

## JAMES A. MURPHY

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### EDUCATION

**Ph. D. in Crop and Soil Sciences**, emphasis in Turfgrass Science. Michigan State University, East Lansing, MI, 1990. Dissertation: Influence of cultivation on turfgrass shoot and root growth. Advisor: Dr. P. E. Rieke.

**M. S. in Crop and Soil Sciences**, emphasis in Turfgrass Science. Michigan State University, East Lansing, MI, 1986. Thesis: Hollow and solid tine cultivation effects on soil properties and turfgrass growth. Advisor: Dr. P. E. Rieke.

**B. S. in Agriculture**. Western Illinois State University, May, 1983.

### CAREER EXPERIENCE

**Extension Specialist**. Department of Extension Specialists, Rutgers Cooperative Extension, Rutgers, New Brunswick, New Jersey. 2006 to present.  
Appointment: 70% Extension, 20% Research, and 10% Teaching.

Responsibilities include conducting an applied research and extension program in turfgrass science and management. Areas of study include evaluation of germplasm and best management practices to improve plant stress tolerance (emphasis on edaphic stresses) and promote environmental stewardship. Instructor for 3 credit undergraduate course, *Soil Management for Sports Fields and Landscapes*.

**Associate Extension Specialist**. Department of Extension Specialists, Rutgers Cooperative Extension, Rutgers, New Brunswick, New Jersey. September 1997 to 2006.  
Appointment: 70% Extension, 20% Research, and 10% Teaching.

Responsibilities include conducting an applied research and extension program in turfgrass science and management. Areas of study include evaluation of germplasm and best management practices to improve plant stress tolerance (emphasis on edaphic stresses) and promote environmental stewardship. Instructor for 4 credit undergraduate course, *Turfgrass Management*, through 2003. New course developed and offered Spring 2004.

**Assistant Extension Specialist**. Department of Extension Specialists, Rutgers Cooperative Extension, Rutgers, New Brunswick, New Jersey.  
Sept. 1993 – Aug. 1997 Appointment: 70% Extension, 20% Research, 10% Teaching  
Oct. 1991 – Sept. 1993 Appointment: 70% Extension, 30% Research.

Responsibilities include conducting an applied research and extension program in turfgrass science and management. Areas of study include evaluation of germplasm and best management practices to improve plant stress tolerance and promote environmental stewardship. Instructor for 3 credit undergraduate course, *Turfgrass Management*.

**Post-doctoral Research Associate.** Department of Crop and Soil Sciences, Michigan State University, East Lansing, Michigan. July 1990 to September 1991.

Areas of study included the evaluation of wetting agent and fertilizer efficacy; determination of the soil zone influenced by the creation of soil macropores with high pressure water injection; and evaluation of polyacrylamide gel in relation to soil moisture and nutrient retention and the implications to plant stress.

**Graduate Research Assistant.** Department of Crop and Soil Sciences, Michigan State University, East Lansing, Michigan. September 1983 to June 1990.

## **SCHOLARSHIP / RESEARCH / EXTENSION PRACTICE**

### **PUBLICATIONS**

#### **Chapters in Books:**

Rieke, P.E., and J.A. Murphy. 2010 (in press). Modified Rootzones for Efficient Turfgrass Water Use. *In* S. Cockerham and B. Lineaur (eds). Water Conservation Workshop. University of California ANR Communication Services.

Murphy, J.A., and S.L. Murphy. 2002. Protection of Soil and Water with Turfgrasses. p. 1349-1352. *In* R. Lal (ed.) Encyclopedia of Soil Science.

Murphy, J.A., S.L. Murphy, and H. Samaranayake. 2000. Soil Physical Constraints and Plant Growth Interactions. p. 387-405. *In* R. E. Wilkinson (ed.) Plant-Environment Interactions. 2<sup>nd</sup> Edition.

Funk, C. R., F. C. Belanger, and J. A. Murphy. 1994. Role of endophytes in grasses used for turf and soil conservation. p. 201-209. *In* C. Bacon and J. White (ed.) Biotechnology of endophytes.

#### **Book Reviews:**

Murphy, J. A. 1993. Book review of ASA Monograph 32, Turfgrass. *Soil Science*. 155:428.

#### **Refereed Journal Articles:**

Inguagiato, J. C., Murphy, J. A., and Clarke, B. B. 2010. Anthracnose development on annual bluegrass affected by seedhead and vegetative growth regulators. Online. *Applied Turfgrass Science* doi:10.1094/ATS-2010-0923-01-RS.

Park, B.S., J.A. Murphy, T.J. Lawson, and H. Samaranayake. 2010. Wear tolerance and recovery of Kentucky bluegrass subjected to seasonal wear. *Crop Sci*. 50:1526-1536.

Fu, J., P.H. Dernoeden, and J.A. Murphy. 2009. Creeping bentgrass color and quality, chlorophyll content, and thatch-mat accumulation responses to summer coring. *Crop Sci*. 49:1079-1087.

den Hann, J., B. Huang, J.A. Murphy, S.A. Bonos, M. DaCosta, and W.A. Meyer. 2009. Evaluation of morphological and physiological traits of *Lolium perenne* cultivars associated with wear tolerance. *Int. Turfgrass Soc. Res. J*. 11:779-787.

Inguagiato, J.C., J.A. Murphy, and B.B. Clarke. 2009. Anthracnose disease and annual bluegrass putting green performance affected by mowing practices and lightweight rolling. *Crop Sci*. 49:1454-1462.

- Inguagiato, J.C., J.A. Murphy, and B.B. Clarke. 2009. Anthracnose of annual bluegrass putting green turf influenced by trinexapac-ethyl application interval and rate. *Int. Turfgrass Soc. Res. J.* 11:207-218.
- Park, B.S., J.M. Bokmeyer, J.A. Murphy, S.A. Bonos, and W.A. Meyer. 2009. Evaluation of tall fescue under simulated wear. *Int. Turfgrass Soc. Res. J.* 11:563-572.
- Inguagiato, J.C., J.A. Murphy, and B.B. Clarke. 2008. Anthracnose severity on annual bluegrass influenced by nitrogen fertilization, growth regulators, and verticutting. *Crop Science.* 48:1595-1607.
- Samaranayake, H., T.J. Lawson, and J.A. Murphy. 2008. Traffic stress effects on bentgrass putting green and fairway turf. *Crop Sci.* 48:1193-1202.
- Cashel, R.A., H. Samaranayake, T.J. Lawson, J.A. Honig, and J.A., Murphy. 2005. Traffic tolerance of bentgrass cultivars grown on a sand-based root zone. *Int. Turfgrass Soc. Res. J.* 10:531-537.
- Ford, T.M., W.A. Meyer, J.A. Murphy, S.A. Bonos, D.A. Smith, and C.R. Funk. 2005. Registration of 'Ambassador' Chewings fescue. *Crop Sci.* 45:1162-1163.
- Henry, G.M., S.E. Hart, and J.A. Murphy. 2005. Overseeding bentgrass species into existing stands of annual bluegrass. *HortScience.* 40:468-470.
- Lycan, D. W., S. E. Hart, and J. A. Murphy. 2005. Annual bluegrass control in Kentucky bluegrass with sulfosulfuron. *Int. Turfgrass Soc. Res. J.* 10:1222-1226.
- Murphy, J.A., H. Samaranayake, J.A. Honig, T.J. Lawson, and S.L. Murphy. 2005. Creeping bentgrass establishment on amended-sand root zones in two microenvironments. *Crop Sci.* 45:1511-1520.
- Murphy, J.A., H. Samaranayake, T.J. Lawson, J.A. Honig, and S. Hart. 2005. Seeding date and cultivar impact on establishment of bentgrass in soil containing annual bluegrass seed. *Int. Turfgrass Soc. Res. J.* 10:410-415.
- Park, B.S., J.A. Murphy, W.A. Meyer, S.A. Bonos, J. den Hann, D.A. Smith, and T.J. Lawson. 2005. Performance of Kentucky bluegrass within phenotypic classifications as affected by traffic. *Int. Turfgrass Soc. Res. J.* 10:618-626.
- Hart, S., D. Lycan, and J.A. Murphy. 2004. Use of quinclorac for large crabgrass (*Digitaria sanguinalis*) control in newly summer-seeded creeping bentgrass (*Agrostis stolonifera*). *Weed Technol.* 18:375-379.
- Hart, S., D. Lycan, and J.A. Murphy. 2004. Response of creeping bentgrass (*Agrostis stolonifera*) to fall applications of bensulide and dithiopyr. *Weed Technol.* 18:1072-1076.
- Heckman, J.R., B.B. Clarke, and J.A. Murphy. 2003. Optimizing manganese fertilization for the suppression of take-all patch disease on creeping bentgrass. *Crop Sci.* 43:1395-1398.
- Hill, W., J.R. Heckman, B.B. Clarke, and J.A. Murphy. 2003. Summer patch disease severity on Kentucky bluegrass in response to fertilizer source. *J. Plant Nutr.* 26:1499-1512.
- Hill, W. J., J. R. Heckman, B. B. Clarke, and J. A. Murphy. 2002. Soil pH management for control of summer patch of Kentucky bluegrass. *Int. Turfgrass Soc. Res. J.* 9:388-393.
- Honig, J.A., and J.A. Murphy. 2001. Antecedent Water Content and Air Encapsulation Effects on Physical Properties of Sand Root Zone Material. *J. Turfgrass Sci.* 77:24-37.

- Zaurov, D.E., S. Bonos, J.A. Murphy, M. Richardson, and F.C. Belanger. 2001. Endophyte infection can contribute to aluminum tolerance in fine fescue. *Crop Sci.* 41:1981-1984.
- Murphy, J.A., J.A. Honig, H. Samaranayake, T.J. Lawson, and S.L. Murphy. 2001. Creeping bentgrass establishment on root zones varying in sand sizes. *Int. Turfgrass Soc. Res. J.* 9:573-579.
- Bonos, S.A., E. Watkins, J.A. Honig, M. Sosa, T.J. Molnar, J.A. Murphy, and W.A. Meyer. 2001. Breeding cool-season turfgrasses for wear tolerance using a wear simulator. *Int. Turfgrass Soc. Res. J.* 9:137-145.
- Gentilucci, G., J.A. Murphy, and D.E. Zaurov. 2001. Nitrogen requirement for Kentucky Bluegrass grown on compost amended soil. *Int. Turfgrass Soc. Res. J.* 9:382-387.
- Hill, W.J., J.R. Heckman, B.B. Clarke, and J.A. Murphy. 2001. Influence of liming and nitrogen on the severity of summer patch of Kentucky bluegrass. *Int. Turfgrass Soc. Res. J.* 9:388-393.
- Bonos, S.A. and J.A. Murphy. 2000. Classification of Kentucky bluegrass grown as spaced-plants. *HortScience.* 35:910-913.
- Johnson-Cicalese, J., M.E. Secks, C.K. Lam, W.A. Meyer, J.A. Murphy, and F.C. Belanger. 2000. Cross species inoculation of Chewings and strong creeping red fescues with fungal endophytes. *Crop Sci.* 40:1485-1489.
- Bonos, S.A., and J.A. Murphy. 1999. Growth responses and performance of Kentucky bluegrass under summer stress. *Crop Sci.* 39:770-774.
- Hill, W.J., J.R. Heckman, B.B. Clarke, and J.A. Murphy. 1999. Take-all patch suppression in creeping bentgrass with manganese and copper. *HortScience.* 34:891-892.
- Richardson, M.D., R.I. Cabrera, J.A. Murphy, and D.E. Zaurov. 1999. Nitrogen-form and endophyte-infection effects on growth, nitrogen uptake, and alkaloid content of Chewings fescue turfgrass. *J. Plant Nutr.* 22(1):67-79.
- Murphy, J.A., S. Bonos, and P. Perdomo. 1997. Classification of Kentucky bluegrass genotypes. *Int. Turfgrass Soc. Res. J.* 8:1176-1183.
- Bailey, R.H., J.W. Jenks, J.A. Murphy, and C.R. Funk. 1997. Registration of 'Elf' perennial ryegrass. *Crop Sci.* 37:1673.
- Lee, L., C. Laramore, C.L. Hartman, Li Yang, C.R. Funk, J. Grande, J.A. Murphy, S.A. Johnston, B.A. Majek, N.E. Tumer, and P.R. Day. 1997. Field evaluation of herbicide resistance in transgenic *Agrostis stolonifera* and inheritance in the progeny. *Int. Turfgrass Soc. Res. J.* 8:337-344.
- Liu, H., J.R. Heckman, and J.A. Murphy. 1997. Greenhouse screening of turfgrass for aluminum. *Int. Turfgrass Res. Soc. J.* 8:719-728.
- Liu, H., J.R. Heckman, and J.A. Murphy. 1997. Aluminum tolerance among creeping bentgrass and colonial bentgrass genotypes. *Int. Turfgrass Res. Soc. J.* 8:729-734.
- Hurley, R.H., V.G. Lehman, J.A. Murphy, and C.R. Funk. 1996. Registration of 'Yorktown III' perennial ryegrass. *Crop Sci.* 36:465-466.
- Liu, H., J.R. Heckman, and J.A. Murphy. 1996. Screening fine fescues for aluminum tolerance. *J. Plant Nutr.* 19:677-688.

- Perdomo, P., J.A. Murphy, and G. Berkowitz. 1996. Physiological changes associated with performance of Kentucky bluegrass cultivars during summer stress. *HortScience*. 31:1182-1186.
- Liu, H., J.R. Heckman, and J.A. Murphy. 1995. Screening Kentucky bluegrass for aluminum tolerance. *J. Plant Nutr.* 18:1797-1814.
- Hurley, R.H., V.G. Lehman, J.A. Murphy, and C. R. Funk. 1994. Registration of 'Southshore' creeping bentgrass. *Crop Sci.* 34:1124-1125.
- Hurley, R.H., V.G. Lehman, J.A. Murphy, and C.R. Funk. 1994. United States Plant Variety Protection Certificate No. 9200256. Southshore creeping bentgrass. Issued October 31, 1994.
- Murphy, J.A., and P.E. Rieke. 1994. High pressure water injection and core cultivation of a compacted putting green. *Agron. J.* 86:719-724.
- Murphy, J.A., and D.E. Zaurov. 1994. Shoot and root growth response of perennial ryegrass to fertilizer placement depth. *Agron. J.* 86:828-832.
- Murphy, J.A., M.G. Hendricks, P.E. Rieke, A.J.M. Smucker, and B.E. Branham. 1994. Turfgrass root systems evaluated using the minirhizotron and video recording methods. *Agron. J.* 86:247-250.
- Murphy, J.A., P.E. Rieke, and A.E. Erickson. 1993. Core cultivation of a putting green with hollow and solid tines. *Agron. J.* 85:1-9.
- Murphy, J.A., S. Sun, and L.L. Betts. 1993. Endophyte-enhanced resistance to billbug (Coleoptera: Curculionidae), sod webworm (Lepidopteran: Pyralidae), and white grub (Coleoptera: Scarabeidae) in tall fescue. *Environ. Entomol.* 22(3):699-703.
- Peterson, R.J., B.B. Clarke, M.L. Fraser, J.A. Murphy, S. Sun, and C.R. Funk. 1993. Registration of 'Shenandoah' tall fescue. *Crop Sci.* 33:1404-1405.
- Thompson, D.C., B.B. Clarke, J.R. Heckman, and J.A. Murphy. 1993. Influence of nitrogen source and soil pH on summer patch development in Kentucky bluegrass. *Int. Turfgrass Soc. Res. J.* 7:317-323.
- Gaussoin, R.E., J.A. Murphy, and B.E. Branham. 1990. A vertically installed flush mounted tensiometer for turfgrass research. *HortScience*. 25(8):928-929.

