

Curriculum vitae

Alan R. Biggs, Ph.D.
Professor Emeritus of Plant Pathology

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Education:

- The Pennsylvania State University - B.Sc., Forest Biology (1976)
- The Pennsylvania State University - M.Sc., Plant Pathology (1978)
- The Pennsylvania State University - Ph.D., Plant Pathology (1982)

Employment:

- Professor of Plant Pathology and Extension Specialist in Tree Fruit Pathology, West Virginia University, Kearneysville Tree Fruit Research and Education Center, P. O. Box 609, Kearneysville, WV 25430. Member - Graduate Faculty. September 1989 – December, 2016.
- Research Scientist and Head, Plant Pathology Section, Agriculture Canada, Vineland Research Station, Vineland Station, Ontario. Fungal and bacterial diseases of tree fruits, administration of the Plant Pathology section. April 1986 - September 1989.
- Research Scientist, Agriculture Canada, Vineland Research Station, Vineland Station, Ontario. Fungal and bacterial diseases of tree fruits. January 1983 - March 1986.
- Adjunct Associate Professor, Department of Botany, University of Toronto, Toronto, Ontario. Member Graduate Faculty. September 1984 - August 1987.
- Instructor of Plant Pathology, Department of Plant Pathology, The Pennsylvania State University. Diseases of Ornamental Plants. September 1982 - November 1982.
- Research Associate, Department of Plant Pathology, The Pennsylvania State University. Effects of acidic precipitation on forest productivity. June 1982 - August 1982.
- Research Graduate Assistant, Department of Plant Pathology and Center for Air Environment Studies, The Pennsylvania State University. Plant Pathology. November 1976 - May 1982.
- Assistant Plant Pathologist, U.S. Dept. Agr. NE-ARS, University Park, PA. Research, field diagnosis, small grains crops. March 1976 - October 1976.

Research Experience (past five years):

- Canker diseases: Mechanisms of disease resistance, breeding for disease resistance with conventional methods and somaclonal variation, physiology of the host/parasite interaction, tissue culture, and integrated pest management.
- Fire blight: Disease prediction with Maryblyt; comparison of prediction models with receiver operating characteristic curve analysis; epidemiology of over-wintering; economic impact the disease.

- Apple scab: Control of apple scab with sterol-inhibiting and strobilurin fungicides, pre-infection and post-symptom effects, use of sterol-inhibiting fungicides in integrated pest management programs, influence of fungicides on apple orchard arthropods, role of sterol-inhibiting fungicides on overwintering of *V. inaequalis*, evaluation of fungicides, non-target effects of fungicides.
- Organic apple culture: Leader of a multidisciplinary team to investigate sustainable and organic systems for processing and fresh market apple production.

Grants received (as Principle Investigator or Co-Principle Investigator):

- Application of epidemiology to reducing fungicide requirements for controlling grey mold of strawberries and brown rot of stone fruits, from Ontario Ministry of the Environment, Pesticides Advisory Committee - \$1500, 1983.
- Application of epidemiology to reducing fungicide requirements for controlling grey mold of strawberries and brown rot of stone fruits, from Ontario Ministry of the Environment, Pesticides Advisory Committee - \$7200, 1984.
- Application of epidemiology to reducing fungicide requirements for controlling brown rot of stone fruits, from Ontario Ministry of the Environment, Pesticides Advisory Committee - \$6650, 1985.
- Control of the peach canker disease by application of chemicals to wounds, Strategic Research Grant from the Natural Sciences and Engineering Research Council - \$81,000, 1986.
- A rapid technique for obtaining *Cytospora* canker resistant peach plants, from Ontario Ministry of Agriculture and Food - \$149,000, 1987.
- N.S.F./A.P.S. Travel grant to attend the Fifth International Congress of Plant Pathology in Kyoto, Japan - \$1,000, 1988.
- Stimulating tree wounds to heal with new biochemicals, from International Society of Arboriculture Research Trust - \$2,000, 1988.
- Stimulating resistance to canker pathogens with application of calcium and other biochemicals, from International Society of Arboriculture Research Trust - \$2,500, 1992.
- Enhancement of wound defenses in fruit trees with biocontrol agents, U.S.D.A. SCA, - \$12,000, 1992.
- Canker development in apple as caused by the fire blight pathogen, *Erwinia amylovora*, West Virginia Tree Fruit Assessment Board - \$750, 1992.
- Predictive system for determining the pathogenic component of apple postharvest storability, State Horticultural Association of Pennsylvania - \$2,900, 1993.
- Stimulating resistance to pathogens with applications of calcium and other biochemicals, from West Virginia Tree Fruit Assessment Board - \$1,400, 1993.
- Canker development in apple as caused by the fire blight pathogen, *Erwinia amylovora*, from West Virginia Tree Fruit Assessment Board - \$1,000, 1993.
- Ecosystem-based management for processing apples, from the State Horticultural Association of Pennsylvania - \$4,000, 1994.
- Ecosystem-based management for processing apples, from the West Virginia Tree Fruit Assessment Board

- \$4,500, 1994.

- Alternative pest control strategies for the production of processing apples, from the State Horticultural Association of Pennsylvania - \$4,940, 1996.
- Alternative pest control strategies for the production of processing apples, from the West Virginia Tree Fruit Assessment Board - \$4,940, 1996.
- Alternative pest control strategies for the production of processing apples, National Research Initiative, Competitive Grants Program, USDA-CSRS - \$73,000, 1994 - 1997.
- Assessment of alternative and conventional IPM strategies for the production of apples for processing, Northeast IPM Special Grant Program, USDA-CSRS - \$31,000, 1995 - 1997.
- Reduced antibiotic use on apple with improved Maryblyt forecasting. Northeast IPM Special Grant Program, USDA-CSREES - \$186,000, 2001 - 2004 (co-principle investigator with W. Turecheck, Cornell University).
- Watershed Initiative for Fourth Graders. US Environmental Protection Agency - \$11,728, 2002 – 2003 (submitted and administered under the auspices of the Potomac Valley Audubon Society).
- Watershed Initiative for Fourth Graders. National Oceanographic and Atmospheric Association. - \$11,728, 2003 – 2004 (submitted and administered under the auspices of the Potomac Valley Audubon Society).
- Developing and implementing a web-based risk management system for organic apple growers in the eastern U.S. USDA – Risk Management Agency, \$438,738, 2003 – 2008 (co-principle investigator with M. Gleason, Iowa State University and Turner Sutton, North Carolina State University).
- Using Maryblyt to manage economic risks of fire blight. Northeast IPM Special Grant Program, USDA-CSREES - \$179,912, 2004 - 2007 (co-principle investigator with W. Turecheck, Cornell University).
- Site specific management of resistance (SMOR) in the control of apple scab: Final phase of development and implementation. Northeast IPM Special Grant Program, USDA-CSREES - \$167,824, 2005 - 2008 (co-principle investigator with W. Koeller, Cornell University).
- Development of an Extension Community of Practice (Cop) - Rootstocks and Apple Varieties For The Eastern States (RAVES), USDA-SCRI - \$496,663, 2010 – 2014. (Co-PI with E. Hoover, UMN and R. Marini, PSU).
- Various grants from agricultural chemical companies for field studies on the biology and control of orchard pathogens (approximately \$65,000 per year since 2009).

Supervisory Experience:

- Scientist-In-Charge (2009 – present), West Virginia University Tree Fruit Research and Education Center, coordinate the daily operation of the TFREC, including land and financial resource allocation, personnel relations, and maintenance of the facility. Supervise the daily operations of laboratory technicians, graduate and undergraduate students, and farm workers.
- Leadership Committee (1989 – 2008), West Virginia University Tree Fruit Research and Education Center, coordinate with committee members the daily operation of the TFREC including land and financial resource allocation, personnel relations, and maintenance of the facility. Supervise the daily operations of laboratory technicians and graduate and undergraduate students.

- Head of Plant Pathology Section, Vineland Research Station, administrate the research programs of a group of seven scientists; make decisions pertaining to land and financial resource allocation; participate with the Director in the annual scientist appraisal exercise; supervise the daily operations of a biologist, a postdoctoral scientist, two laboratory technicians, and two students; supervise the doctoral and masters theses of students at the University of Toronto and the University of Waterloo; supervise bachelors theses at Sir Wilfred Laurier University.

Teaching Experience:

- Instructor: Diseases of Ornamental Plants (1982)
- Teaching Assistant:
 - Pollution of Environmental Systems (1978)
 - Forest Pathology (1981)
 - Diagnosis of Plant Disease (1980)
 - Guest Lecturer in Other Courses
 - Group Leader on Mycological Forays (Public)
- Extension Plant Pathologist: Participate in annual state and regional fruit schools, integrated orchard management training sessions, and various county educational programs (1989 to present).
 - *The Orchard Monitor*. 1989 - present. Bi-weekly plant disease reports distributed to over 500 readers in the Mid-Atlantic region.
 - *Orchard Radio Program*. 1990 - 1996. 72 radio programs on orchard disease biology and control. Broadcast over 3 radio stations in Jefferson, Berkeley, and Hampshire Counties, West Virginia.
 - *Orchard Disease Updates*. 1990 - present. Bi-monthly orchard disease updates conducted at twilight meetings held in Jefferson, Berkeley, and Hampshire Counties, West Virginia.
 - *Kearneysville Tree Fruit Research and Education Center Web Site Updates* 1998 - present. Daily updates on disease conditions from April through August. Other updates as necessary.

