneering studies of core cultivation and its implications in soil compaction.
- 3) Showed efficacy variability among wetting agents on hydrophobic sands and proper application methods.
- 4) Advanced the understanding of arsenate soil chemistry in relation to phytotoxicity.
- 5) Clarified the maximum desirable nitrogen application rate in relation to carbohydrate reserves.
- 6) Developed improved fertilization programs for roadside establishment.

### Cultural Research Contributions

- 1) Reel vs. rotary mowers.
- 2) First evidence of mulching mower effectiveness.
- 3) Thatch characterization, causes, and prevention.
- 4) Conducted an extensive, continuing cultivar characterization program.
- 5) Developed improved seed mixtures for Michigan roadsides.
- 6) Lead in developing concepts of blending cultivars.
- 7) Developed a disc gel electrophoresis method for turfgrass cultivar identification.

### Pest Research Contributions

- 1) First chemical control for Fusarium blight.
- 2) First evidence of pathogen resistance to the systemic fungicides used on turfgrasses.
- 3) Identified Anthracnose as a major summer problem of annual bluegrass.
- 4) Advanced the methods for snow mold control.
- 5) Effect of nitrogen fertilization on snow mold and fairy ring.
- 6) Characterized the adaptation optimums and stress limits of annual bluegrass.
- 7) First definitive studies on the cultural requirements of annual bluegrass.

### Sod Research Contributions

- 1) Clipping utilization - first pelleted clippings.
- 2) Sod heating characterization and prevention.
- 3) First net-sod production system.
- 4) Developed sod strength measurement technique.
- 5) Established the P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O fertilization requirements for sod production or organic soils.
- 6) Demonstrated the adverse effects of high nitrogen fertilization on sod strength.
- 7) Characterized the sod strengths of Kentucky bluegrass cultivars.
- 8) Delineated the proper sod transplanting techniques.

The accomplishments just listed are the result of much work by the many scientists, technical assistants, and graduate students that have been employed by the Michigan Agricultural Experiment Station. Ten scientists have served as project leaders and have made varying contributions to the turfgrass research program over the years. They are summarized in chronological order of the time when they became involved with turfgrass research activities: James Tyson, Carter Harrison, Buford Grigsby, James Beard, Paul Rieke, Ken Payne, Joe Vargas, Bill Meggitt, Chuck Laughlin, and John Kaufmann.

It is also important to recognize the research technicians who aided in accomplishing the research objectives established by the project leaders. They include Jack Eaton, Ron Detweiler, Richard Bay, David Martin, Jerry Lapp, and Ron Yoder. I would like to pay special tribute to Jack Eaton on the eve of his retirement. Over a period of 15 years he was a very tursted and loyal technical assistant and contributed a major role in the development of the turf research program at Michigan State University during the 1960's. Research assistants are not in the lime light in comparison to the project leaders and graduate students, but are of no less importance in terms of their contribution to the research accomplishments just listed. I tip my hat to them!

The graduate students, through the very detailed research conducted on their theses, also make a significant contribution towards the research accomplishments. There were four individuals who received their degrees at Michigan State University prior to 1960. They were Ralph Morrish, Bill Daniel, Milt Erdmann, and Felix Juska. The latter three received Ph.D.'s. Dr. Bill Daniel has made a very significant contribution to the turfgrass programs at Purdue University, Dr. Felix Juska had an active research career with the United States Department of Agriculture at Beltsville, Maryland.

During the 1960's and 70's there was a substantial increase in graduate training in the turfgrass area at Michigan State University. These key individuals are listed on the accompanying summary table. Most are making significant contributions to the turfgrass industry either through university research and extension roles or by providing leadership in the private sector of the turfgrass industry. No other university in the country can claim this number of individuals who are making significant contributions through turfgrass research and education than can Michigan State University. You can be proud of this accomplishment and the contribution that has been made.

#### Michigan State University Turfgrass Graduate Students

Graduate Student	Degree	Year	Employment
David Green	M.S.	1963	Canada Dept. of Agriculture
Harlan Stoin	M.S. & Ph.D.	1966 & 1968	University of Arkansas
Jim Fischer	M.S.	1967	Toro & Gravely Company
Jim Timmerman	M.S.	1967	USGA Green Section & CGS
Achmad Satari	Ph.D.	1967	Foreign Research
Tom Duff	Ph.D.	1968	University of Rhode Island
John King	Ph.D.	1968	University of Arkansas
David Martin	M.S. & Ph.D.	1970 & 1972	Ohio State Univ. & ChemLawn
John Kaufmann	M.S. & Ph.D.	1970 & 1973	Cornell & Michigan State Univ.
Al Turgeon	Ph.D.	1971	Illinois & Texas A&M Univ.
Bob Shearman	M.S. & Ph.D.	1971 & 1973	Scotts & Univ. of Nebraska
Ken English	M.S.	1971	Farming
Bob Carrow	Ph.D.	1972	Mass. & Kansas State Univ.
Jim Bogart	M.S.	1972	O.M. Scotts
Jim Wilkinson	Ph.D.	1973	Ohio State Univ. & ChemLawn
Rich Anda	M.S.	1975	ChemLawn
Dave Duncan	M.S.	1975	Monsanto Company
Jeff Krans	Ph.D.	1975	Mississippi State Univ.
Martin Petrovic	Ph.D.	1979	Cornell University

This completes a summary of the contributions that Michigan State University has made from a research standpoint to the people of Michigan. As a result of these activities the residents of Michigan enjoy more effective, lower cost cultural systems and turfgrasses which contribute significantly from a functional, recreational, and aesthetic standpoint to their quality of life.