#### **Refereed Journal Articles: In Preparation**

- Devaney, J., H. Samaranayake, and T.J. Lawson. 2010. Relationship of organic matter content and particle density needed to estimate total porosity of mat. (in preparation).
- Fu, J., P.H. Dernoeden, and J.A. Murphy. 2010. Creeping bentgrass rooting in response to spring and summer coring. *HortScience*. 49:(in preparation).
- Murphy, J.A., T.J. Lawson, and H. Samaranayake. 2010. Management practices affecting velvet bentgrass performance. *Applied Turfgrass Science*. (to be submitted).
- Murphy, J.A., T.J. Lawson, H. Samaranayake, and J. Devaney. 2010. Long term performance of bentgrass putting green turf on root zone varying in sand size distribution. *Crop Sci.* (to be submitted).

#### **Non-Refereed Journal Articles:**

- Inguagiato, J.C., J. A. Murphy, and B. B. Clarke. 2009. Mowing and rolling strategies to manage anthracnose on annual bluegrass greens. *Golf Course Mgmt* 77: 111-116.

- Inguagiato, J., J. A. Murphy, B. B. Clarke, and J. Roberts. 2009. Effect of topdressing on anthracnose in *Poa annua*. *Golf Course Mgmt* 77(12):94
- Roberts, J., B.B. Clarke and J.A. Murphy. 2009. Effect of irrigation management on anthracnose of *Poa annua* greens. *Golf Course Mgmt* 77(7):103
- Samaranayake, H., T.J. Lawson, and J.A. Murphy. 2009. Effects of traffic stress on bentgrass putting green and fairway turf. *GCM*. 77(1): 126-131.
- Murphy J, Wong F, Tredway L, Crouch JA, Inguagiato J, Clarke B, Hsiang T, Rossi F. 2009. Best management practices for anthracnose on annual bluegrass turf. *The Dogwood*, A Publication of the British Columbia Golf Superintendents Association, Fall 2009, pages 40-48.
- Also printed as:  
 Murphy J, Wong F, Tredway L, Crouch JA, Inguagiato J, Clarke B, Hsiang T, Rossi F. 2010. Best management practices for anthracnose on annual bluegrass turf. *Green is Beautiful*, Winter 2010, Pages 22-33.
- Murphy, J., F. Wong, L. Tredway, J.A. Crouch, J. Inguagiato, B. Clarke, T. Hsiang, and F. Rossi. 2008. Best management practices for anthracnose on annual bluegrass turf. *Golf Course Management*. 76(8):93-104.
- and  
 Murphy, J., F. Wong, L. Tredway, J. A. Crouch, J. Inguagiato, B. Clarke, T. Hsiang and F. Rossi. 2008. Best management practices for anthracnose on annual bluegrass turf. *USGA Turfgrass and Environmental Research Online* 7(16): 1-16
- Murphy, J.A., J.C. Inguagiato, B.B. Clarke, B.S. Park, and T.J. Lawson. 2007. Cultural management of anthracnose disease on annual bluegrass. *USGA Green Section Rec.* 45(6):8-13.
- Also printed as:  
 Murphy, J.A., J.C. Inguagiato, B.B. Clarke, B.S. Park, and T.J. Lawson. 2007. Cultural management of anthracnose disease on annual bluegrass. *The Greenerside*. 32(4):14-17.
- Murphy, J.A. 2007. Rootzone amendments for putting green construction. *USGA Green Section Record*. 45(3):8-13.
- Clarke, B.B., and J.A. Murphy. 2004. Management practices associated with anthracnose and abiotic stress on golf course turf. Available at <http://www.turf.rutger.edu>
- Murphy, J.A. 2004. Soil amendments need continued study. *Golfdom*. Available at <http://golfdom.com/golfdom/article/articleDetail.jsp?id=121543>
- Murphy, J.A., H. Samaranayake, J.A. Honig, T.J. Lawson, and S.L. Murphy. 2004. Turfgrass establishment on various rootzones. *USGA Green Section Record*. 42(6):7-10.
- Murphy, J.A., H. Samaranayake, J.A. Honig, T.J. Lawson, and S.L. Murphy. 2004. Creeping bentgrass establishment on sand-based rootzones varying in amendment. *USGA Turfgrass and Environ. Res. Online* 3(10): 1-15 available at <http://usgatero.msu.edu/v03/n10.pdf>
- Heckman, J.R., B.B. Clarke, and J.A. Murphy. 2003. Take that. *Grounds Maintenance*. 38(10):G22-G24.
- Murphy, J.A. 2003. Longer term assessment of putting green rootzone mixes under two microenvironments. 2003 *Turfgrass and Environ. Res. Summary*. 2003:2.

- Murphy, J.A., T.J. Lawson, and J. Clark. 2003. Ball marks on bentgrass: Blame the golfer, not the cultivar. *USGA Green Section Record*. 41(4):9-13.
- Also reprinted as:*
- Murphy, J.A., T.J. Lawson, and J. Clark. 2003. Ball marks on bentgrass. *USGA Turfgrass and Environ. Res. Online* 2(12): 1- 6. Available at <http://turf.lib.msu.edu/tero/v02/n12.pdf>
- Murphy, J.A., T.J. Lawson, and J. Clark. 2003. Ball marks on bentgrass. *Golf Course Management*. 71(12): 91-94.
- Bonos, S.A., J.A. Murphy, and W.A. Meyer. 2002. Choose Kentucky bluegrass types to develop improved blends. *TurfGrass TRENDS*. 11(2): T11-T12, T14.
- Bonos, S.A., W.A. Meyer, and J.A. Murphy. 2000. Kentucky bluegrasses make comeback on fairways, roughs. *Golf Course Management*. 68(10):59-64.
- Bonos, S. and J.A. Murphy. 2000. Summer stress tolerance in Kentucky bluegrass. *Diversity*. 16(1&2):28.
- Andrews, R.D., A.J. Koskie, J.A. Murphy, and A.M. Petrovic. 1999. Zeoponic materials allow rapid greens grow-in. *Golf Course Management*. 67(2):68-72.
- Liu, H., J. Heckman, and J. A. Murphy. 1998. Acid soils, aluminum and turfgrass. *Golf Course Management*. 66(2): 61-65.
- Hurley, R. H., and J. A. Murphy. 1997. Renovate bentgrass greens without breaking the budget. *Golf Course Management*. 65(3): 58-61.
- Murphy, J. A. 1996. What to do with aeration cores. *Grounds Maintenance*. 31(9):G4,G5,G8,G9.
- Hurley, R. H., and J. A. Murphy. 1996. Creeping bentgrass: The legacy and the promise. *Golf Course Management*. 64(7):49-55.
- Murphy, J. A. 1992. Right aerifier fights compaction. *Northern Turf Management*. 3(9):10-11.
- Murphy, J. A., and P. E. Rieke. 1990. Comparing hollow and solid tine cultivation. *USGA Green Section Record*. 28(5):7-10.
- Murphy, J. A., and P. E. Rieke. 1990. Comparing cultivation methods. *Grounds Maintenance*. 25(7):10-12,76.
- Murphy, J. A. 1990. Summary of water injection agronomic research. *Golf Course Management*. 58(3):38,40.

### **Published Conference Proceedings:**

#### **(a) International**

- Roberts, J.A., J.A. Murphy, and B.B. Clarke. 2010. Effect of soluble-N fertilization on anthracnose severity of annual bluegrass turf. *Proc. European Turfgrass Soc Intern. Conf.*, 2nd. xxx, ed. Angers – France. 11-13 April 2010. *In Press*
- Murphy, J. A., B.B. Clarke, J.C. Inguagiato, J. Roberts. 2008. N fertilization and plant growth regulators affect anthracnose disease severity on *Poa annua*. 1<sup>st</sup> European Turfgrass Society Conf. Proc. 1:143-144.
- Murphy, J. A., S. Sun, and B. B. Clarke. 1993. Association of Acremonium endophytes with performance of turf-type tall fescues in New Jersey. p. 214-216. *In Hume et al. (eds.) Proc.*

Second Int. Symposium on Acremonium/grass Interactions. Palmerston North, New Zealand. 3-6 Feb., 1993.

Thompson, D. C., B. B. Clarke, J. R. Heckman, and J. A. Murphy. 1993. Suppression of summer patch in Kentucky bluegrass with acidifying nitrogen sources. Proc. Int. Congress Plant Pathology, 6<sup>th</sup>. D. Ruest, ed. National Res. Council Canada, Ottawa, Canada.

Rieke, P. E. and J. A. Murphy. Keynote Address. 1989. *Advances in turf cultivation*. p. 49-54. In H. Takatoh (ed.) Proc. of the Sixth Int. Turfgrass Res. Conf. Tokyo, Japan. 31 July - 5 August, 1989. ITS and JSTS, Tokyo, 110, Japan.

#### **(b) National**

Murphy, J. A. 1996. Selection of turfgrass species and varieties. 66<sup>th</sup> Annual Michigan Turfgrass Conf. Proc. 25:125-130.

Murphy, J. A. 1996. Tissue testing: A tool for turf fertilization. 66<sup>th</sup> Annual Michigan Turfgrass Conf. Proc. 25:75-77.

Murphy, J. A. 1991. Aerification: Water injection, hollow or solid tine. p. 14-19. In J. R. Hall III and D. R. Chalmers (ed.) 31<sup>st</sup> Virginia Turfgrass and Landscape Conf. Proc. Richmond, VA. 14-17 Jan., 1991.

Murphy, J. A. 1991. Aeration - The foundation of quality sports turf. p. 87-92. In J. R. Hall III and D. R. Chalmers (ed.) 31<sup>st</sup> Virginia Turfgrass and Landscape Conf. Proc. Richmond, VA. 14-17 Jan., 1991.

Murphy, J. A., and P. E. Rieke. 1989. Cultivation practices for compacted soils. 59<sup>th</sup> Annual Michigan Turfgrass Conf. Proc. 18:82-86.

Rieke, P. E., M. T. Saffel, J. A. Murphy, and J. N. Rogers III. 1989. Turfgrass soils research report - 1988. 59<sup>th</sup> Annual Michigan Turfgrass Conf. Proc. 18:17-35.

Murphy, J. A., and P. E. Rieke. 1988. Cultivation effects on turf and soil. 58<sup>th</sup> Annual Michigan Turfgrass Conf. Proc. 17:23-25.

Murphy, J. A., and P. E. Rieke. 1987. Hollow and solid tine coring research. 57<sup>th</sup> Annual Michigan Turfgrass Conf. Proc. 16:28-33.

Rieke, P. E., M. T. McElroy, and J. A. Murphy. 1987. Turfgrass soil management -1986 research report. 57<sup>th</sup> Annual Michigan Turfgrass Conf. Proc. 16:2-22.

Murphy, J. A., and P. E. Rieke. 1986. Comparing hollow and solid tine cultivation. 56<sup>th</sup> Annual Michigan Turfgrass Conf. Proc. 15:18-23.

Murphy, J. A., and P. E. Rieke. 1985. Research update on turf cultivation. 55<sup>th</sup> Annual Michigan Turfgrass Conf. Proc. 14: 29-34.

Rieke, P. E., S. L. McBurney, and J. A. Murphy. 1984. 1983 Turfgrass soil management research report. 54<sup>th</sup> Annual Michigan Turfgrass Conf. Proc. 13:1-16.

#### **PLANT VARIETY PROTECTION CERTIFICATES, APPLICATIONS, and PLANT PATENTS**

Nelson, Eric, J.A. Murphy, S.A. Bonos and W.A. Meyer. 2006. United States Plant Variety Protection Application no. 200600163. Memorial creeping bentgrass. Applied for.

Brentano, T., J.A. Murphy, S.A. Bonos and W.A. Meyer. 2006. United States Plant Variety Protection Application no. 200600164. Shark creeping bentgrass. Applied for.

Hall, J., C. Reed Funk, S.A. Bonos, J.A. Murphy and W.A. Meyer. 2006. United States Plant Variety Protection Application no. 200600179. Skye Kentucky bluegrass. Applied for.

## ABSTRACTS AND REPORTS

### (a) abstracts for national meetings

Roberts, J.A., J.C. Inguagiato, J.A. Murphy, and B.B. Clarke. 2009. Sand topdressing and foot traffic effects on anthracnose severity of annual bluegrass putting green turf. 2009 International Meeting of ASA-CSSA-SSSA Proceedings. p. 104

Roberts, J.A., J.A. Murphy, and B.B. Clarke. 2009. Anthracnose severity of annual bluegrass putting green turf as affected by summer soluble N-fertilization. 2009 International Meeting of ASA-CSSA-SSSA Proceedings. p.102

Park, B., J. Murphy, and T.J. Lawson. 2009. Seasonal wear tolerance and recovery in the 2005 NTEP Kentucky bluegrass test. *In* Annual meetings abstracts [CD-ROM]. ASA, CSSA, and SSSA, Madison, WI. <http://a-c-s.confex.com/crops/2009am/webprogram/Paper53416.html>

Roberts, J. A., J.C. Inguagiato, B. B. Clarke, J.A. Murphy. 2009. Influence of irrigation quantity on anthracnose severity of annual bluegrass putting greens. *Phytopathology*. June Supplement. 99(6): p. S195.

Roberts, J. A., J.C. Inguagiato, B. B. Clarke, J.A. Murphy. 2009. Effects of foot traffic and sand topdressing on anthracnose severity of annual bluegrass putting green turf. *Phytopathology*. June Supplement. 99(6): p. S109.