Service:

- Review scientific manuscripts for various international journals, including *Phytopathology*, *Plant Disease*, *Canadian Journal of Botany*, *Canadian Journal of Plant Pathology*, *HortScience*, *Journal of the American Horticultural Society*, and *Biotechnic and Histochemistry*.
- Ontario Fruit Research Committee, Stone Fruit Subcommittee, Chair - 1989.
- Ontario Crop Protection Committee, Pome and Stone Fruit Subcommittee, Station Representative, 1983-1989.
- Ontario Fruit Research Committee, Pome Fruit Subcommittee 1983-1989.
- Land Planning Committee, Vineland Station, 1983-1989.
- Protected Environment Structure Committee, Hort. Res. Inst. of Ont., 1983-1989.
- Publications Committee, Ontario Ministry of Agriculture and Food, Plant Industry Branch, 1983-1989.
- Leadership Committee, West Virginia University, University Experiment Farm, 1989-present.
- Adjunct Professor, Department of Biology, Shepherd College, Shepherdstown, WV, 1993-present.
- Regional Tree Fruit Research and Education Planning Committee, Secretary - 1996.
- Board of Directors, Program Committee, Fund-raising Committee, Yankauer Nature Preserve Committee, Potomac Valley Audubon Society, 1999-present.
- Northeast Regional Pest Management Center, Commodity Working Group for Fruit, 2001-present.

Professional Society Activities:

- American Phytopathological Society (APS), Member
 - APS Publications Board, Chair (2003)
 - APS Governing Council (2001-2003)
 - Editor-in-Chief of *Plant Disease* (2001-2003)
 - Senior Editor of *Plant Disease* (1998-2000)

- Associate Editor of *Plant Disease* (1994-1996)
- Associate Editor of *Phytopathology* (1988-1990)
- Awards and Honors Committee, Lee M. Hutchins Award Subcommittee (1994-1996)
- Archives and History Awareness Committee, Member (1994-1996)
- Electronic Technology Advisory Committee, Member (1997-1999)
- Deciduous Tree Fruit Disease Workers, Member
 - Secretary, 1992
 - President, 1993
- Mycological Society of America (MSA), Member
- Expert Committee on Pesticide Use in Agriculture, Pesticide Research Report, Editor--Fruit tree diseases (Agriculture Canada, 1984-1989).
- West Virginia State Horticultural Society
 - Program Committee
 - Apple Task Force, Education Subcommittee
 - Research and Extension Advisory Committee
 - Board of Directors, 2007 - Present
- Virginia State Horticultural Society, 1995 Annual Meeting Planning Committee
- Cumberland-Shenandoah Fruit Workers, Member, 1989 - present; General Chair, 1993

Consulting Activities:

- Subconsultant for Dr. D. D. Davis for the Pennsylvania Department of Environmental Resources: In depth field evaluation and diagnosis (fluoride air pollution) (1978 -1981).
- Subconsultant for Dr. D. D. Davis for Kawecki-Berylco Industries, Boyertown, Pennsylvania: In depth field evaluation and diagnosis (fluoride air pollution) (1982).
- Subconsultant for Davis, Hutnik, and Wood to determine the sulfur content of foliage collected for the Pennsylvania Electric Company and other utilities (sulfur dioxide air pollution) (1978 - 1982).
- Various contracts with National Park Service to identify molds on historical artifacts.

Awards and Honors:

- West Virginia University, Division of Plant and Soil Sciences, Award for Outstanding Service, Academic Year 2002 – 2003, for an outstanding record of service to the University, state and community.
- Secretary's **Group Honor Award for Excellence** from the Secretary of Agriculture, U.S. Department of Agriculture, for the project "NE-1006: Eradication, Containment and/or Management of Plum Pox Disease (Sharka)." This award was presented to all members of the project team; received in June, 2002. This is the highest award bestowed by the U.S. Department of Agriculture and is for exhibiting exemplary performance in work relating to USDA's mission, the nation, and public service.
- Secretary's **Group Honor Award for Excellence** from the Secretary of Agriculture, U.S. Department of Agriculture, for the project "NE-183: Multidisciplinary evaluation of new apple cultivars." This award was presented to all members of the project team; received in June, 2001. This is the highest award bestowed by the U.S. Department of Agriculture and is for exhibiting exemplary performance in work relating to USDA's mission, the nation, and public service.
- **Lee M. Hutchins Award** from the American Phytopathological Society. This award is presented annually and recognizes the best contribution, presented in one or more full-length papers, in research on diseases of perennial fruit plants; received in 1993.

Publications and Presentations:

Refereed Publications in Scientific Journals:

1. Biggs, A. R. and D. D. Davis. 1980. Stomatal response of three birch species exposed to varying acute doses of SO₂. *J. Amer. Hort. Soc.* 105(4):514-516.
2. Biggs, A. R. and D. D. Davis. 1981. Sulfur dioxide injury, sulfur content, and stomatal conductance of birch foliage. *Can. J. For. Res.* 11:69-72.
3. Biggs, A. R. and D. D. Davis. 1981. Effect of sulfur dioxide on growth and sulfur content of hybrid poplar. *Can. J. For. Res.* 11:830-833.
4. Biggs, A. R. and D. D. Davis. 1982. Effects of sulfur dioxide on water relations of hybrid poplar foliage and bark. *Can. J. For. Res.* 12:612-616.
5. Biggs, A. R., D. D. Davis, and W. Merrill. 1983. Stage of growth and restriction of wound-associated infections in *Populus*. *Can. J. Plant Pathol.* 5:269-272.
6. Biggs, A. R., D. D. Davis, and W. Merrill. 1983. Histology of cankers on *Populus* caused by *Cytospora chrysosperma*. *Can. J. Bot.* 61:563-574.
7. Biggs, A. R. 1984. Intracellular suberin: occurrence and detection in tree bark. *Int. Assoc. Wood Anat. Bull. n.s.* 5:243-248.
8. Biggs, A. R., W. Merrill, and D. D. Davis. 1984. Response of bark tissues to injury and infection. *Can. J. For. Res.* 14:351-356.
9. Biggs, A. R. 1984. Boundary zone formation in peach bark in response to wounds and *Cytospora leucostoma* infection. *Can. J. Bot.* 62:2814-2821.
10. Biggs, A. R. 1985. Detection of impervious tissue in tree bark with selective histochemistry and fluorescence microscopy. *Stain Technol.* 60:299-304.
11. Biggs, A. R. and J. Northover. 1985. Sources of brown rot inoculum in Ontario peach orchards. *Can. J. Plant Pathol.* 7:302-307.
12. Biggs, A. R. and N. W. Miles. 1985. Suberin deposition as a measure of wound response in peach bark. *HortScience* 20:902-905.
13. Biggs, A. R. 1985. First report of *Nectria galligena* causing European canker of apple in Ontario. *Plant Disease* 69:1007 (Note).
14. Biggs, A. R. 1985. Suberized boundary zones and the chronology of wound response in tree bark. *Phytopathology* 75:1191-1195.
15. Biggs, A. R. and J. Northover. 1985. Formation of the primary protective layer and phellogen following leaf abscission in peach. *Can. J. Bot.* 63:1547-1550.
16. Biggs, A. R. and R.A. Cline. 1986. Influence of irrigation on wound response in peach bark. *Can. J. Plant Pathol.* 8:405-408.
17. Biggs, A. R. 1986. Phellogen regeneration in injured peach tree bark. *Annals of Botany* 57: 463-470.
18. Biggs, A. R. 1986. Prediction of lignin and suberin deposition in boundary zone tissue of wounded tree bark using accumulated degree days. *J. Amer. Soc. Hort. Sci.* 111: 757-760.
19. Biggs, A. R. 1986. Comparative anatomy and host response of two peach cultivars inoculated with

- Leucostoma cincta* and *L. personii*. *Phytopathology* 76: 905-912.
20. Biggs, A. R. and L.W. Stobbs. 1986. Fine structure of the suberized cell walls in the boundary zone and necrophylactic periderm in wounded peach bark. *Can. J. Bot.* 64: 1606-1610.
 21. Biggs, A. R. 1986. Wound age and infection of peach bark by *Cytospora leucostoma*. *Can. J. Bot.* 64: 2319-2321.
 22. Biggs, A. R. and J. Warner. 1987. Control of primary and secondary apple scab infections with sterol-inhibiting fungicides. *Can. J. Plant Pathol.* 9:41-48.
 23. Biggs, A. R. 1987. Occurrence and location of suberin in wound reaction zones in xylem of seventeen tree species. *Phytopathology* 77:718-725.
 24. Rittinger, P.A., A. R. Biggs, and D.R. Peirson. 1987. Histochemistry of lignin and suberin deposition in boundary layers formed after wounding in various plant species and organs. *Can. J. Bot.* 65:1886-1982.
 25. Biggs, A. R. and E.A.C. Hagley. 1988. Effects of two sterol-inhibiting fungicides on populations of pest and beneficial arthropods on apple. *Agriculture, Ecosystem, and Environment* 20:235-244.
 26. Biggs, A. R. and N. W. Miles. 1988. Association of suberin formation in noninoculated wounds with susceptibility to *Leucostoma cincta* and *L. personii* in various peach cultivars. *Phytopathology* 78:1070-1074.
 27. Biggs, A. R. and J. Northover. 1988. Early and late season susceptibility of peach fruits to *Monilinia fructicola*. *Plant Disease* 72:1070-1074.
 28. Biggs, A. R. and K.O. Britton. 1988. Presymptom histopathology of peach trees inoculated with *Botryosphaeria obtusa* and *Botryosphaeria dothidea*. *Phytopathology* 78:1109-1118.
 29. Biggs, A. R. and J. Northover. 1988. Influence of temperature and wetness duration on infection of peach and cherry fruit by *Monilinia fructicola*. *Phytopathology* 78:1352-1356.
 30. Biggs, A. R. and J. Northover. 1989. Association of epidermal characters with resistance to brown rot in sweet cherry. *HortScience* 24:126-127.
 31. Hagley, E.A.C., and A. R. Biggs. 1989. Effects of three fungicides on populations of a phytophagous and several predacious mites (Acarina) on apple. *Experimental and Applied Acarology* 6:253-256.
 32. Biggs, A. R. 1989. Temporal changes in the infection court following wounding of peach bark are associated with cultivar variation in infection by *Leucostoma personii*. *Phytopathology* 79:627-630.
 33. Biggs, A. R. 1989. Pruning technique affects *Leucostoma* infection and wound closure in peach trees. *Plant Disease* 73:771-773.
 34. Biggs, A. R. 1989. Integrated control of *Leucostoma* canker of peach in Ontario. *Plant Disease* 73:869-874.
 35. Biggs, A. R. and J. Warner. 1990. Full-season and post-harvest applications of sterol-inhibiting fungicides reduce ascospore formation in *Venturia inaequalis*. *Phytoprotection* 71:9-15.
 36. Biggs, A. R. 1990. Managing wound-associated diseases by understanding wound healing in the bark of woody plants. *J. Arboric.* 16:108-112.
 37. Northover, J. and A. R. Biggs. 1990. Susceptibility of immature and mature sweet and sour cherries to *Monilinia fructicola*. *Plant Disease* 74:280-284.

38. Biggs, A. R. and C.A. Peterson. 1990. Effects of chemicals applied to peach bark wounds on accumulation of lignin and suberin and susceptibility to *Leucostoma personii*. *Phytopathology* 80:861-865.
39. Biggs, A. R. 1990. Reduction in transpiration and return bloom in apples by two sterol-inhibiting fungicides. *HortScience* 25:1403-1405.
40. Svircev, A.M., A. R. Biggs, and N. W. Miles. 1991. Isolation, purification, and characterization of a phytotoxin from liquid cultures of *Leucostoma cincta* and *L. personii*. *Can. J. Bot.* 69:1998-2003.
41. Biggs, A. R. 1991. Leaf abscission kinetics of peach cultivars and clones in relation to peach canker disease. *Can. J. Bot.* 69:2020-2025.
42. Biggs, A. R., N. W. Miles, and R.L. Bell. 1992. Heritability of suberin accumulation in wounded peach bark. *Phytopathology* 82:83-86.
43. Biggs, A. R. and G. Alm. 1992. Response of peach bark tissues to inoculation with epiphytic fungi alone and combination with *Leucostoma cincta*. *Can. J. Bot.* 70:186-191.
44. Schneider, K.E., D. Speranzini, and A. R. Biggs. 1992. Ontogeny of shoot regenerants on excised immature peach embryos. *Can. J. Plant Sci.* 72:497-506.
45. Svircev, A.M., A. R. Biggs, and N. W. Miles. 1993. Peach regeneration from callus derived from embryos of selected cultivars. *Fruit Var. J.* 47:13-18.
46. Hagley, E.A.C., A. R. Biggs, G.E. Timbers, and J. Cotu-Sundy. 1993. Effect of the age of the puparium of the apple maggot, *Rhagoletis pomonella* (Walsh) (Diptera:Tephritidae), on parasitism by *Phygadeuon Wiesmanni* Sachtl. (Hymenoptera:Ichneumonidae). *Can. Ent.* 125:721-724.
47. Biggs, A. R. 1993. Water relations of various peach cultivars in relation to peach canker disease. *HortScience* 28:939-941.
48. Goodin, M.M., A. R. Biggs, and A.M. Castle. 1993. Changes in levels and isozymes of peroxidase in wounded peach bark. *Fruit Var. J.* 47:185-192.
49. Biggs, A. R., L.M. Ingle, and W.D. Solihati. 1993. Control of *Alternaria* rot of Nittany apple fruit with calcium chloride and fungicides. *Plant Disease* 77:976-980.
50. van der Zwet, T., A. R. Biggs, R. Heflebower, and G.W. Lightner. 1994. Evaluation of the MARYBLYT computer model for predicting blossom blight on apple in West Virginia and Maryland. *Plant Disease* 78:225-230.
51. Hogmire, H. W. and A. R. Biggs. 1994. A reduced pesticide program for peaches based on tree phenology. *Crop Protection* 13:277-280.
52. Biggs, A. R. 1994. Mycelial growth, sporulation, and virulence to apple fruit of *Alternaria alternata* strains resistant to iprodione. *Plant Disease* 78:732-735.
53. Biggs, A. R. 1994. Characteristics of fire blight cankers following shoot inoculations of three apple cultivars. *HortScience* 29:795-797.
54. Biggs, A. R., J. B.Kotcon, T. A. Baugher, A. R. Collins, D. M. Glenn, H. W. Hogmire, R. E. Byers, A. J. Sexstone, and G.W. Lightner. 1994. Comparison of corn and fescue rotations on pathogenic nematodes, nematode biocontrol agents, and soil structure and fertility on an apple replant site. *J. Sustain. Agric.* 4:39-56.

55. Biggs, A. R., M. El-Kholi, and S. El-Neshawy. 1994. Effect of calcium salts on growth, pectic enzyme activity, and colonization of peach twigs by *Leucostoma personii*. *Plant Disease* 79:886-890.
56. Northover, J. and A. R. Biggs. 1995. Effect of conidial concentration of *Monilinia fructicola* on brown rot development in cherries. *Can. J. Plant Pathol.* 17:205-214.
57. Biggs, A. R. 1995. Detecting latent infections in apple fruit with paraquat. *Plant Disease* 79:1062-1067.
58. Baugher, T. A., Hogmire, H. W., Biggs, A. R., Lightner, G. W., Walter, S.I., Leach, D.W., and Winfield, T. 1996. Packout audits of apples from five orchard management systems. *Hort Technology* 6:34-41.
59. Biggs, A. R. 1997. Genetic and temporal variation in abscission zone formation in peach leaves in relation to peach canker disease. *Can J. Bot.* 75:717-722.
60. Biggs, A. R., M. El-Kholi, S. El-Neshawy, and R. Nickerson. 1997. Effect of calcium salts on growth, polygalacturonase activity, and colonization of peach fruit by *Monilinia fructicola*. *Plant Disease* 81:399-403.
61. Biggs, A. R., and R. Scorza. 1997. Increased suberin accumulation in peach x almond hybrids. *HortScience* 32(4):717-718.
62. Biggs, A. R., T. A. Baugher, J. B. Kotcon, D. M. Glenn, A. R. Collins, A. J. Sexstone, H. W. Hogmire, R. E. Byers and G.W. Lightner. 1997. Growth, establishment and nitrogen utilization of four apple cultivars following rotation with corn or killed sod. *Amer. J. Alt. Agric.* 12:162-172.
63. Biggs, A. R. and G. G. Grove. 1998. Role of the World Wide Web in Extension plant pathology: Case studies in tree fruits and grapes. *Plant Disease* 82:153-165.
64. Biggs, A. R. 1999. Effects of calcium salts on apple bitter rot caused by two *Colletotrichum* spp. *Plant Disease* 83:1001-1005.
65. Biggs, A. R., Henry W. Hogmire, and A. R. Collins. 2000. Assessment of an alternative IPM program for the production of apples for processing. *Plant Disease* 84:1140-1146.
66. Biggs, A. R. and S. S. Miller. 2001. Relative susceptibility of selected apple cultivars to *Colletotrichum acutatum*. *Plant Disease* 85:657-660.
67. Biggs, A. R. and S. S. Miller. 2003. Relative susceptibility of selected apple cultivars to *Botryosphaeria dothidea*. *HortScience* 38:400-403.
68. Biggs, A. R. 2004. Effect of inoculum concentration and calcium salts on infection of apple fruit by *Botryosphaeria dothidea*. *Plant Disease* 88:147-151.
69. Biggs, A. R. and S. S. Miller. 2004. Relative susceptibility of selected apple cultivars to *Botryosphaeria obtusa*. *HortScience* 39:303-306.
70. Biggs, A. R. and S.S. Miller. 2005. Relative susceptibility of NE-183 apple cultivars to fruit rot pathogens in West Virginia. *Journal of the American Pomological Society.* 59: 72-77.
71. Biggs, A.R and N. W. Miles. 2005. Variation in wound healing and resistance to *Leucostoma personii* in peach derived from embryo culture. *HortScience* 40:1585-1586.
72. Biggs, A. R. and Grove, G. G. 2006. Leucostoma canker of stone fruits. *The Plant Health Instructor*. DOI: 10.1094/PHI-I-2005-1220-01.