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- Murphy, J.A. 2005. Managing *Poa trivialis* and *Poa annua*. *Plant and Pest Advisory Landscape Nursery and Turf Edition* 11(5):4.
- Murphy, J.A. 2005. Mowing management as it affects turf quality of athletic fields. *Plant and Pest Advisory Landscape Nursery and Turf Edition*. 11(2):6-7.
- Murphy, J.A. 2005. Turf concerns: Moss and slow spring green-up. *Plant and Pest Advisory Landscape Nursery and Turf Edition* 11(3):1-2.
- Murphy, J.A., and A.M. Koppenhöfer. 2005. Earthworms: Beneficial organisms or pests? *Foundation News*. 12():
- Murphy, J.A., and B.S. Park. 2005. Tall fescue varieties for New Jersey sports fields. *Clippings*. 58: 20-22. (newsletter of the New Jersey Turfgrass Association).
- Koppenhöfer, A.M., and J.A. Murphy. 2004. Earthworms in turfgrass. *Plant and Pest Advisory Landscape Nursery and Turf Edition* 10(15):2.
- Koppenhöfer, A.M., and J.A. Murphy. 2004. For fine turf management only – factors affecting earthworm activity. *Plant and Pest Advisory Landscape Nursery and Turf Edition* 10(15):6.
- Murphy, J.A. 2004. Cultural management solutions for shade problems on turf. *Clippings*. 54:15-16.
- Murphy, J.A. 2004. Mowing management as it affects turf quality. *Clippings*. 53:15-16.
- Murphy, J.A. 2004. Murphy's Law. Update Sports Field Managers Association of New Jersey. 4(1): 9.
- Murphy, J.A. 2004. Supina bluegrass: will it work in New Jersey? *Plant and Pest Advisory Landscape Nursery and Turf Edition*. 10(1):4.
- Murphy, J.A., and B.S. Park. 2004. Perennial ryegrass varieties for New Jersey sports fields. *Clippings*. 56: 19-21.
- Murphy, J.A. 2003. Aerification and repair of athletic fields. Update Sports Field Managers Association of New Jersey. 3(1):8.

- Murphy, J.A. 2003. Professional Insight. TurfNet Monthly. 10(8): 7-8. (national commercial newsletter of TurfNet, Turnstile Publishing Company).
- Murphy, J.A. 2003. TurfNotes. NJLCA Times. 4(July/August): 15. (newsletter of the New Jersey Landscape Contractors Association).
- Murphy, J.A., and M. Mohr. 2003. Perennial ryegrass varieties for New Jersey. Clippings. 52: 15-17.
- Clarke, B.B., and J.A. Murphy. 2002. Management practices associated with anthracnose and abiotic stress on golf course turf. Clippings 46: 23-26.
- Clarke, B.B., and J.A. Murphy. 2002. Putting the breaks on the anthracnose epidemic. Tee To Green 32(2):2-5. (newsletter of the Metropolitan Golf Course Superintendents Association).
- Murphy, J.A. 2002. Kentucky bluegrass varieties for New Jersey. Clippings. 45:17-20.
- Murphy, J.A. 2002. Managing Sports Turf. Clipping 48:7.
- Murphy, J.A. 2002. Managing Sports Turf. Update Sports Field Managers Association of New Jersey. 2(9):8.
- Murphy, J.A. 2002. Murphy's Law. Update Sports Field Managers Association of New Jersey. 2(11): 12.
- Murphy, J.A. 2002. Murphy's Law. Update Sports Field Managers Association of New Jersey. 2(12): 7.
- Murphy, J.A. 2002. Nitrogen sources for turf. Update Sports Field Managers Association of New Jersey. 2(10): 4-6.
- Murphy, J.A. 2002. Sports Field drainage. Update Sports Field Managers Association of New Jersey. 2(10): 3.
- Murphy, J.A. 2002. Tall fescue varieties for NJ athletic fields. Cultivating Cumberland. 7(4):3. (newsletter of the Cumberland County Rutgers Cooperative Extension office).
- Murphy, J.A. 2002. Turfgrass seed selection for home lawns. Clippings. 48: 17-19.
- Murphy, J.A. 2002. Turfgrass species and soil conditions affect irrigation requirements. Update Sports Field Managers Association of New Jersey. 2(11):3-4.
- Murphy, J.A. 2000. Rutgers team digs deeper for ideal root zone mix. Foundation News. 7. (newsletter of the Tri-state Turf Research Foundation).
- Murphy, J.A. 1999. Research update: Rutgers team puts putting green plots to new tests. Foundation News. 6(2):2.
- Murphy, J.A. 1999. Watching the grass grow. Foundation News. 6(1):3.
- Murphy, J.A. 1998. Research update: Rutgers hot on the trail of the ultimate root zone mix. Foundation News. 5(1):3.
- Murphy, J.A. 1996. Big green for the greens. The Greenerside. 19(3):1, 4.
- Murphy, J.A. 1996. Fine fescues: Low maintenance species for turf. Green World. 23(1):1-2. (research newsletter of the New Jersey Turfgrass Association).
- Murphy, J.A., C.R. Funk, B.B. Clarke, and K. N. Morris. 1996. Only you can save the national turfgrass evaluation program. The Greenerside. 19(4):1, 4. (newsletter of the Golf Course Superintendents Association of New Jersey).
- Funk, C.R., J.A. Murphy, R.F. Bara, and D.A. Smith. 1995. Challenges and opportunities in turfgrass breeding. GreenWorld. 22(2):1, 4.

- Engel, R. E., and J. A. Murphy. 1994. The best shot on time of seeding turf. *GreenWorld*. 21:(1)3.
- Murphy, J.A, and P.L. McCormick. 1994. Turfgrasses in New Jersey turf trials. *GreenWorld*. 21(1):3-4.
- Murphy, J.A.1994. Rutgers field day research tour topics. *GreenWorld*. 21(1):1-2.
- Murphy, J. 1992. Evaluating newer postemergence and preemergence herbicides for grasses. *GreenWorld*. 20(2):6-7.
- Murphy, J.A. 1992. Environmentally sound lawn and garden control. Rutgers Cooperative Extension: Swamp Sounds. 1(4):5. (newsletter of the water quality program in Rutgers Cooperative Extension).

**Online Publications:**

- Clarke, B.B., and J.A. Murphy. 2004. Management practices associated with anthracnose and abiotic stress on golf course turf. Available at <http://www.turf.rutger.edu>

## COMPETITIVE EXTERNAL GRANTS

2011-2013	United States Golf Association. <i>Development of Best Management Practices for Anthracnose Disease on Annual Bluegrass Putting Green Turf</i> . PI: James A. Murphy	\$60,000
2009-2011	Tri-State Turf Research Foundation. <i>Improving the Uniformity of Golf Course Fairways Composed of Diverse Mixed-Species Swards</i> . Co-Principle Investigator with S. Hart.	\$15,000
2009-2010	Tri-State Turf Research Foundation. <i>Development of Best Management Practices For Anthracnose Disease on Annual Bluegrass Putting Green Turf</i> . Co-Principle Investigator with B. Clarke.	\$16,000
2009-2010	Golf Course Superintendents Association of New Jersey. <i>Development of Best Management Practices For Anthracnose Disease on Annual Bluegrass Putting Green Turf</i> . Co-Principle Investigator with B. Clarke.	\$20,000
2008-2012	Department of Energy SUN Grant Initiative. <i>Regional Biomass Feedstock Partnership Herbaceous Bioenergy Crop Field Trials – Miscanthus x giganteous</i> . Co-Principle Investigator with S. Bonos (Rutgers), Tom Voigt (U. of Illinois), D. Williams (U. of Kentucky), Z. Reicher (Purdue), R. Gaussoin (U. of Nebraska-Lincoln). (Rutgers share: \$14,976 per year).	\$74,880
2008-2010	United States Golf Association. <i>Development of Best Management Practices for Anthracnose Disease on Annual Bluegrass Putting Green Turf</i> . Co-Principle Investigator with B. Clarke.	\$90,000
2007-2008	Golf Course Superintendents Association of America jointly with the Golf Course Superintendents Association of New Jersey. <i>Management Practices Effects on Anthracnose Severity of Annual Bluegrass Putting Green Turf</i> . Co-Principle Investigator with B. Clarke.	\$30,000
2006-2007	United States Golf Association. <i>Evaluating Management Practices for Influence on Anthracnose Severity of Annual Bluegrass Putting Green Turf</i> . Co-Principle Investigator with B. Clarke.	\$60,000
2005-2008	USDA–Cooperative State Research, Education, and Extension Service (\$99,027 total funding). <i>Long term Evaluation and Improvement of Golf Turf Management Systems with Reduced Chemical Pesticide Inputs</i> . Principle Investigator: J. Grant (Cornell). Co-PIs: F. Rossi and	\$7,545

D. Peck (Cornell), J.A. Murphy, B. Clarke, and R. Buckley (Rutgers), and N.A. Mitkowski (U. of Rhode Island).

2005-2006	Golf Course Superintendents Association of America jointly with the Golf Course Superintendents Association of New Jersey. <i>Assessment of Mowing and Rolling Practices on Anthracnose Severity and Ball Roll Distance of Annual Bluegrass Turf</i> . Co-Principle Investigator with B.B. Clarke	\$30,000
2004-2006	Tri-State Turf Research Foundation. <i>Management of Earthworms on Golf Courses in the Tri-state Metropolitan Region</i> . J.A. Murphy and A.M. Koppenhöfer.	\$50,000
2004-2007	United States Golf Association. <i>Assessing Maturation of Putting Green Root Zone Mixes Under Two Microenvironments</i> . Co-Principal investigators: S.L. Murphy, D. Giménez, and B.B. Clarke.	\$75,000
2002-2005	Tri-State Turf Research Foundation. <i>Management Practices Associated with Anthracnose and Abiotic Stress on Golf Course Turf</i> . J.A. Murphy and B.B. Clarke	\$ 25,000
2001-2004	United States Golf Association and Golf Course Superintendents Association of America. <i>Longer Term Assessment of Putting Green Root Zone Mixes Under Two Microenvironments</i> . Co-principal investigators: J.A. Honig, S.L. Murphy, D. Giménez, and B.B. Clarke.	\$ 90,000
1998-2000	United States Golf Association. <i>Cultivar and Traffic Effects on Population Dynamics of Agrostis spp. and Poa annua Mixtures</i> . Co-principal investigators: W. A. Meyer, J. Honig, and B. B. Clarke.	\$ 74,820
1996-2000	United States Golf Association and Golf Course Superintendents Association of America. <i>Assessing Differential Root Zone Mixes for Putting Greens Over Time and Under Two Environmental Conditions</i> . Co-principal investigators: S. Murphy, H. Motto, R. Tate III, and B. B. Clarke.	\$100,000
1996-2000	Tri-state Research Foundation. <i>Assessing Differential Root Zone Mixes for Putting Greens Over Time and Under Two Environmental Conditions</i> . Co-principal investigators: S. Murphy, H. Motto, R. Tate III, and B. B. Clarke.	\$ 55,000
1996-1997	Pocono Golf Course Superintendents Association. <i>Assessing Differential Root Zone Mixes for Putting Greens Over Time and Under Two Environmental Conditions</i> . Co-principal investigators: S. Murphy, H. Motto, R. Tate III, and B. B. Clarke.	\$ 1,000

1995-1996	United States Golf Association. <i>Assessment of Testing Methods for Establishing Golf Course Accessibility Guidelines</i> . J.A. Murphy	\$ 42,557
2008-2013	2008 Bentgrass Fairway/Tee Trial 2008 Bentgrass Putting Green Trial 2008 Fineleaf Fescue Trial	\$ 10,000 \$ 10,000 \$ 10,000
1992-2006	National Turfgrass Evaluation Program. 2006 <i>Tall Fescue Traffic Stress Trial</i> . 2005 <i>Kentucky Bluegrass Wear Trial</i> . 2004 <i>Perennial Ryegrass Trial</i> . Co-PIs: Meyer and Bonos 2003 <i>Bentgrass Greens Trial</i> . Co-PIs: Meyer and Bonos 2003 <i>Bentgrass Fairway/Tee Trial</i> . Co-PIs: Meyer and Bonos 2003 <i>Fine Fescue Trial</i> . Co-PIs: Meyer and Bonos. 2001 <i>Tall Fescue Trial</i> . Co-PI: W.A. Meyer. 2000 <i>Kentucky Bluegrass Trial</i> . Co-PI: W.A. Meyer 1999 <i>Perennial Ryegrass Trial</i> . Co-PI: W.A. Meyer) 1998 <i>Bentgrass Greens Trial</i> . Co-PI: W.A. Meyer 1998 <i>Bentgrass Fairway/Tee Trial</i> . Co-PI: W.A. Meyer 1998 <i>Fine Fescue Trial</i> . Co-PI: W.A. Meyer 1997 <i>On-site Bentgrass Trial</i> 1996 <i>Tall Fescue Trial</i> 1995 <i>Medium-high Maintenance Kentucky Bluegrass Trail</i> 1995 <i>Low Maintenance Kentucky Bluegrass Trial</i> 1994 <i>Perennial Ryegrass Trial</i> 1993 <i>Bentgrass Greens and Trial</i> 1993 <i>Bentgrass Fairway/Tee Trial</i> 1993 <i>Fine Fescue Trial</i> 1992 <i>Tall Fescue Trial</i>	\$155,500
1989-1994	Tri-State Research Foundation and the Golf Course Superintendents Association. <i>Ecology, epidemiology, and control of summer disease</i> . Co-principal investigator with B. I. Hillman and B.B. Clarke from 1991-1994.	\$120,000

<b>CONTRACTED RESEARCH</b>		
2009-2011	University of Illinois. <i>Evaluation of Miscanthus x giganteous and switchgrass as Bioenergy Crops in New Jersey</i> . Co-Principle Investigator with S. Bonos (Rutgers), Tom Voigt (U. of Illinois)	\$24,000

## CONTRIBUTED EXTERNAL GRANTS

2000	New Jersey State Golf Association. <i>Assessing Root Zones Mixes for Putting Greens.</i>	\$5,000
1997	New Jersey Turfgrass Foundation. <i>Field Site Development to Assess Root Zones Mixes for Putting Greens Over Time Under Two Environmental Conditions.</i>	\$ 18,780
1996	New Jersey Turfgrass Foundation. <i>Assessing Root Zones Mixes for Putting Greens Over Time Under Two Environmental Conditions.</i>	\$ 5,000
1996-1997	The Toro Company, Minneapolis, MN. <i>Summer Patch Disease Control with High Pressure Liquid Injection of Fungicide.</i>	\$ 10,000
1996-1997	Ciba. <i>Turfgrass Management Research and Extension.</i>	\$ 9,500
1995-1996	The Toro Company, Minneapolis, MN. <i>Hollow Tine and Water Injection Cultivation Frequency Affect Soil and Bentgrass Growth.</i>	\$ 20,000
1995-1996	AgrEvo. <i>Turfgrass Management Research and Extension.</i>	\$ 4,000
1995-1996	Sherritt Fertilizers. <i>Turf Management Research and Extension.</i>	\$ 1,500
1994-1995	The Toro Company, Minneapolis, MN. <i>Soil Compaction and Localized Dry Spot Management with Water Injection Cultivation.</i>	\$ 20,000
1993-1994	Peter Selmar Loft Memorial Scholarship Fund. <i>Graduate Assistantship for Pedro Perdomo.</i>	\$ 44,000
1993-1995	New Plant Food Society of New Jersey. <i>Nitrogen needs testing of turfgrasses.</i> Co-principal investigator: J. R. Heckman.	\$ 6,500
1992-1994	New Jersey Turfgrass Association. <i>Evaluation of germplasm and best management practices for reducing environmental stresses of turfgrass.</i>	\$ 27,000
1992-1994	The Toro Company, Minneapolis, MN. <i>Further evaluation of water injection cultivation as turf management tool.</i>	\$ 30,000
1992-1994	New Jersey Department of Environmental Protection. <i>Pesticide reduction and pollution prevention through a supported integrated crop management program for New Jersey.</i> Co-principal investigators: G. Hamilton, Z. Helsel, J. Lashomb, D. Smith-Fiola. (Total Grant \$271,999.37).	\$27,364

1993-1995	Proctor & Gamble and New Jersey Special Initiative Pari-mutuel Funds. <i>Influence of solid waste compost on soil quality in turfgrass landscapes.</i>	\$47,157
1993	Association of Disabled American Golfers. <i>Golf course accessibility for disabled golfers.</i>	\$ 5,000
1992-1993	The Scotts Company. <i>Turfgrass Management Research and Extension.</i>	\$ 3,000
1992-1993	Rockland Corporation. <i>Turfgrass Management Research and Extension.</i>	\$ 6,500

### COMPETITIVE INTERNAL GRANTS

2009-2010	Center for Turfgrass Science. <i>Assessing Traffic Stresses and Soil Properties Related to Turf Performance.</i> J.A. Murphy	\$127,728
2008	Center for Turfgrass Science. <i>Soil Edaphic and Traffic Effects on Turfgrass Species and Cultivars.</i> J.A. Murphy	\$56,874
2007	Center for Turfgrass Science. <i>Soil Properties and Traffic Effects on Turfgrass Performance.</i> J.A. Murphy	\$77,187
2006	Center for Turfgrass Science. <i>Soil Properties and Management Effects on Turfgrass Performance.</i> J.A. Murphy	\$79,533
2005	Center for Turfgrass Science. <i>Relationship of Soil Properties and Management Practices on Performance of Turfgrass.</i> J.A. Murphy	\$46,174
2004-2005	Center for Turfgrass Science. <i>Relationship of Soil Properties and Management Practices on Performance of Turfgrass.</i> J.A. Murphy	\$91,177
2003-2004	Center for Turfgrass Science. <i>Assessment of Soil-related Stresses and Turf Management Practices on Performance of Turfgrass.</i> J.A. Murphy	\$100,000
2002-2003	Center for Turfgrass Science. <i>Turfgrass Management Project: Constructed Root Zones and Traffic Tolerance of Turfgrass.</i> J.A. Murphy	\$91,670
2001-2002	Center for Turfgrass Science. <i>Effect of microenvironment and root zone properties on creeping bentgrass performance and Turfgrass</i>	\$84,000

	<i>performance affected by simulated traffic stresses.</i> J.A. Murphy	
2000-2001	NJAES Grants Program. <i>An automated rainout shelter for conducting turf research on drought stress and disease development in the field.</i> Principal Investigator with B. Huang, Co-PIs: B. Clarke, S. Hart, and W. Meyer	\$50,000
2000-2001	Center for Turfgrass Science. <i>Effect of microenvironment and root zone properties on creeping bentgrass performance and Poa annua Invasion in Agrostis spp. Turfs</i> J.A. Murphy	\$84,000
1999-2000	Center for Turfgrass Science. <i>Root zone properties affecting turf performance and Turf population dynamics of Poa annua and Agrostis spp</i> J.A. Murphy.	\$72,500
1998-1999	Center for Turfgrass Science. <i>Assessment of root zone properties affecting turf establishment and Evaluation of sward population dynamics comprised of Poa annua and Agrostis spp.</i> J.A. Murphy	\$ 94,200
1998-1999	Center for Turfgrass Science. <i>Special initiatives project: Plant germplasm collection in Uzbekistan.</i> J.A. Murphy and D. Zaurov.	\$ 19,700
1997-1998	Center for Turfgrass Science. <i>Turfgrass Management Research at Cook College/NJAES.</i> J.A. Murphy	\$125,881
1996-1997	Center for Turfgrass Science. <i>Performance of fine fescues as affected by endophyte; Aluminum tolerance in tall fescue genotypes; and Summer stress tolerance in Kentucky bluegrass genotypes.</i> J.A. Murphy	\$ 91,487
1995-1996	Center for Interdisciplinary Studies in Turfgrass Science. <i>Summer stress tolerance in Kentucky bluegrass genotypes; Endophyte enhance performance of fine fescues, and Soil pH effect on summer patch disease severity on two cultivars of Kentucky bluegrass.</i> J.A. Murphy	\$ 81,959
1994-1995	Center for Interdisciplinary Studies in Turfgrass Science. <i>Influence of N form, pH modifiers, and method of application on soil pH and summer patch.</i> Co-principal investigator: B.B. Clarke.	\$ 59,959
1993-1994	NJAES Rutgers Sustainable Agriculture Program. <i>Optimizing nitrogen nutrition for suppression of diseases in turfgrass.</i> Co-principal investigator: J.R. Heckman.	\$ 16,000

1992-1994	Center for Interdisciplinary Studies in Turfgrass Science. <i>Influence of N form, pH modifiers, and method of application on soil pH and summer patch.</i> Co-principal investigator: B.B. Clarke.	\$ 38,560
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**CONTRIBUTED INTERNAL GRANTS**

1996-1998	Department of Plant Science. <i>Graduate Assistantship for Joshua Honig.</i>	\$ 48,000
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1995-1996	Hatch Project. <i>Integrated turfgrass management for environmental protection and resource conservation.</i>	\$ 1,000
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1993-1994	Department of Plant Science. <i>Graduate Assistantship for Michael Ventola.</i>	\$ 48,000
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**EXTERNAL EQUIPMENT GIFT ACQUISITIONS**

2001	New Jersey Turfgrass Association. <i>LCD projector</i>	\$4,000
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1998	Unimin Corp. <i>Sand/peat mix for construction of research plots.</i>	\$10,000
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1998	Koonz Sprinkler Supply, Inc. <i>Irrigation system for research plots.</i>	\$7,283
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1998	Wilfred MacDonald, Inc. <i>Jacobsen PGM style putting green mower.</i>	\$1,800
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1997	Unimin Corp. <i>Sand/peat mix for construction of research plots.</i>	\$10,000
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1997	The Sambol Companies. <i>Fine grading work for development of field research plots at Hort Farm II.</i>	\$2,625
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1996	New Jersey Turfgrass Association. <i>5,000 sq. ft. building for storage of turf research equipment.</i>	\$100,000
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1994	United States Golf Association, Far Hills, NJ and Karsten Turf, Inc., Phoenix, AZ. <i>Model 591 Turfgrass Tissue Analyzer.</i>	\$ 15,900
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1994	United States Golf Association, Far Hills, NJ and Karsten Turf, Inc., Phoenix, AZ. <i>UDY Cyclone Sample Mill.</i>	\$ 2,600
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1993	Storr Tractor Company, Somerville, NJ. <i>Greens Master 1000.</i>	\$ 15,000
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1992	Troxler Electronic Laboratories, Inc., Research Triangle Park, NC. <i>Nuclear Moisture/Density Gauge.</i>	\$ 3,475
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1992	Karsten Turf, Inc., Phoenix, AZ. <i>Model 491 Turfgrass Tissue Analyzer.</i>	\$ 15,900
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1992	Karsten Turf, Inc., Phoenix, AZ. <i>UDY Cyclone Sample Mill.</i>	\$ 2,600
1992	Storr Tractor Company, Somerville, NJ. <i>HydroJect 3000.</i>	\$ 21,950

**PARTNERSHIP WITH MANUFACTURER - VENDOR- UNIVERSITY**

2004-present	Turflite, Inc. <i>Vibratory Putting Green Roller and Thatch-Away SupraSystem</i>	\$5,000
2003-present	AerCore, Inc. <i>Tractor and Deep Tine Cultivator.</i>	\$15,000
2002	Finch Turf Equipment (John Deere), <i>Walk-behind and Triplex Green Mowers.</i>	\$25,000
1995-present	The Toro Company, Bloomington, MN and Storr Tractor, Somerville, NJ. <i>Greens Master 3100 or 3150.</i>	\$18,000
1991-1999	Double Eagle Equipment, Dayton, N.J. <i>Cushman Truckster.</i>	\$ 15,000

**AWARDS**

The Rutgers Cooperative Extension 2007 Team Research/Outreach Award.

Project: Integrated Program for the Control of Gray Leaf Spot Disease in Golf and Landscape Turf. Co-recipient.

National Association of County Agricultural Agents Communication Awards.

NACAA 2002 State winner for bulletin: 'FS555: Best Management Practices for Watering Lawns'. Co-recipient.

Seed Research of Oregon, Inc.

Excellence in Research Award. February 1997. Las Vegas, NV.

The Rutgers Cooperative Extension Team Research/Outreach Award.

Project: Development of an Integrated Summer Patch Control Program for Golf and Landscape Turf. Co-recipient.

Graduate Student Outstanding Paper Award (Co-winner). Division C-5, American Society of Agronomy 1989 Annual Meetings. Las Vegas, Nevada.

## TEACHING

### UNDERGRADUATE INSTRUCTION

#### RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY

##### Course Responsibilities

- 2006, 2008 Soil Management for Sports Fields and Landscapes 11:776:404. 3 credits. Upper level undergraduate course on advanced management of soil for sports fields and landscapes.
- 2007 Special Problems in Environmental Science/Studies. 11:375:431. 2 credits. Co-developed and co-taught library work on assigned topics in soil fertility related to turfgrass systems in Fall 2007.
- 2004 Special Problems in Plant Science 11:776:496. 3 credits. Upper level undergraduate course on advanced management of soil for sports fields and landscapes. Became Soil Management for Sports Fields and Landscapes 11:776:404 in Spring 2006.
- 1998-2002 Turfgrass Management 11:930:304. 4 credits. Undergraduate level introduction to the science and culture of turfgrasses.
- 1993-1996 Turfgrass Management 11:930:304. 3 credits. Undergraduate level introduction to the science and culture of turfgrasses

##### Guest Lectures

- 2008 Soils and Society. 11:375:102. 3 credits. 1 Guest Lecture: *Soils and Human Recreation*
- 2008-2006 Turfgrass Management 11:930:304. 4 credits. 1 Filed Trip Guest Lecture on Reconstruction of the Monmouth Park Turf Racetrack.
- 2008 Turfgrass Management 11:930:304. 4 credits. 2 Guest Lectures: *Soil Physics and Sand-based Construction*.
- 2007-2006 Soils and Society. 11:375:102. 3 credits. 1 Guest Lecture: *Urban and Created Soils*
- 1999 Fine and Sports Turf 11:930:453. 3 credits. 4 Guest Lectures: *Soil Fertility Management for Fine and Sports Turf and Thatch, Cultivation and Aerification*.
- 1998 Fine and Sports Turf 11:930:453. 3 credits. 2 Guest Lectures: *USGA Greens Construction and Thatch, Cultivation and Aerification*.
- 1996 Plant Biology 16:765:601. 1 credit. Guest Lecture: *Turfgrass Management for Optimal Growth under Biotic and Abiotic Stress*.
- 1996 Plant Science 11:776:141. 3 credits. 2 Guest Lectures: *Turfgrass Production and its Role in the Environment*.
- 1994 Fine and Sports Turf 11:930:453. 3 credits. 2 Guest Lectures: *Aerification and Cultivation Techniques and Cultivation Programs for Sports Turf*.
- 1992 Turfgrass Management 11:930:304. 3 credits. 2 Guest Lectures: *Turfgrass Edaphic Environment and Turfgrass Cultivation*.

##### Independent Study

- Special Problems 11:776:495
- 1994 Brian Feldman. *Potassium and Its Role in Plant Nutrition*. (3 credits).

### **Coop-Education I (Work / Learn Study)**

#### 11:199:200: Faculty Sponsor

- 1998 Matthew Muchowski (3 credits), Conducted at Rutgers Horticultural Research Farm 2.
- 1998 Victor Frederico (3 credits), Conducted at Tavistock Country Club.
- 1996 Theodore Stallone (3 credits), Conducted at Aquatrols Corporation.
- 1996 Monica Ruggiero (3 credits), Conducted at Turfgrass Management Research Project.
- 1996 Nicole Chiafullo (3 credits), Conducted at Turfgrass Management Research Project.
- 1993 Colleen Wisniewski (3 credits), Conducted at Aquatrols Corporation.
- 1993 Adelyn Bersalona (3 credits), Conducted at Aquatrols Corporation.
- 1993 Brian Feldman (6 credits), Conducted at Spring Lake Country Club.

### **Coop-Education I (Work / Learn Study) 11:199:200: Employer**

- 1997 Robert Fry (6 credits), Kathleen Keating, faculty sponsor.

### **Coop-Education II (Work / Learn Study) 11:199:200: Employer**

- 1997 Robert Fry (3 credits), Marcos Cheney, faculty sponsor.

### **BROOKDALE COMMUNITY COLLEGE**

#### **Guest Lecture**

- 1994 Soil Science Course. Guest lecture: *Soil Compaction and Aerification*.

### **MICHIGAN STATE UNIVERSITY**

- 1984, 1987-1990 Turfgrass Soil Management CSS 414. Guest Lectures: *Turf Cultivation and Topdressing*.
- 1987 Turfgrass Identification and Uses CSS 066 - Agricultural Technology. (2-year Program). Prepared and presented lectures, lab exercises, and exams for 2 lab sections of 40 students. Graded exams and term papers..

### **GRADUATE STUDENTS and POST DOCTORAL FELLOWS**

#### **RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY**

##### Post Doctoral Fellow: Primary Advisor

- 2000-2004 Hiranthi Samaranyake
- 1995-1997 Haibo Liu

##### Doctoral Thesis: Primary Advisor

- 2009-2003 John Inguagiato (Co-advise with B. Clarke)

##### Master's Thesis Primary Advisor.

- 2007-Present Joseph Roberts
- 2005-Present James Devaney
- 2004 Robert Cashel, Plant Biology
- 2001 Joshua Honig, Plant Biology.
- 1995 Gary Gentilucci, Plant Biology.
- 1995 Craig Tolley, Plant Biology.
- 1994 Stacy Bonos, Plant Science and Technology.
- 1993 Michael Ventola, Plant Science and Technology.
- 1993 Pedro Perdomo, Plant Science and Technology.

Ph.D. Thesis Committee.

- 2005 Patrick McCollough  
2005 Michelle DaCosta  
2002 Gengyun Zhang, Plant Biology.

Master's Thesis Committee.

- 2005 Han Han, Environmental Sciences  
2002 Gerald Henry, Plant Biology  
2001 Jennifer N. Vaiciunas, Plant Biology.  
1995 Wendy Hill, Plant Biology.  
1992 Randy Probst, Plant Science and Technology.  
1991 Mirta Guglielmoni, Plant Pathology.

**THE UNIVERSITY OF MASSACHUSETTS**

- Master's Thesis Committee. 1995 John J. Bresnahan, Plant Pathology.

**RUTGERS CONTINUING PROFESSIONAL EDUCATION PROGRAM**

**Curricula Developed**

- 2009 **Options for Organic Turf Management & Reduced Pesticide Inputs on Sports Fields** (½-day course). Course defines, as currently understood, organic sports field management, integrated pest management, and other commonly cited management systems. Techniques of organic sports field management taught include soils, turfgrass selection, products for pest control, and other techniques. Techniques to manage sports fields with reduce pesticide inputs were presented along with an overview of the maintenance program for lawns and sports fields in Central Park NYC using organic and reduced pesticide inputs.