73. Grove, G. G. and Biggs, A. R. 2006. Production and dispersal of conidia of *Leucostoma cinctum* in peach and cherry orchards under irrigation in Eastern Washington. *Plant Disease* 90:587-591.
74. Dewdney, M. M., Biggs, A. R., and Turechek, W. W. 2007. A statistical comparison of the blossom blight forecasts of Maryblyt and Cougarblight with receiver operating characteristic (ROC) curve analysis. *Phytopathology* 97: 1164-1176.
75. Biggs, A. R., Turechek, W. W., and Gottwald, T. R. 2008. Analysis of fire blight shoot infection epidemics on four apple cultivars. *Plant Disease* 92:1349-1356.
76. Sugimoto, T., K. Watanabe, S. Yoshida, M. Aino, K. Irie, and Biggs, A. R. 2008. Select calcium compounds reduce *Phytophthora* stem rot disease of soybean. *Plant Disease* 92:1559-1565.
77. Biggs, A. R., Rosenberger, D. A., Yoder, K. S., Kiyomoto, R. K., Cooley, D. R., and Sutton, T. B. 2009. Relative susceptibility of selected apple cultivars to cedar apple rust and quince rust. *Plant Health Progress* doi:10.1094/PHP-2009-1014-01-RS. (This article was the Plant Health Progress "Editor's Pick" to highlight Key Research in APS News Capsule #282).
78. Biggs, A. R., Yoder, K. S., and Rosenberger, D. A. 2009. Relative susceptibility of selected apple cultivars to powdery mildew caused by *Podosphaera leucotricha*. *Plant Health Progress* doi:10.1094/PHP-2009-1119-01-RS.
79. Biggs, A. R., and Turechek, W. W. 2010. Fire blight of apples and pears: epidemiological concepts comprising the Maryblyt forecasting program. Online. *Plant Health Progress* doi:10.1094/PHP-2010-0315-01-RS.
80. Biggs, A. R., Sundin, G., Rosenberger, D. A., Yoder, K. S., and Sutton, T. B. 2010. Relative susceptibility of selected apple cultivars and selections to apple scab caused by *Venturia inaequalis*. *Plant Health Progress* doi:10.1094/PHP-2010-0408-01-RS.
81. Sugimoto, T., Watanabe, K., Yoshida S., Aino M., Furiki, M., Shiono, M., Matoh, T., and Biggs A. R. 2010. Field experiments with two calcium compounds that reduce *Phytophthora* stem rot disease of soybean, and calcium distribution in plants using scanning electron microscope analysis. *Plant Disease* 94:812-819.
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6. Biggs, A. R. 1991. Pruning peach trees to reduce the incidence of Cytospora canker disease. The Mountaineer Grower 504:10-12.
7. Biggs, A. R. 1991. Some management strategies for summer apple diseases. The Mountaineer Grower 510:3-5.
8. Kotcon, J. B., T. A. Baugher, A. J. Sexstone, A. R. Biggs, H. W. Hogmire, and A. R. Collins. 1992. Alternative processing apple production systems and impacts on ground water quality. The Mountaineer Grower 512:15-20.
9. Biggs, A. R., J. B. Kotcon, T. A. Baugher, A. R. Collins, D. M. Glenn, H. W. Hogmire, R. E. Byers, A. J. Sexstone, C.D. Monks, M.L. McFarland, and G.W. Lightner. 1993. The West Virginia University ecosystem project for processing apples. The Mountaineer Grower 521:4-16.
10. Biggs, A. R., L. M. Ingle, W.D. Solihati, and B. Bergman. 1994. Calcium chloride for the control of Alternaria rot on Nittany apples. The Mountaineer Grower 525:4-21.
11. Hogmire, H. W. and A. R. Biggs. 1994. A reduced pesticide program for peach based on tree phenology. Pennsylvania Fruit News 74:22-28.
12. Biggs, A. R. 1995. Use of calcium-based materials for the control of tree fruit diseases. The Mountaineer Grower 531:14-24.
13. Biggs, A. R. 1995. Use of calcium-based materials for the control of tree fruit diseases. Virginia Fruit 83:(9)20-23.
14. Biggs, A. R. 1998. Integrated management of apple bitter rot and the role of calcium in disease

- suppression. *The Mountaineer Grower* 549:13-17.
15. Biggs, A. R. 1999. Management of *Leucostoma* canker and the role of infection court dynamics. *Proc. Michigan State Horticultural Society* 128:27-31.
 16. Biggs, A. R. 1999. Alternatives for apple pest management in processing orchards. *Proc. Michigan State Horticultural Society* 128:18-26.
 17. Biggs, A. R., H. W. Hogmire, and A. R. Collins. 1999. Strategies for apple pest management in processing orchards. *The Mountaineer Grower* 558:4-23.
 18. Biggs, A. R., H. W. Hogmire, and A. R. Collins. 1999. Conventional and alternative strategies for apple pest management in processing orchards. *Virginia Fruit* 12:85-88.
 19. Biggs, A. R. and S. S. Miller. 2000. Relative susceptibility to bitter rot of selected apple cultivars from NE-183 field trials. *The Mountaineer Grower* 562:6-15.
 20. Biggs, A. R. 2001. Tree Fruit Disease Information at West Virginia University: Web Site Activity, 1997 - 2000. Instructional Technology Symposium 2001. International Society of Plant Pathology. Massey University, Auckland, New Zealand (online electronic symposium - invited presentation).
 21. Biggs, A. R., H. W. Hogmire, and A. R. Collins. 2000. Assessment of an Alternative IPM Program for the Production of Apples for Processing: Part 1. *Pennsylvania Fruit News* 80 (10):12-18.
 22. Biggs, A. R., H. W. Hogmire, and A. R. Collins. 2000. Assessment of an Alternative IPM Program for the Production of Apples for Processing: Part 2. *Pennsylvania Fruit News* 80 (11):18-21.
 23. Biggs, A. R., H. W. Hogmire, and A. R. Collins. 2001. Assessment of an Alternative IPM Program for the Production of Apples for Processing: Part 3. *Pennsylvania Fruit News* 81:12-16.
 24. Biggs, A. R. 2001. Tree fruit disease information at West Virginia University: web site activity 1997-2001. Invited, peer-reviewed electronic symposium presentation by the Teaching Committee of the International Society for Plant Pathology (ISPP) on the use of instructional technology in plant pathology; hosted by Massey University; June 16 - 23, 2001.
 25. Biggs, A. R. 2007. Summer rot diseases: background, control and alternatives. *Pennsylvania Fruit News* 87:57-70.
 26. Biggs, A. R. 2007. Management of black rot, white rot and bitter rot of apples with sanitation, fungicides, cultural practices, and host resistance. *The Mountaineer Grower* 588:4-18.
 27. Biggs, A. R. 2009. WVU Orchard Management Extension Programs: Survey Results. *The Mountaineer Grower* 596:12-19.
 28. Hogmire, H. W., Biggs, A. R., Chandran, R. S., and Miller, S. S. 2009. NRCS – EQIP Tree Fruit IPM Program. *The Mountaineer Grower* 597:5-12.
 29. Biggs, A. R., and Sutton, T. B. 2010. Disease management for fire blight. Proceedings of the Southeastern Apple Growers Meeting. Asheville, NC. Jan. 12 – 13, 2010.
 30. Biggs, A. R. 2010. A Guide for Disease Management Decisions Using Maryblyt™. *The Mountaineer Grower* 599:6-15.
 31. Dewdney, M. M., Aldwinckle, H. S., Biggs, A. R., and Turechek, W. W. 2010. Recent Advances in Fire Blight Blossom Infection Epidemiology. *The Mountaineer Grower* 600:6-11.

Invited Presentations without Published Proceedings:

1. Biology and control of blister spot on Mutsu. Norfolk and Brant Apple Day Program. Simcoe Hortic. Expt. Stn. Feb. 3, 1984.
2. Peach canker research. HRIO Twilight Grower's Tour, Vineland Station, Ontario. Aug. 22, 1984.
3. Apple canker research. Northumberland County Apple Growers Meeting. Port Hope, Ontario. December 12, 1985.
4. Progress in peach canker research. Niagara Peninsula Fruit and Vegetable Grower's Association. December 4, 1986.
5. Controlling black knot of plum. HRIO Plum Growers Tour, Vineland Station, Ontario. August 10, 1987.
6. Peach canker and brown rot research. Presented to Niagara Peninsula Fruit and Vegetable Association, Research Committee, April 15, 1988.
7. Orchard disease control. Northern Panhandle Spring Tree Fruit School. Wheeling, WV. March 15, 1990.
8. Current topics on plant disease control: A forum. 1990 West Virginia Winter Fruit School. Peterkin Conference Center, Romney, WV. March 27, 1990.
9. Current topics on plant disease control: A forum. 1990 West Virginia Winter Fruit School. WVU Experiment Farm, Kearneysville, WV. March 28, 1990.
10. Disease identification, monitoring and management. Integrated Orchard Management Training Program, Kearneysville, WV, March 29, 1990.
11. Pest management in intensive apple systems. 1990 Mid-Atlantic Regional Extension Fruit School, Priest Field Pastoral Center, Middleway, WV. October 30 -November 1, 1990.
12. Disease identification, monitoring and management. Integrated Orchard Management Training Program, Kearneysville, WV, March 14, 1991.
13. Update on tree fruit fungicides. West Virginia Category 10 Demonstration and Workshop. Morgantown, WV. July 1, 1991.
14. Management strategies for summer apple diseases. 1991 Mid-Atlantic Regional Extension Fruit School, Priest Field Pastoral Center, Middleway, WV. November 12 - 14, 1991.
15. Alternative management strategies for processing apple orchards (panel member). West Virginia State Horticultural Society Annual Meeting. Martinsburg, WV. Feb 5, 1992.
16. Disease identification, monitoring and management. Integrated Orchard Management Training Program, WVU Experiment Farm, Kearneysville, WV. March 4, 1992.
17. Disease identification, monitoring and management. Integrated Orchard Management Training Program, Hampshire Co. High School, Romney, WV. March 5, 1992.
18. Peach diseases: identification, monitoring, and control. 1992 Mid-Atlantic Regional Extension Fruit School, St. Pius Retreat House, Blackwood, NJ. November 4 - 6, 1992.

19. Proper use of the EBDC fungicides in 1993. 1993 West Virginia Winter Fruit School. WVU Experiment Farm, Kearneysville, WV. March 9, 1993.
20. Disease identification, monitoring and management. Integrated Orchard Management Training Program, WVU Experiment Farm, Kearneysville, WV. March 10, 1993.
21. Monitoring equipment, supplies and procedures for diseases. Integrated Orchard Management Training Program, WVU Experiment Farm, Kearneysville, WV. March 10, 1993.
22. Disease identification, monitoring and management. Integrated Orchard Management Training Program, Hampshire Co. High School, Romney, WV. March 12, 1993.
23. Monitoring equipment, supplies and procedures for diseases. Integrated Orchard Management Training Program, Hampshire Co. High School, Romney, WV. March 12, 1993.
24. Proper use of the EBDC fungicides in 1993. 1993 West Virginia Winter Fruit School. Peterkin Conference Center. Romney, WV. March 25, 1993.
25. The role of calcium in fruit tree disease control. 1993 Mid-Atlantic Regional Extension Fruit School, December 1 - 2, 1993, Holiday Inn, Winchester, VA.
26. The influence of canopy architecture in high density orchards on insect and disease control. 1993 Mid-Atlantic Regional Extension Fruit School, December 1 - 2, 1993, Holiday Inn, Winchester, VA.
27. Managing Cytospora canker in peach orchards. 1994 South Jersey Tree Fruit School, Luccien's Manor, Berlin, NJ. February 24, 1994.
28. Potential use of calcium for control of peach diseases. 1994 South Jersey Tree Fruit School, Luccien's Manor, Berlin, NJ. February 24, 1994.
29. Disease identification, monitoring and management. Integrated Orchard Management Training Program, WVU Experiment Farm, Kearneysville, WV. March 15, 1994.
30. Managing fire blight in high risk situations. 1994 West Virginia Winter Fruit School. WVU Experiment Farm, Kearneysville, WV. March 16, 1994.
31. Managing peach orchards after the '94 arctic express (panel member). 1994 West Virginia Winter Fruit School. WVU Experiment Farm, Kearneysville, WV. March 16, 1994.
32. Managing fire blight in high risk situations. 1994 West Virginia Winter Fruit School. Hampshire Co. High School, Romney, WV. March 17, 1994.
33. Managing peach orchards after the '94 arctic express (panel member). 1994 West Virginia Winter Fruit School. Hampshire Co. High School, Romney, WV. March 17, 1994.
34. Disease identification, monitoring and management. Integrated Orchard Management Training Program, Hampshire Co. High School, Romney, WV. March 31, 1994.
35. Disease identification and management. West Virginia County Extension Agent In-service Training, University Experiment Farm, Kearneysville, WV. April 13, 1994.
36. Control of Apple Diseases in 1995. Maryland Tree Fruit School, Western Maryland Research and Education Center, Keedysville, MD. February 8, 1995.
37. The West Virginia University ecosystem project for processing apples: The establishment phase. 1995

West Virginia Winter Fruit School, WVU Experiment Farm, Kearneysville, WV. March 8, 1995.

38. Apple disease control in 1995. 1995 West Virginia Winter Fruit School, WVU Experiment Farm, Kearneysville, WV. March 8, 1995.
39. The West Virginia University ecosystem project for processing apples: The establishment phase. 1995 West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 23, 1995.
40. Apple disease control in 1995. 1995 West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 23, 1995.
41. Comparison of MaryBlyt with the Penn State system for the management of fire blight. 1996 Fire Blight Fruit School, Lancaster County Extension Office, Lancaster, PA. January 23, 1996.
42. Control of tree fruit diseases in 1996. West Virginia Winter Fruit School, WVU Experiment Farm, Kearneysville, WV. March 12-13, 1996.
43. Control of tree fruit diseases in 1996. West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 28, 1996.
44. The West Virginia University alternative processing apple production project. West Virginia Winter Fruit School, WVU Experiment Farm, Kearneysville, WV. March 12-13, 1996.
45. The West Virginia University alternative processing apple production project. West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 28, 1996.
46. Increased suberin accumulation in peach x almond hybrids. 37th Northeastern Forest Pathology Workshop, Camp Round Meadow, Catoctin Mountain park, MD. May 17, 1996.
47. Disease incidence and severity in conventional and alternative pest management systems. Deciduous Tree Fruit Disease Workers Workshop, Indianapolis, IN. July 25, 1996.
48. Bitter Rot: Control and Alternative Strategies. West Virginia Winter Fruit School, WVU Experiment Farm, Kearneysville, WV. March 12, 1997.
49. Control and Alternative Strategies for Bitter Rot. West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 27, 1997.
50. Control of Tree Fruit Diseases in 1997. West Virginia Winter Fruit School, WVU Experiment Farm, Kearneysville, WV. March 12, 1997.
51. 1997 Tree Fruit Disease Management. West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 27, 1997.
52. The West Virginia Fruit Web Site. Maryland/Delaware Peach School. Houghton Laboratory, Wye Research and Education Center, Queenstown, MD, February 10, 1998.
53. The WVU Experiment Farm Web Site: What can it do for you? West Virginia Winter Fruit School, WVU Experiment Farm, Kearneysville, WV. March 12, 1998.
54. What Can the WVU Experiment Farm Web Site do for you? West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 26, 1998.
55. Control of tree fruit diseases in 1998. West Virginia Winter Fruit School, WVU Experiment Farm, Kearneysville, WV. March 12, 1998.

56. 1998 Tree fruit disease management. West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 26, 1998.
57. Peach canker management. Niagara Peninsula Fruit and Vegetable Growers Association, St. Catharines, Ontario, February 26, 1999.
58. Control of tree fruit diseases in 1999. West Virginia Winter Fruit School, WVU Experiment Farm, Kearneysville, WV. March 18, 1999.
59. Biology and control of apple scab. West Virginia Winter Fruit School, WVU Experiment Farm, Kearneysville, WV. March 18, 1999.
60. Tree fruit disease management in 1999. West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 25, 1999.
61. Biology and control of apple scab. West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 25, 1999.
62. Fruit disease management with strobilurin fungicides. West Virginia Winter Fruit School, WVU TFREC, Kearneysville, WV. March 14, 2000.
63. Suppression of tree fruit diseases with calcium. Winchester In-depth Fruit School. Virginia Tech AREC, Winchester, Va. March 22, 2000.
64. Management of fruit diseases with strobilurin fungicides. West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 23, 2000.
65. Current status of plum pox disease in Pennsylvania. West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 23, 2000.
66. Biology and epidemiology of plum pox. Mid-Atlantic Regional Plum Pox Fruit School 2000. Biglerville, Pa. April 11, 2000.
67. Biology and epidemiology of summer rot diseases. Western Maryland Fruit Growers Meeting. Keedysville, Md. February 13, 2001.
68. Status of plum pox in the mid-Atlantic region. Western Maryland Fruit Growers Meeting. Keedysville, Md. February 13, 2001.
69. Suppression of fire blight with the plant growth regulator Apogee. West Virginia Winter Fruit School, WVU TFREC, Kearneysville, WV. March 21, 2001.
70. Biology, monitoring and management of summer rot diseases on apple. West Virginia Winter Fruit School, WVU TFREC, Kearneysville, WV. March 21, 2001.
71. Fire blight suppression with prohexadione calcium (Apogee). West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 22, 2001.
72. Summer disease management for apples in 2001. West Virginia Winter Fruit School, Hampshire Co. High School, Romney, WV. March 22, 2001.
73. Alternative and organic pest management for processing apples. Winchester Area Commercial Fruit Production School. Winchester, VA. February 15, 2002.
74. Control of tree fruit diseases in 2002. West Virginia Winter Fruit School, WVU - KTFREC, Kearneysville,

WV. March 13, 2002.