**Advanced Turfgrass Management Symposium** (2-day short course)

- 2002 Trials and tribulations of the Modern Putting Green. Co-developed and taught in a two-day symposium for turf management professionals in cooperation with Continuing Professional Education. Completion of the symposium contributed towards certification sponsored by the Golf Course Superintendents Association of America. 75 participants.
- 1994 Herbicide Programs for Control of Grassy Weeds and Conversion and Renovation of *Poa annua* Turf. Developed and coordinated a two-day symposium for turf management professionals in cooperation with Continuing Professional Education. Completion of the symposium contributed towards certification sponsored by the Golf Course Superintendents Association of America. 35 participants.
- 1993 Cultivation/Aerification for Management of Soil Compaction and Thatch Management. Developed, coordinated, and taught a two-day symposium for turf management professionals in cooperation with Continuing Professional Education. Completion of the symposium and exam contributed towards certification sponsored by the Golf Course Superintendents Association of America. 40 participants.

**Courses – Developed and Taught**

- 2000-present Case Studies in Turfgrass Management. Developed and coordinated a 4-lecture (1½-hour each lecture) course for the Rutgers Professional Golf Turf Management School. Co-taught with either James Baird or Bruce Clarke two sessions per year

(fall and winter) except 2003 which was used to develop a new undergraduate course. Instruction emphasizes development of skills to identify and solve problems associated with abiotic and biotic stress of golf turf.

- 2003-present Athletic Field Construction and Maintenance Short Course. Co-developed and co-coordinated with Brad Park and Henry Indyk a three-day course on athletic field construction and maintenance.
- 2004-present Athletic Field Special Topics: Soil, Turf, and Athletic Field Construction Procedures. Co-developed and co-coordinated with Brad Park and Henry Indyk 3 one-day courses soil, turf, and construction procedures. Provided one lecture each day.
- Relating Soils to Athletic Field Management (1/2 hour)
  - Turfgrass Establishment (45 minutes)
  - Soil/Root Zone Physical and Chemical Properties (1/2 hour)

### **Short Course Lectures**

- 2008-2007 Overview of Soil Physical Properties and ASTM specifications for Skin Surfaces. (1 hour) Lecture in the Athletic Field Special Topics: Baseball/Softball Infield Skins Construction and Management short course (20-60 participants).
- 2008-2005 Site Preparation and Construction Procedures (1-hour) and Getting the Job Done (½ hour) lectures in the 3-day Athletic Field Construction and Maintenance short course (75 participants).
- 2008-1996 Selection of Turfgrasses and Establishment Procedures and Contending with Soil Compaction in the 3-day Athletic Field Construction and Maintenance Short Course. 70-100 participants.
- 2008 Turfgrass Management: Mowing, Irrigation, Fertilization, Cultivation, and Topdressing 3 hours of lectures in the Golf Turf Management School: Three Week Preparatory Short Course (40 participants).
- 2007-1998 Turfgrass Management: Mowing, Irrigation, Fertilization, Cultivation, and Topdressing 6 hours of lectures in the Golf Turf Management School: Three Week Preparatory Short Course (40-70 participants).
- 2005-2004 Relating Soils to Athletic Field Management ½ hour lecture in the 1-day Athletic Field Special Topics: Soil short course.
- 2005-2004 Turfgrass Establishment ¾-hour lecture in the 1-day Athletic Field Special Topics: Turf short course.
- 2005-2004 Soil/Root Zone Physical and Chemical Properties Improvement ½ hour lecture in the 1-day Athletic Field Special Topics: Athletic Field Construction Procedures short course.
- 2003-2000 Soil / Plant / Water Relationships (1½-hour lecture) and Contending with Soil Compaction 1-hour lecture in the Two Week Athletic Field Management short course. (35-40 participants).
- 2002 Constructing a Root Zone: What Characteristics Do You Want?, The Root Zone: Drainage and The Root Zone: Fertility/Nutrition at the Advanced Turfgrass Management Symposium: The Trials and Tribulations of the Modern Golf Green (75 participants).

- 1997-1992 Soil Cultivation/Aerification 1-hour lecture in the Rutgers Professional Golf Turf Management School. Winter session in 1992, 1993, and 1996 and fall session in 1992 and 1997. (80 to 100 participants).
- 1998 USGA Greens Research at Rutgers 1½-hour lecture in the Rutgers Professional Golf Turf Management School for the winter session in 1998 (41 participants).
- 1996 Spring Lawn Care 1-hour lecture at the Twenty-second Annual Home Gardeners' School. (70 participants).
- 1995 Turfgrass Science Research at Rutgers 1-hour lecture in the Rutgers Professional Golf Turf Management School for the winter session in 1995. (45 participants).
- 1994 Cultivation of Turf. 1-hour lecture in Fundamentals of Turfgrass Management Short Course (40 participants).
- 1994 Turf Cultural Considerations, and Weeds and Their Control in Turf 1-hour lecture in the Integrated Pest Management Short Course (65 participants).
- 1994 Turfgrass Establishment and Maintenance 1-hour lecture in the Home Depot Garden Center Management Training Program (30 participants).
- 1993 Integrated Pest Management 1-hour lecture in the Rutgers University Professional Golf Turf Management School (65 participants).
- 1993 Physical and Chemical Properties of Soil 1-hour lecture in the Athletic Field Construction and Maintenance Short Course (70 participants).
- 1993 Soil Cultivation of Turf Basics of Turfgrass Management Short Course (40 participants).
- 1993-1992 Lawn Aerifying and Soil Compaction 1-hour lecture in the Spring Home Gardeners' School (60 participants).
- 1992 New Research in Turf Cultivation 1-hour lecture in the Basics of Turfgrass Management Short Course (40 participants).
- 1992 Turf Management: Strategies and Varieties for Drought Tolerance and Reduced Maintenance 1-hour lecture in the Spring Yard Waste Management Short Course (30 participants).

## OUT OF STATE EXTENSION TEACHING – SEMINARS / PRESENTATIONS

### Seminars:

#### (a) International

- 2008 Anthracnose: Cultural management, 1 hour presentation, 250 participants; 20<sup>th</sup> Annual OSC/Nutrite Professional Turfgrass Seminar in Waterloo, Ontario, Canada.
- 2007 Fertilizer Trends in USA., 1 hour presentation, 100 participants;  
Organic Matter Control, 1 hour presentation, 100 participants;  
Agronomy Trends in the USA, 1 hour presentation, 100 participants;  
 Organic Management of Sportsfields, ½ hour presentation, 50 participants  
 at the 2007 New Zealand Turf Conference in Wellington.
- 1998 Cultivation and Renovation of Older Putting Greens. ½-day presentation to the Atlantic Golf Superintendents Association. Digby, Nova Scotia, Canada. (45 participants)

- 1997 Study and Use of Endophytes in Turfgrass. A 1-hr presentation on June 5 to faculty and staff of the Tashkent Agrarian University, Tashkent, Uzbekistan. (25 participants)
- 1995 Turfgrass Production and Research in the United States; Adaptation and Use of Cool- and Warm- Season Turfgrasses; and Principles of Turfgrass Culture. 1-day seminar presented to the Shanghai Academy of Agricultural Sciences. Shanghai, China. (40 participants).
- 1995 Turfgrass Production and Research in the United States; Adaptation and Use of Cool- and Warm- Season Turfgrasses; and Principles of Turfgrass Culture. 2-day seminar presented to the Xi'an Municipal Administration of Gardens and Landscaping. Xi'an, China. (100 participants).
- 1995 Adaptation and Use of Cool-Season Turfgrasses.  $\frac{1}{2}$ -day seminar presented to the Beijing Institute of Landscape and Gardening. Beijing, China. (10 participants).
- 1995 Turfgrass Production and Research in the United States; Adaptation and Use of Cool- and Warm- Season Turfgrasses; and Principles of Turfgrass Culture. 2-day seminar presented to the Shanghai Blue Turf United Development Company. Shanghai, China. (70 participants).
- 1995 Aeration Practices for Golf Turf and Defining Optimum Nitrogen Levels using Turfgrass Clipping Analysis. 2-day seminar presented to the Toyo Green Company. Tokyo, Japan. (75 participants).

**(b) National**

- 2010 Cultural Practices Affecting Anthracnose. 1-hour presentation.  
Soil Physical Properties and Cultivation. 1-hour presentation.  
Sports Turf and Traffic Management. 1-hour presentation. 2010 Michigan Turf Conference in Grand Rapids, MI.
- 2008 Managing Traffic Stress on Bentgrass Greens. An 8-hour presentation at the 2008 North Carolina Turfgrass Conference in Raleigh, NC (20 participants).
- 2007 Modified Rootzones for Turfgrass Water Use. Rieke, P.E., and J.A. Murphy. An invited  $\frac{1}{2}$  hour presentation at The Victor A. Gibeault Symposium on Turfgrass Water Conservation at University of California Riverside (50 participants).
- 2007 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation to the GCSAA in Anaheim, CA (50 participants).
- 2007 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation to the SDGCSA in Souix Falls, SD (75 participants).
- 2007 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation to the GCSAA in Anaheim, CA (50 participants).
- 2006 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation to the Nebraska GCSA in Lincoln, NE (30 participants).
- 2006 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation to the San Diego GCSA in Carlsbad, CA. (25 participants).
- 2006 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation to the Everglades GCSA in Naples, FL (35 participants).

- 2006 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation Maryland GCSA in College Park, MD (24 participants).
- 2006 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation at the annual meeting of the Golf Course Superintendents Association of America in Atlanta, GA (96 participants).
- 2005 Traffic and Turf. 1.5 hours presentation (50 participants);  
Making it Work With and Without Irrigation. 1/2-hour presentation (35 participants);  
Putting Green Rootzone Advances. A 1/2-hour presentation (40 participants);  
 at the Illinois Professional Turfgrass Conference in St. Charles, IL.
- 2005 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation to the Northern Ohio GCSA in Hudson, OH. (34 participants).
- 2005 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation at the annual meeting of the Golf Course Superintendents Association of America in Orlando, FL (75 participants).
- 2005 Managing Turfgrass Traffic. Murphy, J.A., and R. Gaussoin. A 2-hour seminar at the Arkansas Turfgrass Association 17<sup>th</sup> Annual Conference in Hot Springs National Park, AR (200 participants).
- 2004 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. An 8-hour presentation at the annual meeting of the Golf Course Superintendents Association of America in San Diego, CA (75 participants).
- 2004 Athletic Field Construction. A 2-hour seminar presented to the Sports Turf Managers Association in San Diego, CA. (150 participants).
- 2004 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. Traffic Stress: Physiology and Management. A one-day (8-hours) seminar at the New England Turfgrass Conference in Providence, RI. (75 participants).
- 2003 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. Traffic Stress: Physiology and Management. One-day (8-hours) presentations to local Golf Course Superintendents Association in Kansas (55 participants).
- 2003 Traffic Stress: Physiology and Management. Gaussoin, R., and J. A. Murphy. Traffic Stress: Physiology and Management. One-day (8-hours) presentations to local Golf Course Superintendents Associations Rhode Island (35 participants)
- 2003 Traffic Stress: Physiology and Management. One-day (8-hours) seminar to a local Golf Course Superintendents Association in Ohio. (35 participants).
- 2002 Athletic field management workshop. A 1/2-day course sponsored by the New Mexico Turfgrass Association in Ruidoso, NM
- 1999 Soil/plant relations. A 2 1/2-hour workshop presented at the 69<sup>th</sup> Annual Michigan Turfgrass Conference. Lansing, MI. (100 participants).
- 1998 Options and Their Applications in Pest Management. A one-day course sponsored by the Golf Course Superintendents Association of America in conjunction with the 69<sup>th</sup> Annual Golf Course Conference in Anaheim, CA. (18 participants).
- 1998 Options and Their Applications in Pest Management. A one-day course sponsored by the Golf Course Superintendents Association of America and presented to golf course superintendents in Phoenix, AZ. (40 participants).

- 1998 Options and Their Applications in Pest Management. A one-day course sponsored by the Golf Course Superintendents Association of America at the 69<sup>th</sup> Golf Conference in Anaheim, CA. (35 participants).
- 1997 Options and Their Applications in Pest Management. A one-day course sponsored by the Golf Course Superintendents Association of America in conjunction with the 68<sup>th</sup> Annual Golf Course Conference and Show. Las Vegas, NV. (70 participants).
- 1996 Options and Their Applications in Pest Management. A one-day course sponsored by the Golf Course Superintendents Association of America in conjunction with the 67<sup>th</sup> Annual Golf Course Conference and Show. Orlando, FL. (75 participants).
- 1996 Pros and Cons of Cultivation Practices. A 3-hour workshop presented at the 66<sup>th</sup> Annual Michigan Turfgrass Conference. Lansing, MI. (80 participants).
- 1995 Turfgrass Aerification and Cultivation. A 3-hour workshop presented at the Nebraska Turfgrass Conference. Omaha, NE. (60 participants).

### **(c) Regional**

- 2002 The soil fix a 2¼-hour seminar at the Cornell Organic Turfgrass Management Short Course in Bethpage, NY (75 participants).
- 2000 Managing white grub damage in New England: control and renovation. Murphy, J. A and P. J. Vittum. A 2-hour seminar presented at the New England Grows Conference. Boston, MA. (400 participants)
- 1997 Options and Their Applications in Pest Management. A one-day course sponsored by the Golf Course Superintendents Association America and presented to golf course superintendents in Albany, NY. (35 participants).

### **Presentations:**

#### **(a) International**

- 2007 Different Aeration Methods for Your Preventative or Curative Problems. ¾ hour, 75 participants;  
Management of Traffic Stress. ¾ hour, 50 participants.  
Cultural Practices That Effect Anthraxnose Disease. ¾ hour, 75 participants;  
 at the Ottawa Valley Turfgrass Association Winter Seminar (Ontario, Canada).
- 1998 Assessing Differential Root Zone Mixes for Putting Greens at the 49<sup>th</sup> Canadian International Turfgrass Conference in Calgary, Alberta (¾-hour, 250 participants).
- 1998 Poa versus the New Bentgrass Varieties. A ½-hour presentation to the Atlantic Golf Superintendents Association. Digby, Nova Scotia, Canada. (45 participants).
- 1997 Tissue testing: A tool for turf management. A ½-hour presentation to the New Zealand Sports Turf Research Institute. Auckland, New Zealand. (30 participants).
- 1997 Wetting agents: Their role in turf management. A ½-hour presentation to the New Zealand Sports Turf Research Institute. Rotarura, New Zealand. (30 participants).

#### **(b) National**

- 2008 Sand Based Root Zones: What Properties Do You Want? An ½ hour presentation at the 2008 North Carolina Turfgrass Conference in Raleigh, NC (100 participants).

- 2007 Anthracnose: What is the Impact of Cultural Management Practices? A ¾-hour presentation to the Mid-Atlantic Association of Golf Course Superintendents (150 participants).
- 2007 Cultural Practices: Do They Affect Anthracnose? A ¾-hour presentation at the Annual South Dakota Golf Course Superintendents Association Conference. (75 participants).
- 2007 Constructing Root Zone: Which Properties Do You Want? A 1-hour presentation to the South Dakota Golf Course Superintendents Association (75 participants).
- 2007 Managing Traffic Stress for Sports Fields. A 1-hour presentation at the Annual South Dakota Golf Course Superintendents Association Conference. (35 participants).
- 2007 Managing Turf With or Without Water. A 1-hour presentation at the Annual South Dakota Golf Course Superintendents Association Conference. (35 participants).
- 2005 Making it Work With and Without Irrigation. (½- hour presentation, 35 participants); Putting Green Rootzone Advances. (½-hour presentation, 40 participants); at the Illinois Professional Turfgrass Conference in St. Charles, IL.
- 2005 Root Zone Construction (¾-hour, 75 participants) and Ball Marking on Bentgrass ( ½ hour, 100 participants) at the Arkansas Turfgrass Association 17<sup>th</sup> Annual Conference in Hot Springs National Park, AR.
- 2005 Turfgrass Fertility for Golf. (½ hour, 200participants) and Turfgrass Fertility for Sports Turf. (½ hour, 75 participants) at the Virginia Turfgrass Council 45<sup>th</sup> Annual Turf and Landscape Conference in Richmond, VA.
- 2004 Aerification. (45 minutes, 200 participants) and Amendments- Organic and Inorganic. (45 minutes, 200 participants) at the 39<sup>th</sup> Wisconsin Golf Turf Symposium sponsored by the Wisconsin Golf Course Superintendents Association and the Milorganite Division of MMSD.
- 2004 Longer Term Assessment of Putting Green Root Zone Mixes Under Two Microenvironments at the USGA Research Committee Meeting on Putting Green Construction Research Projects in Nebraska City, NE (20 participants).
- 2004 Topdressing: What you need to know to be successful. A ¾-hour presentation to Sports Turf Managers Association in San Diego, CA. (100 participants).
- 2003 Constructing a putting green root zone: What should be specified? Creeping bentgrass varieties: Can the new ones perform under traffic? and Cultivation and topdressing: What programs make sense? at the South Dakota Golf Course Superintendents Association in Sioux Falls, SD (75 participants).
- 2003 Longer Term Assessment of Putting Green Root Zone Mixes Under Two Microenvironments at the USGA Research Committee Meeting on Putting Green Construction Research Projects in Columbus, OH (24 participants).
- 2002 Fertilization of cool season species. (1-hour, 150 participants) and Root zone characteristics for putting greens. (75 participants) at the New Mexico State Turfgrass Conference in Ruidoso, NM.
- 2002 Root zone mixes for putting greens at the 73<sup>rd</sup> International Golf Course Conference (Golf Course Superintendents Association of America) in Orlando, FL (½-hour, 600 participants).

- 2001 Selection and use of turfgrass species and cultivars. (¾ hour, 150 participants) and Root zone characteristics for putting greens. (¾ hour, 150 participants) at the Kentucky Turfgrass Council Conference in Bowling Green, KY.
- 2001 New bentgrass cultivars for overseeding and renovation. (150 participants) Presented at the Pure Seed Testing Field Day. Rolesville, NC.
- 2001 Root zone effects on bentgrass performance (1-hour, 200 participants) at the Maine Turfgrass Conference in Rockport, ME.
- 2001 Assessing differential root zone mixes for putting greens over time under two environmental conditions at the USGA Turfgrass and Environmental Research Committee Meeting in Atlanta, GA (20 minutes, 30 participants).
- 1999 Greens construction – methods, costs and performance. A ½-hour presentation to the Golf Course Superintendents Association of America. Orlando, FL. (500 participants)
- 1999 Assessing root-zone mixtures for putting greens under two microenvironments. (600 participants) and Turfgrass species and variety selection and use. (100 participants) at the Michigan Turfgrass Conference in Lansing, MI.
- 1999 Cultivation programs for putting greens. (250 participants) and Developing a sound topdressing program for putting greens. (250 participants) at the 34<sup>th</sup> Wisconsin Golf Turf Symposium in Brookfield, WI.
- 1999 Water injection technology - new uses for the HydroJect. (125 participants) Presented at the USGA Regional Conference in St. Louis, MO.
- 1998 Assessing differential rootzone mixes for putting over time under two environmental conditions at the Turfgrass and Environmental Research Committee Meeting: Putting Green Construction Program in Atlanta, GA (20 minutes, 50 participants).
- 1998 Golf course aerification. (300 participants) and Lawn aerification procedures. (125 participants) at the North Carolina Turfgrass Conference in Charlotte, NC.
- 1997 Progress Report on Root Zone Mixture Research and Tour of Field Plots to the USGA Research Committee in North Brunswick, NJ (10 participants).
- 1997 Wetting Agents: What's Their Role in Turf Management? (300 participants) and Soils: The Basics and More. (75 participants) at the Massachusetts Turfgrass Conference in Boston, MA.
- 1997 Turfgrass Research – Do Wheeled Devices Damage Greens Surfaces and Under What Conditions at the Seminar on Accessible sponsored by the National Center on Accessibility and Association of Disabled American Golfers in Littleton, CO (40 participants).
- 1997 Turf and Soil Responses to Selected Frequencies of Hollow Tine and Water Injection Cultivation and Control of Turfgrass Root Disease with Fungicide Injection at the Toro Turf Research Conference, The Toro Company, Bloomington, MN (40 participants).
- 1997 Assessing Wheel-traffic Damage to Golf Course Putting Greens and Assessment of Root Zone Mixes Over Time Under Two Microenvironments ½-hour

- presentations to the Golf Course Superintendents Association of America at the 68<sup>th</sup> Annual Golf Course Conference and Show. Las Vegas, NV (100 participants).
- 1996 Kentucky Bluegrass Types - Different Characteristics, Different Applications. (125 participants) and Tissue Testing - A Valuable Tool? (300 participants) at the North Central Turfgrass Exposition in St. Charles, IL.
- 1996 Tissue Analysis for Monitoring Plant Fertility. (75 participants) and Evaluating Aerification Techniques. (75 participants) at the 8<sup>th</sup> Annual West Virginia GCSA Turf Conference in Morgantown, WV.
- 1996 Response of Putting Green Surfaces to Wheel Traffic. Presented at the National Forum on Accessible Golf V. Clemson University. (50 participants).
- 1996 Selection of Bluegrass Varieties. (130 participants) and Tissue Testing: A Tool in Turf Fertilization. (600 participants) at the 66<sup>th</sup> Annual Michigan Turfgrass Conference in Lansing, MI.
- 1996 Compaction Management on Athletic Fields. (50 participants) and Evaluating HydroJect Use for Turfgrass Cultivation. (150 participants) at the Wisconsin Turfgrass and Greenscape Expo-96. Madison, WI.
- 1996 Golf Course Aeration Practices. Presented at the Chicago District Golf Association Green Seminar. Oak Brook, IL. (250 participants).
- 1996 Turf and Soil Responses to Selected Frequencies of Hollow Tine and Water Injection Cultivation. Presented at the Toro Turf Research Conference. The Toro Company, Bloomington, MN. (30 participants).
- 1995 Tall Fescue Fertility and Wear Tolerance. (70 participants) and Bluegrass: Fact and Fiction. (150 participants) at the Nebraska Turfgrass Conference in Omaha, NE.
- 1994 Evaluating Management Use of HydroJect Aeration. (250 participants) Compaction Management on Athletic Fields. (60 participants) and Nitrogen Fertilization and Tissue Testing with NIR. (150 participants) at the Ohio Turfgrass Foundation Conference in Columbus, OH.
- 1994 Kentucky Bluegrass Varieties for Golf Turf. and Bentgrass Varieties for Golf Turf to the United States Golf Association during a site visit of the Rutgers Turfgrass Research Program in North Brunswick, NJ. (12 participants)
- 1993 HydroJect Aeration. (80 participants) and Managing Compaction on Athletic Fields. (30 participants) at the Western Pennsylvania Turf Conference in Monroeville, PA.
- 1993 Soil Aeration Techniques. Presented at the 82<sup>nd</sup> Annual Professional Grounds Management Society Conference. Baltimore, MD. (80 participants).
- 1992 Aeration Technology. (100 participants) and Effective Aeration Techniques. (40 participants) at the 39<sup>th</sup> Rocky Mountain Regional Turf Conference in Denver, CO.

**(b) Regional:**

- 2005 Managing (Pushing) Turf to its Limits at the June meeting of Long Island Golf Course Superintendents Association in Bethpage, NY (½-hour, 65 participants).
- 2005 Anthracnose and Summer Patch Diseases on Golf Turf at the New York State Turfgrass Association Southeast Regional Conference in Tarrytown, NY (1 ½ hours, 150 participants).
- 2005 Interpreting Soil Test Results: Separating Fact from Fiction at the United States Golf Association Regional Conference in Rochester, NY (35 minutes, 100 participants).
- 2004 Research update on cultural management of anthracnose disease at the Connecticut Association of Golf Course Superintendents Winter Seminar in Berlin, CT (45 minutes, 200 participants).
- 2004 New Cultivation Techniques- It's Not Just Plugging Anymore (40 minutes, 250 participants),  
Problem Greens- Is it the Soil? (30minutes, 200 participants), and  
Panel Discussion: Is it the Green Construction or Grow-in Method (45 minutes, 200 participants) at the New York State Turfgrass Association Turf and Grounds Exposition in Rochester, NY.
- 2004 Current perspectives in turfgrass management at the Certified Crop Advisor Program – Nutrient Management (¾-hour, 75 participants), and  
Kentucky Bluegrass Tolerance to Billbugs and 2003 Fine Fescue Trial at the Adelphia Plant Science Research Farm Tour (½-hour, 50 participants) held for the Northeast Branch American Society of Agronomy and Soil Science Society of America Annual Summer Meeting hosted by Rutgers.
- 2004 Update on turfgrass management research at Rutgers at the Long Island Golf Course Superintendents meeting at North Shore Country Club, NY (35 participants).
- 2003 Anthracnose Research Update at the Syngenta Professional Products Poa annua Meeting in Philadelphia, PA (½-hour, 12 participants).
- 2002 Anthracnose: cultural practices and ball roll at the Metropolitan Golf Course Superintendents Association Summer Seminar at Pelham, NY (75 participants).
- 2002 Root zone characteristics affecting putting green performance at the Central Pennsylvania Superintendents Meeting in Moselem Springs, PA.
- 2002 Recent Developments in Rootzone Research at the Science and Politics of Putting Green Rootzones sponsored by A T Sales in Oreland, PA (50 participants).
- 2002 Root zone characteristics for putting greens at the Connecticut Association of Golf Course Superintendents Winter Seminar in Berlin, CT (1hour, 200 participants).
- 2002 Putting green performance affected by root zones at the Metropolitan Golf Course Superintendents Winter Meeting in Harrison, NY (45 minutes, 250 participants).
- 2002 Turfgrass species, variety selection, and use at the Professional Turf and Landscape Conference in Scarsdale, NY (75 participants).
- 2001 Modifying a root zone over time at the New England Regional Turfgrass Conference in Providence, RI (¾ -hour, 600 participants).
- 2000 What have we learned about putting green construction? at the Long Island Superintendents Meeting in St. James, NY (1 hour, 45 participants).

- 2000 What are the alternatives? A new look at alternative putting green construction. at the USGA Regional Conference in Bolton, MA
- 2000 How to effectively manage organic matter accumulation. (150 participants) and Nature's "Black Box" soil nutrient management. (100 participants) at the .NYSTA Turf and Grounds Exposition in Syracuse, NY.
- 1999 Water Injection Technology at the USGA Regional Conference. St. Louis, Missouri. (100 participants).
- 1999 Greens construction and root zone testing. (300 participants) and Methods of cultivation for athletic fields. (75 participants) at the Eastern Pennsylvania Turf Conference in Valley Forge, PA.
- 1998 Assessing Root Zone Mixes for Putting Green Construction at the Egypt Farms Turf Seminar in White Marsh, MD (1-hour, 75 participants).
- 1998 Managing soil: The foundation of your turf. (100 participants) and Pro's and con's of cultivation practices for golf turf. (300 participants) at the Maryland Turfgrass '98 Conference in Baltimore, MD.
- 1997 Assessing Root Mixes for Golf Course Putting Greens at the Hudson Valley Golf Course Superintendents Association Monthly Meeting in Hudson Valley, NY (125 participants).
- 1997 Assessing Root Mixes for Golf Course Putting Greens at the Connecticut Association of Golf Course Superintendents Winter Seminar in Meridian, CT (135 participants).
- 1996 Evaluating Turfgrass Cultivation Techniques and Programs at the Connecticut Association of Golf Course Superintendents Winter Seminar in Meridian, CT. (125 participants).
- 1996 Evaluating Turfgrass Cultivation Techniques and Programs at the Metropolitan Golf Course Superintendents Association Winter Seminar in Westchester, NY (150 participants).
- 1996 Soil management techniques for highly trafficked turf to the American Golf Corporation in New Brunswick, NJ. (26 participants).
- 1995 Selection of Adapted Turfgrass Species and Varieties at the Lebanon Turf Products 1995 Turf Care Seminar in Wyomissing, PA (175 participants).
- 1994 Utilizing Recent Aerification Technology (200 participants) and Fertility and Grass Selection for Wear Resistant Turf (80 participants) at the New York Turf and Grounds Exposition in Rochester, NY.
- 1994 Accessibility Issues for Disabled Golfers at the United States Golf Association Northeast Regional Conference in Taunton, MA (170 participants).
- 1994 Environmentally Friendly Lawn Care at the Annual Delaware Horticulture Industry Expo in Dover, DE (40 participants).
- 1994 Environmental Issues of Golf Turf Management to the Philadelphia & Vicinity Club Managers Association in Medford Lakes, NJ (40 participants).
- 1993 Aeration Strategies for Fine Turf at the Long Island Golf Course Superintendents Association Educational Seminar in Melville, NY (150 participants).

- 1992 Aeration Through Water Injection. (100 participants) and Athletic Field Aeration. (20 participants) at the Eastern Pennsylvania Turf Conference in Valley Forge, PA.
- 1992 Lawn Care at the Master Gardener 1992 Northeast Regional Conference in Somerset, NJ. (20 participants).

#### **IN-SERVICE EDUCATION (Rutgers Cooperative Extension)**

- 2003 Tour of the Turfgrass Research Trials for Agriculture and Resource Management In-Service Training (2 hours, 10 participants).
- 1999 Turfgrass Management for Agriculture and Resource Management at the Louis Vasvary Memorial In-Service (1-hour, 10 participants).
- 1991 Water Conservation and Turf for Agriculture and Resource Management In-Service training in Low-Water Use Landscaping (1 hour, 35 participants).

#### **STATE EXTENSION WORKSHOPS**

- 1996 Aerification/Cultivation a 2-hr. workshop for 125 participants at the New Jersey Turfgrass Expo '96 in Atlantic City, NJ.
- 1995 Back to Basics Update on Lawn Care Principles a 2-hr. workshop for 100 participants at the New Jersey Turfgrass Expo '95 in Atlantic City, NJ.
- 1992 Turf Cultivation and Aerification a 2-hr. workshop for 30 participants and Update on Seed Recommendations for N.J. Certified Sod a 2-hr. workshop for 20 participants at the New Jersey Turfgrass Expo '92 in Atlantic City, NJ.