75. Tree fruit disease management in 2002. West Virginia Winter Fruit School, Romney, WV. March 14, 2002.
76. Blueberry Diseases: Biology and Management. WMREC Regional Fruit Growers Meeting; Virginia, West Virginia, Maryland; Thursday, February 27, 2003.
77. Fire Blight: Surviving 2002 and Anticipating 2003. WMREC Regional Fruit Growers Meeting; Virginia, West Virginia, Maryland; Thursday, February 27, 2003.
78. Tree Fruit Disease Management Update. WMREC Regional Fruit Growers Meeting; Virginia, West Virginia, Maryland; Thursday, February 27, 2003.
79. Management of fire blight in apple orchards with severe disease in the previous year. West Virginia Winter Fruit School, WVU - KTFREC, Kearneysville, WV. March 12, 2003.
80. Fire blight management in 2003. West Virginia Winter Fruit School, Romney, WV. March 13, 2003.
81. Control of tree fruit diseases in 2003. West Virginia Winter Fruit School, WVU - KTFREC, Kearneysville, WV. March 12, 2003.
82. Tree fruit disease management in 2003. West Virginia Winter Fruit School, Romney, WV. March 13, 2003.
83. Apple scab management in 2004. WMREC Regional Fruit Growers Meeting; Virginia, West Virginia, Maryland; Thursday, February 26, 2004.
84. Tree fruit disease management update. WMREC Regional Fruit Growers Meeting; Virginia, West Virginia, Maryland; Thursday, February 26, 2004.
85. Managing apple scab following the 2003 epidemic. West Virginia Winter Fruit School, WVU - KTFREC, Kearneysville, WV. March 17, 2004.
86. New disease management options for 2004. West Virginia Winter Fruit School, WVU - KTFREC, Kearneysville, WV. March 17, 2004.
87. Improving apple scab management in 2004. West Virginia Winter Fruit School, Romney, WV. March 18, 2004.
88. Why was apple scab so severe in 2003 and what can we do about it in 2004. West Virginia Winter Fruit School, Romney, WV. March 18, 2004.
89. Organic disease management for apples in West Virginia. WMREC Regional Fruit Growers Meeting; Virginia, West Virginia, Maryland; Thursday, February 23, 2006.
90. Tree fruit disease management update. WMREC Regional Fruit Growers Meeting; Virginia, West Virginia, Maryland; Thursday, February 23, 2006.
91. New disease management options for 2006. West Virginia Winter Fruit School, WVU - KTFREC, Kearneysville, WV. March 8, 2006.
92. New options for disease management in 2006. West Virginia Winter Fruit School, Romney, WV. March 9, 2006.

93. Improvements in disease management for the 2007 growing season. West Virginia Winter Fruit School, WVU - KTFREC, Kearneysville, WV. March 14, 2007.
94. Pome and stone fruit disease management in 2007. West Virginia Winter Fruit School, Romney, WV. March 15, 2007.
95. How to identify, assess status, and make management decisions for major orchard insects and diseases. Virginia Fruit and Vegetable Growers Conference. January 22, 2008 (Panel participant).
96. Disease management options for 2008. West Virginia Winter Fruit School, WVU - KTFREC, Kearneysville, WV. March 5, 2008.
97. Disease management in 2008: Some new approaches to old problems. West Virginia Winter Fruit School, Romney, WV. March 6, 2008.
98. Calcium disorders and their relation to fruit rot incidence in 2007. Virginia Winter Fruit School, Winchester, VA March 7, 2008.
99. Assessing Web site activity with Google Analytics. Annual Meeting of the 84th Cumberland-Shenandoah Fruit Workers' Conf., Winchester, VA. Dec 4 – 5, 2008.
100. Current status of Maryblyt for Windows. Annual Meeting of the 84th Cumberland-Shenandoah Fruit Workers' Conf., Winchester, VA. Dec 4 – 5, 2008.
101. Managing fungicide resistance in orchards. West Virginia Winter Fruit School, March 5, 2009, Kearneysville, WV.
102. Disease management options in 2009. West Virginia Winter Fruit School, March 5, 2009, Kearneysville, WV.
103. Apple disease management strategies for 2009. West Virginia Winter Fruit School, March 5, 2009, Kearneysville, WV.
104. Disease management in 2009: New tools provide better results. West Virginia Winter Fruit School, March 6, 2009, Romney, WV.
105. Progress on Maryblyt 7.0 software for predicting fire blight on apple and pear. Presented at the Potomac Division Meeting of the American Phytopathological Society, March 25, 2009. Gettysburg, PA.
106. Extension of the northern range of Alternaria leaf blotch of apple into eastern West Virginia. Presented at the Potomac Division Meeting of the American Phytopathological Society, March 25, 2009. Gettysburg, PA.
107. Confirmed resistance of the apple scab fungus to trifloxystrobin. Presented at the Potomac Division Meeting of the American Phytopathological Society, March 25, 2009. Gettysburg, PA.
108. Managing tree fruit diseases for the Master Gardener. Presented at the West Virginia State Master Gardener Conference, May 2, 2009. Morgantown, WV.
109. Principles of fruit disease management for the Master Gardener. Presented at the West Virginia State Master Gardener Conference, Oct. 6, 2009. Kearneysville, WV.
110. Apple disease management with DPX-LEM17 and Inspire Super. Presented at the 85th Cumberland-Shenandoah Fruit Workers Conference, November 19 - 20, 2009.

111. Assessing Web site activity with Google Analytics. Presented at the 85th Cumberland-Shenandoah Fruit Workers' Conf., Winchester, VA. November 19 - 20, 2009.
112. Current status of Maryblyt for Windows. Presented at the 85th Cumberland-Shenandoah Fruit Workers' Conf., Winchester, VA. November 19 - 20, 2009.
113. Distribution of *Venturia inaequalis* isolates with resistance to DMI fungicides in eastern West Virginia. Presented at the 85th Cumberland-Shenandoah Fruit Workers' Conf., Winchester, VA. November 19 - 20, 2009.
114. First assessment of resistance in *Monilinia fructicola* to DMI and strobilurin fungicides in Virginia and West Virginia. Presented at the 85th Cumberland-Shenandoah Fruit Workers' Conf., Winchester, VA. November 19 - 20, 2009.
115. Managing fire blight with Maryblyt v.7. West Virginia Winter Fruit School. Winchester, VA. February 19, 2010.
116. Apple disease management in 2010. WMREC Regional Fruit Growers Meeting. Keedysville, MD. February 25, 2010.
117. Fire blight management and the new Maryblyt v.7. WMREC Regional Fruit Growers Meeting. Keedysville, MD. February 25, 2010.
118. Apple Rootstock and Cultivars Community of Practice; Virginia/West Virginia Fruit School, Feb. 11, 2011, Winchester, VA, Invited.
119. WVU-KTFREC Research and Extension Highlight for 2010. West Virginia State Horticultural Society Annual Meeting Feb. 11, 2011, Winchester, VA, Invited
120. Apple Rootstock and Cultivars eXtension Community of Practice; Western Maryland Regional Fruit School, Feb. 24, 2011, Keedysville, MD Invited (Featured speaker).
121. Efficacy and timing of new fungicides for tree fruit disease management; Western Maryland Regional Fruit School, Feb. 24, 2011; Keedysville, MD, Invited (Featured speaker).
122. eXtension Community of Practice for Apple Rootstocks and Cultivars; Potomac Division APS Meeting, March 9 – 11, 2011, Rehoboth Beach, DE Paper session, contributed.
123. Blueberry Diseases in the Mid-Atlantic Region, Mid-Atlantic Blueberry Field Tour, June 3, 2011, Thurmont, MD, Invited.
124. Fungicide Resistance Management in Pome Fruits. WVU/DuPont Corp. Educational Program on Proper Use of Fungicides, July 13, 2011, Kearneysville, WV, Invited (Featured speaker).
125. Fungicide Resistance Management in Stone Fruits. WVU/DuPont Corp. Educational Program on Proper Use of Fungicides, July 14, 2011, Kearneysville, WV, Invited (Featured speaker).
126. Research and Extension Programs at WVU-KTFREC, Dept. Homeland Security, July 19, 2011 WVU-KTFREC, Invited.
127. Graduate research opportunities in agricultural sciences at West Virginia University. Panel Member Biology Department, Sept. 30, 2011, Shepherd University, Invited.
128. Tree Fruit Disease Management Programs at WVU-KTFREC , International Master Gardeners Conference, Oct. 12, 2011, WVU-KTFREC, Invited.