#### **STATE EXTENSION PRESENTATIONS**

- 2010 Nutrient Management Regulations for Turf Fertilization (1-hour; 30 participants) Cultivated Sod Association of New Jersey, Annual Spring Seminar.
- 2009 Aerification: Timing and Recommendations (1.5-hour presentation; 30 participants) Golf Course Superintendents Association of New Jersey.
- 2009 Organic Turf Management Practices (1-hour presentation presented twice; 87 participants) Master Gardeners Association of New Jersey Fall Conference.
- 2008 Sports field management considerations under reduced pesticide inputs (1 hour, 20 participants) at the New Jersey State League of Municipalities in Atlantic City, NJ.
- 2007 Updating the USGA Greens Concept: Lessons Learned from Rutgers Research (¾ hour, 100 participants),  
2007 Snapshots of Turf Problems and Solutions (¾ hour, 300 participants).  
at the New Jersey Turfgrass and Landscape Expo in Atlantic City, NJ.
- 2007 Athletic Field Maintenance to Athletic Directors and Grounds Managers of the Tri County Conference at the Clearview Regional High School, NJ (1 hour, 20 participants)
- 2007 Organic Lawn Care, Do You Know What it Means? at the South Jersey Landscape Meeting in Gloucester County, NJ (½ hour, 40 participants).
- 2007 Interpreting a Soil Test. at the Sports Field Managers Association of New Jersey Spring Field Day in South River, NJ (½ hour, 35 participants).

- 2007 Worm Cast Research Study & Managing Traffic Stress on the Golf Course at the 2007 Crystal Conference at Crystal Springs Resort, NJ (1½ hour, 150 participants).
- 2005 Soil Characteristics and Turfgrasses at the Sports Field Managers Association of New Jersey Spring Field Day in Hammonton, NJ (½ hour, 85 participants).
- 2004 Nutrient Management Guidelines for New Jersey to the Cultivated Sod Association of New Jersey in Jamesburg, NJ (1 hour, 30 participants).
- 2004 Turf Pests: What We Learned From This Year (1/2 hour, 350 participants), Base Saturation Myths (1/2 hour, 100 participants), From Construction Site to Health Lawn: How to Improve the Soil (1/2 hour, 125 participants), and Factors to Consider in Athletic Field Construction (1/2 hour, 75 participants) at the New Jersey Turfgrass and Landscape Expo in Atlantic City, NJ.
- 2004 Establishment of Kentucky Bluegrass on a Sand-Based Root Zone at the Rutgers Sports Turf Workshop in North Brunswick, NJ (50 participants).
- 2004 Establishment of a Late Fall Seeding and Fall Field Renovation at the Sports Field Managers Association of New Jersey Spring Field Day in Bricktown, NJ (85 participants).
- 2004 Impact of Nitrogen Fertility, Growth Regulation and Verticutting on Anthracnose in Poa annua Green, Management of Velvet Bentgrass for Putting Greens, and Evaluation of Sand- Based Root Zones for Putting Greens at the Rutgers Fine and Golf Turf Research Field Day in North Brunswick, NJ (200 participants).
- 2004 Billbug Resistance in the 1999 Kentucky Bluegrass Hybrid Trial at the Rutgers Landscape Turf Research Field Day in Adelphia, NJ (175 participants).
- 2003 Effects of Mowing Height, Mowing Frequency, and Fertilization on Turfgrass Quality and Baseball Infield Mix Demonstration at the Rutgers Sports Turf Outreach Program in Pittstown, NJ. (55 participants)
- 2003 Summer Field Renovation of Turf at the Sports Field Managers Association of New Jersey August Field Day in Paramus, NJ (60 participants)
- 2003 Spring Rejuvenation of Sports Field Turf at the Sports Field Managers Association of New Jersey Spring Field Day in Wall, NJ (85 participants).
- 2003 Is it time for a nutrient management plan for sod production in New Jersey? to the Cultivated Sod Association in Jamesburg, NJ (1 hour, 30 participants).
- 2003 Turfgrass Management: Proven Programs for Success (1/2 hour, 300 participants) and Management Practices for Minimizing Impact of Traffic (1/2 hour, 75 participants) at the New Jersey Turfgrass and Landscape Expo in Atlantic City, NJ.
- 2003 Growth Regulation, Nitrogen, and Verticutting Effects on Anthracnose Disease of Annual Bluegrass, Root Zone Characteristics for Putting Greens and Performance of Low-cut Kentucky Bluegrass Varieties at the Rutgers Golf Turf Research Field Day in North Brunswick, NJ (175 participants).
- 2003 1999 Perennial Ryegrass Trial at the Rutgers Landscape Turf Research Field Day in Adelphia, NJ (150 participants).

- 2003 Best Management Practices for Irrigation Golf Course Turf at the Golf Course Superintendents Association of New Jersey Fall Seminar in Springfield, NJ (¾ hour, 100 participants).
- 2002 Poa traffic and stress at the Golf Course Superintendents Association of New Jersey Winter Seminar in Westfield, NJ (135 participants).
- 2002 The Drought of 2002 and Impact of N fertility and topdressing on traffic tolerance if perennial ryegrass and tall fescue at the Rutgers Athletic Field Maintenance and Renovation Field Day in Pittstown, NJ (65 participants).
- 2002 Interpreting Soil Test Results at the Sports Field Managers Association of New Jersey August Field Day in Bernards Township, NJ (150 participants).
- 2002 Practical Solutions to Common Problems (1/2 hour, 300 participants), Turfgrass Case Studies: Volume II (1/4 hour, 300 participants) and Mowing Management as It Affects Turf Quality (1/2 hour, 80 participants) at the New Jersey Turfgrass and Landscape Expo in Atlantic City, NJ.

- 2002 Root Zone Effects on Putting Green Performance, Bentgrass Tolerance to Traffic and Ball Marking Under Putting Green Management and Traffic Tolerance of Kentucky bluegrasses (2000 NTEP) Mowed at 0.65- inch at the Rutgers Fine and Golf Turf Research Field Day in North Brunswick, NJ (220 participants).
- 2002 1999 NTEP Perennial Ryegrass Trial at the Rutgers Landscape Turf Research Field Day in Adelphia, NJ (225 participants).
- 2002 Tall fescue Performance Characteristics at the Cultivated Sod Association Field Day of Rutgers Turfgrass Research in Adelphia, NJ (55 participants).
- 2002 Turf Renovation and Seed Selection at New Jersey Landscape '02 in Seacacus, NJ (1 hour, 200 participants).
- 2002 Turfgrass Management Update at the New Jersey Landscape 2002 conference in Seacacus, NJ (75 participants).
- 2002 Rutgers Research Update at the Golf Course Superintendents Association of New Jersey April Monthly Meeting in Swainton, NJ (120 participants).
- 2002 Update on Disease Research at the Lesco South/Central Jersey Turf Seminar in Mount Holly, NJ (100 participants).
- 2001 Proven Turf Management Programs Recipes for Success (½-hour, 350 participants), Soil Temperature and Air Movement (½ -hour, 150 participants), Invasion of Poa annua into bentgrass varieties maintained under traffic stress (¼-hour, 300 participants) and Turfgrass management with and without irrigation (½ -hour, 85 participants) at the New Jersey Turf and Landscape Expo '01 in Atlantic City, NJ.
- 2001 Leading management stresses associated with anthracnose at the Golf Course Superintendents Association of New Jersey November Education Seminar in Bedminster, NJ (¾-hour, 100 participants).
- 2001 Invasion of Poa annua into Bentgrass Varieties under Traffic Stress, Root Zone Characteristics Affecting Putting Green Performance and Wear and Rolling Tolerance of Bentgrasses Grown on a Sand-Based Root Zone at the Rutgers Fine and Golf Turf Research Field Day in North Brunswick, NJ (200 participants).
- 2001 Management Practices for Cool-Season Turfgrass and 1999 NTEP Perennial Ryegrass Trial at the Rutgers Landscape Turf Research Field Day in Adelphia, NJ (225 participants).
- 2001 Drainage and Soil Management of Baseball Outfield at the Sports Field Managers Association of New Jersey Spring Field Day in Bridgewater, NJ (125 participants).
- 2001 Rutgers Research Update at the Golf Course Superintendents Association of New Jersey April Monthly Meeting in Cologne, NJ (100 participants).
- 2000 Turf Establishment: Seed and Sod (100 participants) and Understanding and Contending with Soil Compaction (85 participants) at the New Jersey Turf and Landscape Expo '00 in Atlantic City, NJ.

- 2000 Poa annua and Bentgrass Population Dynamics as Effected by Seeding Data and Bentgrass Variety, Infiltration and Bentgrass Performance on Sand-Based Root Zones and Tolerance of Bentgrass Varieties to Traffic at the Rutgers Fine and Golf Turf Research Field Day in North Brunswick, NJ (150 participants).
- 2000 1999 NTEP Perennial Ryegrass Trial at the Rutgers Landscape Turf Research Field Day in Adelphia, NJ (200 participants).
- 1999 Update on USGA Putting Green Construction Project (½-hour, 120 participants) and Case Studies: Real Problems, Real Solutions (¼-hour, 300 participants) at the New Jersey Turf and Landscape Expo '99 in Atlantic City, NJ.
- 1999 Poa annua and Bentgrass Population, Dynamics Under Simulated Traffic and 1996 NTEP Medium- High Maintenance Tall Fescue Test at the Rutgers Fine and Golf Turf Research Field Day in North Brunswick, NJ (150 participants).
- 1999 1996 Medium- High Maintenance Tall fescue NTEP Trial and 1998 NTEP Medium Maintenance Fine Fescue Trial at the Rutgers Landscape Turf Research Field Day in Adelphia, NJ (150 participants).
- 1998 Exploring Green Construction Alternatives (¾-hour, 125 participants), Selecting Turf Varieties for Pest Tolerance (¾-hour, 140 participants) and Basics of Lawn Establishment (½-hour, 110 participants) at the New Jersey Turf and Landscape Expo '98 in Atlantic City, NJ.
- 1998 Quest for he Prefect Green at the New Jersey State Golf Association Annual Meeting in Clifton, NJ (½ hour, 200 participants).
- 1998 1993 National Bentgrass Evaluation: Green and Fairway Trials and Assessing Root Zone Mixtures for Golf Putting Greens at the Rutgers Fine and Golf Turf Research Field Day in North Brunswick, NJ (150 participants).
- 1998 1993 National Perennial Ryegrass Trial With and Without Wear Induced by the Rutgers Wear Simulator and 1995 National Medium-High Maintenance Kentucky Bluegrass Trial at the Rutgers Landscape Turf Research Field Day in Adelphia, NJ (150 participants).
- 1997 Utilizing Composts in Landscape Turf (450 participants) and USGA Greens Research - What We Know and What We are Trying to Find Out (125 participants) at the New Jersey Turf and Landscape Expo '97 in Atlantic City, NJ.
- 1997 1993 National Bentgrass Evaluation: Green and Fairway Trials and 1995 Kentucky Bluegrass Evaluation Trial: Medium/High Maintenance at the Rutgers Fine and Golf Turf Research Field Day in North Brunswick, NJ (150 participants).
- 1997 1993 National Fine Fescue Evaluation Trial and Evaluating Koeleria and Hard Fescue under Low Maintenance at the Rutgers Landscape Turf Research Field Day in Adelphia, NJ (150 participants).
- 1996 The Potency of Cultural Practices: The Latest Word at the New Jersey Turfgrass and Landscape Expo '96 in Atlantic City, NJ (75 participants).
- 1996 1993 National Bentgrass Evaluation Trials: Green and Fairway at the Rutgers Fine and Golf Turf Research Field Day in North Brunswick, NJ (150 participants).

- 1996 1995 Kentucky Bluegrass Evaluation Trial: Medium/High Maintenance and 1993 National Fine Fescue Evaluation Trial at the Rutgers Landscape Turf Research Field Day in Adelphia, NJ (200 participants).
- 1996 Turf Renovation and Seed Selection at New Jersey Landscape '96 in Seacacus, NJ (100 participants).
- 1996 Update: Research of Root Zone Mixes for Putting Green Construction at the Golf Course Superintendents Association of New Jersey Winter Meeting (50 participants).
- 1996 Selecting Turfgrass Varieties at the Statewide Training for New Jersey Master Gardeners (50 participants).
- 1995 Turfgrass Management Research Results '95 at the New Jersey Turfgrass Expo '95 in Atlantic City, NJ (400 participants).
- 1995 Biostimulants - Do They Work? at the Annual Sod Seminar of the Cultivated Sod Association of New Jersey in Jamesburg, NJ (30 participants).
- 1995 1990 National High Maintenance Kentucky Bluegrass Evaluation Trial: Improvements in Pest and Stress Resistance (200 participants), 1992 National Tall Fescue Evaluation Trial: Improvements in Pest and Stress Resistance (200 participants) and Slowly Available Nitrogen Fertilizer Trial (200 participants) at the Rutgers Turfgrass Research Field Day in Adelphia, NJ.
- 1994 Basics of Turfgrass Management (180 participants), Highlights of Turfgrass Management Research at Cook College (350 participants) and Nitrogen Fertility and Disease (100 participants) at the New Jersey Turfgrass Expo '94 in Atlantic City, NJ.
- 1994 Compost Utilization for Amending Landscape Soils, 1993 National Bentgrass Evaluation Trials and Turfgrass Cultivation Frequency and Monitoring Nitrogen Fertility through Turf Clipping Analysis at the Rutgers Turfgrass Research Field Day in North Brunswick, NJ (230 participants).
- 1994 Use of NIRS to Monitor Nitrogen Status in Bentgrass Clippings at the Golf Course Superintendents Association of New Jersey Monthly Meeting in Bedminster, NJ (100 participants).
- 1994 Revised Seed Standards for Sod Production at the Cultivated Sod Association of New Jersey Spring Meeting in Jamesburg, NJ (30 participants).
- 1994 Management of Localized Dry Spots with Water Injection Cultivation at the Educational Seminar for the Golf Course Superintendents Association of New Jersey (50 participants).
- 1994 Optimizing Nitrogen Fertilization in Creeping Bentgrass at the Fiftieth Annual Pest Control Meeting (30 participants).
- 1994 Turf Research at the Adelphia Plant Science Research Station at the Cook College VIP Tour (50 participants).
- 1993 New Fertilizer Sources (350 participants) and An Annual Lawn Care Program (80 participants) at the New Jersey Turfgrass Expo '93 in Somerset, NJ.

- 1993 Injection vs. Surface Applications of Fertilizers: Aerification Demonstration and 1992 National Tall Fescue Evaluation Trial at the Rutgers Turfgrass Research Field Day in Adelphia, NJ (210 participants).
- 1993 HydroJect Use on Bentgrass Greens at Lofts Seed, Inc. 17<sup>th</sup> Annual Field Day (150 participants).
- 1993 Tour of Rutgers Turfgrass Research Program for the Golf Course Club Managers of New Jersey at North Brunswick, NJ (30 participants).
- 1993 Optimizing nitrogen nutrition for suppression of dollar spot at the Golf Course Superintendents Association of New Jersey: 29<sup>th</sup> Annual Turfgrass Equipment, Irrigation and Supplies Field Day (50 participants).
- 1993 Environmentally Friendly Lawn Care at the Garden State Nursery and Landscape Conference sponsored by New Jersey Nursery and Landscape Association (80 participants).
- 1993 Turfgrass Aerification at New Jersey Landscape '93 in Seacacus, NJ (100 participants).
- 1992 Managing Turf in 1992 - Year in Review at the New Jersey Turfgrass Expo '92 in Somerset, NJ (250 participants).
- 1992 Injection vs. Surface Application of Nitrogen; Aerification Demo, National Bentgrass Evaluation Trials and Nitrogen Needs Test at the Rutgers Turfgrass Research Field Day in North Brunswick, NJ (210 participants).
- 1992 Environmental Issues in Golf Turf Management at the New Jersey Golf Club Managers Association Educational Seminar in Montclair, NJ. (60 participants).
- 1992 High Pressure Water Injection as a Turf Management Tool at the Plant Food Educational Society of New Jersey Fertilizer and Lime Conference (50 participants).
- 1991 Aerification Techniques: Deep vs. Hollow vs. Solid Tine vs. Spiking and Further Evaluation of High-Pressure Water Injection as a Turf Management Tool at the New Jersey Turfgrass Expo '91 in Somerset, NJ (200 participants).

#### **MULTI-COUNTY EXTENSION PRESENTATIONS**

- 2009 Organic Turf Management Practices at the Central Jersey Turf & Ornamental Institute. (70 participants).
- 2005 Turfgrass Pests and Other Problems! What we learned from the summer of 2004 at the North Jersey Ornamental Horticulture Conference. (1 hour, 250 participants).
- 2001 Water quality: An overview at the North Jersey Ornamental Horticulture Conference - Turf Day (300 participants).
- 2000 Athletic Field Management at the North Jersey Ornamental Horticulture Conference. (1 hour, 250 participants).
- 1999 Turf Cultivar Update: Pest and Environmental Stresses at the North Jersey Ornamental Horticulture Conference Turf Day Program in Randolph, NJ (1-hour, 300 participants).
- 1998 Managing for Traffic Tolerance in Turf at the North Jersey Ornamental Horticulture Conference Turf Day Program (1-hour, 300 participants).
- 1997 Selection of Turfgrass Species and Varieties for Pest Tolerance at the Central Jersey Turf and Ornamentals Institute in Freehold, Hamilton, and Bridgewater, NJ (350 participants).

- 1997 Performance and Pest Resistance of Varieties in Rutgers Turf Trials at the North Jersey Ornamental Horticulture Conference - Turf Day (300 participants).
- 1997 Bentgrass Evaluation Trials and Root Zone Mixes for Putting Greens at the Pro-Lawn/Lesco Inc. Meeting, Southern, NJ. (100 participants).
- 1996 Irrigation Management of Turf and Turf Selection and Renovation at the North Jersey Ornamental Horticulture Conference - Turf Day (350 participants).
- 1995 What's New in Turfgrass for 1995 at the 28<sup>th</sup> Regional Grounds Maintenance Conference in Ocean City, NJ (250 participants).
- 1996 Research Information on Slow Release Fertilizers for Turf at the Pro-Lawn, Inc. Meeting, Spring Lake, NJ (100 participants).
- 1995 Targeting a Turf Fertility Program at the Central Jersey Turf and Ornamentals Institute in Freehold, Hamilton, and Bridgewater, NJ (three presentations) (350 participants).
- 1995 Turfgrass Selection and Fertility for Wear Tolerance and Improving Soil Quality of Turf Landscapes with Waste Composts at the North Jersey Ornamental Horticulture Conference - Turf Day (350 participants).
- 1994 Nitrogen Sources for Turf at the North Jersey Ornamental Horticulture Conference (350 participants).
- 1994 Compaction and Thatch Management for Turf at the Central Jersey Turf and Ornamental Institute in Freehold, Hamilton, and Bridgewater, NJ (three presentations) (350 participants).
- 1993 Turfgrass Seed Selection for Enhanced Pest Resistance at the Central Jersey Turf and Ornamental Institute in Freehold, Hamilton, and Bridgewater, NJ (three presentations) (350 participants).
- 1993 Turf Varieties for the Landscape at the South Jersey Landscape and Nursery Conference (70 participants).
- 1993 Turfgrass Cultural Problems and How to Avoid at the Spring Landscapers Forum.
- 1992 New Insect Resistant Lawn Grasses and Speedy Lawn Establishment, Endophytes: Biological insect control in lawns at the Clifford and Melda Snyder Research and Extension Farm Lawn and Garden Field Day (200 participants).
- 1992 Renovation or Reconstruction - Why and How and Correcting Compaction at the North Jersey Ornamental Horticulture Conference (350 participants)
- 1992 Turf Management to Reduce Insects, Diseases, and Stress at the Central Jersey Turf and Ornamental Institute in Freehold, Hamilton, and Bridgewater, NJ (three presentations) (350 participants).
- 1992 Turf and Its Response to Soil Compaction and Aeration at the 25<sup>th</sup> Regional Grounds Maintenance Conference, Ocean City, NJ (250 participants).
- 1991 Home Lawn Fertility at the Clifford and Melda Snyder Research and Extension Farm Lawn and Garden Field Day in Pittstown, NJ (150 participants).

#### **COUNTY EXTENSION PRESENTATIONS**

- 1994 Turfgrass Aerification and Fertilization at the Bergen County Department of Parks Training Program (20 participants).
- 1993 Turfgrass Soil Aerification at the Union County Parks and Recreation training program (20 participants).
- 1993 Lawn Renovation at the Bergen County Landscape Contractors Association, Educational Seminar (20 participants).
- 1992 Turfgrass IPM for Golf Turf at the Golf Course Superintendents Meeting in Sussex County (20 participants).
- 1992 Lawn Renovation and Management Practices at the Union County Master Gardener training program (20 participants).
- 1992 Relief of Soil Compaction with Turfgrass Aeration at the Bergen County Landscape Contractors Association, Educational Seminar (30 participants).

## SERVICE

### PROFESSIONAL SERVICE

#### a) International

- 2009-2013 International Turfgrass Society. Board of Directors and Secretary.  
1993-2013 International Turfgrass Society. Member  
2000-2001 Scientific Program Planning Committee for the 9<sup>th</sup> International Turfgrass Research Conference in Toronto, Canada.  
2001-2005 Editorial Board. *Journal of Turfgrass Science*, published by the Sports Turf Research Institute (the United Kingdom's national center for turfgrass science).

#### Journal Article Reviewer:

- 2005-2004 International Turfgrass Society Research Journal  
2002 World Scientific Congress of Golf  
2001-2000 International Turfgrass Society Research Journal

#### b) National

**National Turfgrass Evaluation Program (NTEP):** [cooperative effort between National Turfgrass Federation, Inc. and the United States Department of Agriculture (USDA)]

- 2007-2003 Policy Committee member  
2005 Chair  
2004 Secretary

#### Crop Science Society of America (CSSA):

- 2010 Incoming Chair, Division C-5 Turfgrass Science of CSSA.  
2009 Nominated Chair-Elect, Division C-5 Turfgrass Science of CSSA.  
1988-present Member  
2005-present Associate Editor for Crop Science  
2002, 1998, 1992 Judge for graduate student presentation competition in the C5 Division (Turfgrass Science) of ASA-CSSA-SSSA Annual Meeting.  
1997-1993 Evening Program Committee of the C5 Division for the ASA-CSSA-SSSA Annual Meetings.  
1996 Obituary for Professor Emeritus Ralph E. Engel in *Agronomy News* (August issue).  
1993 Presiding Officer for C5 Division Oral Presentation Session at ASA-CSSA-SSSA Annual Meeting  
2005-1985 **American Society of Agronomy** member  
2005-1985 **Soil Science Society of America**, member  
2005-1992 **American Society for Horticultural Science** member  
2005-1992 **American Association for the Advancement of Science** member

#### Journal Article Reviewer:

- *Agronomy Journal*

- Crop Science
- HortScience
- HortTechnology
- Soil Science

2001      Journal reviewer for World Scientific Congress of Golf, St. Andrews, Scotland, July 2002

### c) Regional

#### **Regional Hatch Projects (Multi-state regional research projects):**

2010-2005      NE-1025 Biology, Ecology, and Management of Emerging Pests of Annual Bluegrass on Golf Courses - member

2005-2000      NE-187 Regional Hatch Project member

1999-1992      NE-169 Regional Hatch Project

1998-1996      Chair NE-169

1995-1994      Secretary NE-169

2005-1992      New Jersey Representative to NE-169 and NE-187.

### **UNIVERSITY SERVICE**

#### **Cook College:**

2008-2010      Appointments and Promotions Committee member

2005-2004      Cook College Council Committee member

2005-1996      Member of the Faculty of the Graduate School

1999-1997      Cook College Planning Committee member

1999              Annual Extension Conference Committee

#### **Department of Extension Specialists:**

2006-2007      Committee on User Fees.

1998              Search Committee Chair, Extension Specialist in Turf Entomology.

1998-1997      Search Committee Member, Extension Specialist in Turf and Ornamental Weed Science. (2<sup>nd</sup> search)

1997              Seminar presentation to the Rutgers University Turf Club

1996-1995      Search Committee Member, Extension Specialist in Turf and Ornamental Weed Science. (1<sup>st</sup> search)

1998-1997      Merle Adams Award and Wilber Runk Scholarship Selection Committee, Chair

1994              Search Committee Chair, Program Associate II

#### **Department of Plant Biology and Pathology:**

2003-2001      Restructured undergraduate teaching program in Turfgrass Management with R. Hurley and B. Clarke: Two brochures and several open houses for students and guidance counselors from the NE and mid-Atlantic States. Increased enrollment 15% in 2003 and 2004.

- 1996-1995 Search Committee Chair, Fine Turf Scientist and Associate Director of the Center for Turfgrass Science. (2<sup>nd</sup> search)
- 1994 Search Committee Chair, Fine Turf Scientist and Associate Director of the Center for Turfgrass Science. (1<sup>st</sup> search)
- 1995 Search Committee member, Turfgrass Mycologist / Pathologist
- 1995 Search Committee member, Turfgrass Physiologist / Ecologist
- 1995-1993 Plant Science and Technology Graduate Program. Applicant Reviews.
- 1994-1992 Undergraduate Curriculum Committee. Curriculum Review.

**Center for Turfgrass Science:**

- 2008-1991 Chair, Academic and Planning Committee  
Recording Secretary for the Center and Turfgrass Advisory Board (see below)  
Executive Committee member  
By-laws Committee member  
Curriculum and Recruitment Committee member  
Special Activities Committee member
- 2008, 2005-2003 Rutgers Turfgrass Research Symposium Organizing Committee member
- 2007-1991 Chair, Finance Committee
- 2005 -1991 Selection Committee for Student Scholarships in Turfgrass Science and Management.
- 2004 Chair, Rutgers Turfgrass Research Symposium Organizing Committee
- 2003 Co-Editor, Proc. of the Rutgers Turfgrass Research Symposium

**COMMUNITY / SOCIETAL SERVICE**

**a) National**

- 2008 Scholarship Committee member for the Golf Course Superintendents Association of America (GCSAA).
- 2007-2006 Education Committee member for the Golf Course Superintendents Association of America (GCSAA).
- 2004-2003 United States Golf Association Putting Green Guidelines Review Committee
- 1998-1997 Publications Committee member for *Golf Course Management* and *Newslines* publications of the GCSAA.

**b) State**

- 2005-2007 Fertilizer Task Force for Model Fertilizer Ordinance, New Jersey Department of Environmental Protection and Industry Stakeholders.
- 2007-present Healthy Lawns & Healthy Water Initiative, New Jersey Department of Environmental Protection and Industry Stakeholders.
- 2007-2004 Assembled and lead the design team that developed the design for the reconstruction of the turf race course at Monmouth Park in Oceanport, NJ.

Professional service fee for the design: \$250,000. Total costs for turf course reconstruction were \$5 million.

- 2005-1991 Recording Secretary, Turfgrass Advisory Board (University / Industry Stakeholder Group meets twice a year to prioritize turf research and education).
- 2005-1991 University liaison to the New Jersey Turfgrass Association
- 2005-1993 NJ Turfgrass and Landscape Expo Educational Program Committee. Responsible for developing the educational program for the 3-day NJTA Exposition attended by 1200-1500 each year.
- 2005-1993 Rutgers Turfgrass Research Field Day Committee. Develops the educational program for the annual NJTA sponsored Rutgers Turfgrass Research Field Days attended by 400-500 each year.
- 2005-1997 University Liaison to the Golf Course Superintendents Association of New Jersey.
- 2005-2000 Education Committee Chair, Sports Field Managers Association of New Jersey.
- 2005-2001 Board of Directors, Sports Field Managers Association of New Jersey.
- 2005-1996 University Liaison to the New Jersey Landscape Contractors Association (formerly the Bergen County Landscape Contractors Association)
- 2000-1992 New Jersey Agribusiness Association (formerly Plant Food Educational Society of New Jersey, a University / Industry Group)
- 1999-1992 University Liaison to the Cultivated Sod Association of New Jersey
- 1995-1994 Vice-president, New Jersey Specialists Association
- 1993-1992 Treasurer, New Jersey Specialists Association
- 1994-1993 Secretary, New Jersey Specialists Association

#### **Media Contacts:**

- The Washington Post, June 2008, water conservation for golf turf
- Star Ledger. Interview on drought in 1995, 2001; Sports turf in 2005.
- Asbury Park Press. Sports Turf interview 2005.
- The Home News Tribune. Drought 2001, 2002; Interview on Sports Turf in 2002 and 2003
- 101.5 FM radio interview on drought of 1995. Sports turf in 2002
- NBC Sports. Interview for research on disabled golf. 1996.
- Bergen Record. Rebuttal of editorial. 1996.
- ESPN. Interview for research on disabled golf. 1995.
- The News Tribune. Interview on drought of 1995.
- Bergen Record. Interview on drought of 1995.
- Burlington County Times. Interview on drought of 1995.
- WCTC radio interview on drought of 1995.
- Hackettstown radio station interview on drought of 1995.

Sponsored Winiefred Kamunge of Newark (NJ) High School for The American Chemical Society's Project Seed Program (Provides guidance and work experience in the areas of science and research).

#### **HONOR SOCIETIES**

- 2005-1982 Alpha Zeta
- 2005-1983 Phi Kappa Phi National Honor Society
- 2005-1989 Sigma Xi, The Scientific Research Society

#### **AWARDS**

- 2007 Recognition Award, New Jersey Turfgrass Association.
- 1996 Distinguished Service Award, New Jersey Turfgrass Association.
- 1992 Honorary Membership, Golf Course Superintendents Association of New Jersey.