129. Fungicide Resistance Management in Pome Fruits. WVU/DuPont Corp. Educational Program on Proper Use of Fungicides, July 10, 2012, Kearneysville, WV, Invited (Featured speaker).
130. Fungicide Resistance Management in Stone Fruits. WVU/DuPont Corp. Educational Program on Proper Use of Fungicides, July 11, 2012, Kearneysville, WV, Invited (Featured speaker).
131. Update on Apple Rootstock and Cultivars Community of Practice; Virginia/West Virginia Fruit School, Feb. 15, 2013, Winchester, VA, Invited.
132. New fungicides for tree fruit disease management; Virginia/West Virginia Fruit School, Feb. 15, 2013, Winchester, VA, Invited.
133. WVU-KTFREC Research and Extension Highlight for 2012 and Looking Ahead to 2013. West Virginia State Horticultural Society Annual Meeting Feb. 15, 2013, Winchester, VA. Invited
134. eXtension Community of Practice for Apple Rootstock and Cultivars; Western Maryland Regional Fruit School, Feb.21, 2013, Keedysville, MD. Invited.
135. Tree fruit disease management and the new SDHI fungicides; Western Maryland Regional Fruit School, Feb. 21, 2013; Keedysville, MD. Invited.
136. Management of early-season apple diseases. Henderson County Winter Tree Fruit School. Feb. 5, 2014; Hendersonville, NC. Invited.

Papers Published in Professional Trade Journals:

1. Biggs, A. R. 1985. Proper pruning minimizes dieback, wood rot, and Cytospora infection in peach. *Canadian Fruit Grower* 41:8-9.
2. Biggs, A. R., J. B. Kotcon, T. A. Baugher, A. R. Collins, D. M. Glenn, H. W. Hogmire, R. E. Byers, A. J. Sexstone, and G. Lightner. 1992. The West Virginia University ecosystem project for processing apples: The rotation phase. *Northeast Sustainable Apple Production Newsletter* 3(2):5-12.
3. Baugher, T. A., J. B. Kotcon, A. R. Biggs, D. M. Glenn, A. R. Collins, A. J. Sexstone, H. W. Hogmire, D. Monks, M. McFarland, R. E. Byers, and G. Lightner. 1994. The West Virginia University ecosystem project for processing apples: The first year of establishment. *Northeast Sustainable Apple Production Newsletter* 4(1):6-12.
4. Biggs, A. R., H. W. Hogmire, and A. R. Collins. 2000. Evaluation of an alternative IPM program for processing apples. *Pennsylvania Fruit News* 80:85-99.
5. Biggs, A. R. 2003. APS Participates in Development of New Guidelines for Publication of Scientific Information. *Phytopathology News* 37:1-2.
6. Biggs, A. R. 2004. The Journal's Role in Scientific Misconduct. *Phytopathology News* 38:17-19.

Extension Publications:

1. Biggs, A. R. 1983. Black knot of plums and cherries. Ontario Ministry of Agriculture and Food Factsheet 83-026.
2. Biggs, A. R. and J. Northover. 1985. Brown rot. Ontario Ministry of Agriculture and Food Factsheet

85-014.

3. Biggs, A. R. 1986. Peach canker. Ontario Ministry of Agriculture and Food Factsheet 86-034.
4. Yoder, K.S., and A. R. Biggs, 1991, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 118 pp.
5. Yoder, K.S., and A. R. Biggs, 1992, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 122 pp.
6. Yoder, K.S., and A. R. Biggs, 1993, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 116 pp.
7. Yoder, K.S., and A. R. Biggs, 1994, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 116 pp.
8. Yoder, K.S., and A. R. Biggs, 1995, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
9. In: The Mid-Atlantic Regional Orchard Monitoring Guide 1995. H. W. Hogmire, Jr., ed. NRAES-75, 361 pp.
 - a. Biggs, A. R. and K.D. Hickey. Apple Scab. pp. 101-103.
 - b. Biggs, A. R., K.D. Hickey, and K.S. Yoder. Brown rot of Stone Fruits. pp. 120-122, 130-131, 132-133.
 - c. Steiner, P.W. and A. R. Biggs. Peach Leaf Curl. pp. 122-123.
 - d. Travis, J.M., J.L. Rytter, and A. R. Biggs. Black Rot. pp. 112-113.
 - e. Travis, J.M. and A. R. Biggs. White Rot. pp. 114-115.
 - f. Travis, J.M., J.L. Rytter, and A. R. Biggs. Bitter Rot. p. 113-114.
 - g. Travis, J.M., J.L. Rytter, and A. R. Biggs. Leucostoma Canker. p. 126.
 - h. Yoder, K.S. and A. R. Biggs. Cedar-apple Rust. pp. 103-104.
 - i. Yoder, K.S. and A. R. Biggs. Quince Rust. p. 104.
 - j. Yoder K.S. and A. R. Biggs. Alternaria Blotch. pp. 116-117.
10. Yoder, K.S., and A. R. Biggs, 1996, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
11. Yoder, K.S., and A. R. Biggs, 1997, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
12. Yoder, K.S., A. R. Biggs, and P. W. Steiner, 1998, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
13. Yoder, K.S., A. R. Biggs, and P. W. Steiner, 1999, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication

456-419, 120 pp.

14. Yoder, K.S., A. R. Biggs, and P. W. Steiner, 2000, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
15. Steiner, P. W., A. R. Biggs, and A.B. Sinderman. 2000. Symptom field guide for sharka disease of stone fruits. Maryland Dept. of Agriculture Publication #320-00.
16. Yoder, K.S., A. R. Biggs. 2001, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
17. Yoder, K.S., A. R. Biggs. 2002, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
18. Yoder, K.S., A. R. Biggs. 2003, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
19. Turechek, W., Biggs, A. R., Lightner, G., and Dewdney, M. 2003. Receiver operating characteristic (ROC) curve analysis – an introduction. Northeast Sustainable Agriculture Research and Education Conference, Burlington, VT, October 19-21, 2003.
20. Dewdney, M., Biggs, A. R., and Turechek, W. 2003. Comparison of Maryblyt and Cougar blight with receiver operating characteristic curve analysis. Northeast Sustainable Agriculture Research and Education Conference Burlington, VT, October 19-21, 2003.
21. Biggs, A. R. 2004. Fire Blight, In: 2004 West Virginia University Cooperative Extension Service, Garden Calendar.
22. Yoder, K.S., A. R. Biggs. 2004, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
23. Biggs, A. R. 2005. Apple Scab, In: 2005 West Virginia University Cooperative Extension Service, Garden Calendar.
24. Yoder, K.S., A. R. Biggs. 2005, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
25. Yoder, K.S., A. R. Biggs. 2006, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
26. Demchak, K., J. A. Fiola, A. D. Bratsch, A. R. Biggs, and G. C. Pavlis. 2006. Mid Atlantic Berry Guide. EB242. Regional small fruit production guide for Mid Atlantic. 205 pp.
27. Yoder, K.S., A. R. Biggs, and DeMarsay, A. 2007, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
28. Yoder, K.S., A. R. Biggs, and DeMarsay, A. 2008, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.
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Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp.

30. Baniecki, J. F., Hogmire, H., Biggs, A. R., and McCann, D. P. 2009. Tips for Home Plant Pest Management. AGF09-168. 8 pp.
31. Yoder, K.S., and A. R. Biggs. 2010, Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp. (all Va. Tech Extension publications are now refereed in-house at Va. Tech).
32. Biggs, A. R., Rosenberger, D. A., Yoder, K. S., Kiyomoto, R., Cooley, D. R., Sutton, T. B., and Sundin, G. 2011. Relative Susceptibility of Apple Cultivars and Selections from the NE-183 Regional Project "Multidisciplinary Evaluation of New Apple Cultivars" to Rust Diseases, Powdery Mildew, Apple Scab, Sooty Blotch and Fly Speck, Black Rot, White Rot, and Bitter Rot. Poster. West Virginia Cooperative Extension Service.
33. Yoder, K.S., and A. R. Biggs. 2011. Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp. (all Va. Tech Extension publications are now refereed in-house at Va. Tech).
34. Yoder, K.S., and A. R. Biggs. 2012. Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp. (all Va. Tech Extension publications are now refereed in-house at Va. Tech).
35. Yoder, K.S., and A. R. Biggs. 2013. Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp. (all Va. Tech Extension publications are now refereed in-house at Va. Tech).
36. Frank, D. L., Biggs, A. R., and Blue, D. 2013. West Virginia perennial flowers for pollinators and beneficial insects. WVU Extension Service Publication.
37. Yoder, K.S., and A. R. Biggs. 2014. Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp. (all Va. Tech Extension publications are now refereed in-house at Va. Tech).
38. Yoder, K.S., and A. R. Biggs. 2015. Plant Pathology Section, In: Spray Bulletin for Commercial Tree Fruit Growers. Virginia, Maryland and West Virginia Cooperative Extension Service, Publication 456-419, 120 pp. (all Va. Tech Extension publications are now refereed in-house at Va. Tech).
- 39.

Abstracts of Presentations at National and International Meetings:

1. Biggs, A. R., D. D. Davis, and J. B. Coppolino. 1977. The influence of SO₂ on 10 forest tree species with reference to relative susceptibility, leaf sulfur content, and stomatal response. Proc. Amer. Phytopathol. Soc. 4:183.
2. Biggs, A. R. and D. D. Davis. 1980. The enlargement of Cytospora canker of hybrid poplar and associated bark water relations. Phytopathology 71:558.
3. Biggs, A. R. and D. D. Davis. 1981. Bark water relations and the enlargement of hybrid poplar Cytospora cankers. Phytopathology 71:860.

4. Biggs, A. R. and D. D. Davis. 1981. Effects of sulfur dioxide on growth, sulfur content, and water relations of hybrid poplar. *Phytopathology* 71:80.
5. Biggs, A. R., D. D. Davis, and W. Merrill. 1982. Pathological anatomy of *Cytospora* canker of hybrid poplar. *Phytopathology* 72:705.
6. Biggs, A. R., W. Merrill, and D. D. Davis. 1983. *Populus* as a model for studying defense mechanisms in bark--Characterization of components. *Phytopathology* 73:363.
7. Merrill, W., A. R. Biggs, L. Zang, L. Forer, V. Wagner, and B. Towers. 1983. Rhabdocline needlecast in Pennsylvania. *Phytopathology* 73:371.
8. Biggs, A. R. 1983. Necrophyllactic periderm formation in peach. *Can. J. Plant Pathol.* 5:201.
9. Biggs, A. R. 1984. Intracellular suberin: Occurrence and detection in tree bark. *Can. J. Plant Pathol.* 6:201.
10. Biggs, A. R. 1985. Suberin deposition as a nonspecific response to injury in trees. 15th Plant Development Workshop. May 4, 1985. Guelph University.
11. Davis, D. D. and A. R. Biggs. 1985. Foliar injury to pine seedlings exposed to sulfur dioxide. *Phytopathology* 75:624.
12. Biggs, A. R. 1987. Use of wound response parameters to assess the relative susceptibility of peach cultivars to *Leucostoma* spp. *Phytopathology* 77:1690.
13. Miles, N. W. and A. R. Biggs. 1987. Breeding for resistance to *Cytospora* canker in peach. *Proc. Can. J. Hort. Sci.* 26:68.
14. Schneider, K., A.M. Svircev, A. R. Biggs, N. W. Miles, and C. Chong. 1988. Regenerative capabilities of Ontario peach cultivars. *Int. Plant Tissue Culture and Genetic Engineering Workshop*, Ottawa, Ontario. May 29 - June 2.
15. Biggs, A. R. and C.A. Peterson. 1988. Stimulation of lignin in pruning wounds of peach trees by various exogenously applied chemicals. *Phytopathology* 78:1154.
16. Biggs, A. R. 1988. Anatomy of the infection court on injured trees. *Proceedings of the Fifth International Congress of Plant Pathology*, Kyoto, Japan.
17. Biggs, A. R. 1988. The apple industry and apple diseases in Canada. *Fifth International Congress of Plant Pathology*, *Proceedings of the Deciduous Tree Fruit Workers Working Group*, Hirosaki, Japan.
18. Miles, N. W., A.M. Svircev, C. Chong, and A. R. Biggs. 1989. In vitro generation of peach plants with resistance to the *Cytospora* canker pathogens. *Can J. Hort. Sci.* 26:71.
19. Svircev, A.M., Biggs, A. R., Miles, N., and Chong, C. 1989. Isolation, purification, and characterization of a phytotoxin from liquid cultures of *Leucostoma persoonii* and *L. cincta*. *Phytopathology* 79:1572.
20. Miles, N. W. and A. R. Biggs. 1990. Breeding for resistance to *Leucostoma* spp. in peach. *Int. Hort. Conf.*, Florence, Italy.
21. Biggs, A. R. 1991. Genetic control of suberin accumulation in wounded peach bark. *Phytopathology* 81:1160.
22. Biggs, A. R. and J. Northover. 1992. Effect of inoculum concentration on brown rot development in cherries. *Phytopathology* 82:1105.

23. Biggs, A. R. 1994. Determining the pathogens present in pre-harvest apple fruit. *Phytopathology* 84:541.
24. Biggs, A. R., J. B. Kotcon, T. A. Baugher, A. R. Collins, D. M. Glenn, H. W. Hogmire, R. E. Byers, A. J. Sexstone, and G. W. Lightner. 1994. The West Virginia University ecosystem project for processing apples: comparisons among Liberty, Golden Delicious, York and Fuji in the first year of growth. *Fruit Var. J.* 48:37.
25. Biggs, A. R. 1997. Suppression of apple bitter rot (*Colletotrichum* spp.) with calcium salts. *Phytopathology* 87:S9 (Supplement).
26. Hogmire, H. W. and Biggs, A. R. 1998. Arthropod and disease incidence in alternative and conventional management systems for processing apples. Joint APS/ESA Meeting, Las Vegas, NV, August 9-13, 1998.
27. Biggs, A. R. 1999. Analysis of fire blight epidemics with spatio-temporal distance class analysis. *Phytopathology* 89:S98.
28. Biggs, A. R. 1999. Suppression of apple bitter rot caused by *Colletotrichum* spp. with calcium salts. *Phytopathology* 89:S99.
29. Yoder, K.S., Biggs, A. R., and Norelli, J. 2002. Effectiveness of prohexadione-Ca (Apogee 27.5DF) for fire blight shoot blight suppression in commercial apple orchards. Presented at the 2001 Northeastern and Potomac Divisions Meeting, October 17-19, 2001, Cromwell, Connecticut. Publication no. P-2002-0036-NEA. *Phytopathology* 92:S147.
30. Biggs, A. R. 2002. Organic apple production in West Virginia. Annual Meeting of the American Phytopathological Society, Deciduous Tree Fruit Disease Workers, July 27, 2002. (Workshop presentation).
31. Dewdney, M. M., Biggs, A. R., Lightner, G., and Turechek, W. W. 2002. Maryblyt: Can there be improvements? Presented at the Annual Meeting of the American Phytopathological Society, Milwaukee, WI, July 27-31, 2002. Publication no. P-2002-0134-AMA. *Phytopathology* 92:S19.
32. Biggs, A. R. and Miller, S.S. 2003. Relative susceptibility of apple cultivars to rot diseases in eastern North America. International Congress of Plant Pathology, Christchurch, New Zealand, February 2, 2003.
33. Dewdney, M.M., Biggs, A. R., and Turechek, W.W. 2003. A statistical comparison of MARYBLYT and Cougarblight using Receiver Operator Characteristic (ROC) analysis. Presented at the Annual Meeting of the American Phytopathological Society, Charlotte, NC, August 9-14, 2003. Publication no. P-2003-0145-AMA. *Phytopathology* 93:S20.
34. Dewdney, M. M., Biggs, A. R., and Turechek, W. W. 2004. Maryblyt and Cougarblight: is there a difference? Presented at the Annual Meeting of the Potomac Division of the American Phytopathological Society, Shepherdstown, WV, April 6, 2004. Publication no. P-2004-0156-AMA. *Phytopathology* 94:S21.
35. Dewdney, M.M., Biggs, A. R., and Turechek, W.W. 2004. A statistical comparison of MARYBLYT and Cougarblight with receiver operating characteristic (ROC) curve analysis. International Fire Blight Conference, Bologna, Italy, July 5-9: p. 41.
36. Dewdney, M.M., Biggs, A. R., and Turechek, W.W. 2005. MARYBLYT and Cougarblight: Is there a difference? *Phytopathology* 95: S156.
37. Sugimoto, T., Watanabe, K., Matoh, T., Yoshida, S., Aino, M., and Biggs, A. R. 2009. Compounds that reduce *Phytophthora* stem rot disease of soybean, and the results of SEM analysis and field experiments using calcium formate. Proceedings of the World Soybean Research Conference VIII. Beijing China, August 10-15, 2009.

38. Janisiewicz, W. J., Biggs A. R., Jurick, II W. M., Vico I., and Conway W. S. 2010. Characteristics of *Monilinia fructicola* isolates from decayed stone fruits in eastern West Virginia. *Phytopathology* 100:S56 (Abstract).
39. Hoover, E., Marini, R. P., Tepe, E., Autio, W. R., Biggs, A. R., Clements, J. M., Crassweller, R. M., Foster, D., Foster, M., Miller, D. D., Parker, M. L., Racsco, J., Robinson, T. L., and Warmund, M. 2011. Apple Rootstocks and Cultivars: A Case Study In Using Extension to Increase Access to Research-Based Information. *HortScience* 46(9):S84. (Abstr.)
40. Ngugi, H. K., Cox, K., Koeller, W., Cooley, D. R., and Biggs, A. R. 2011. Cross-resistance to dodine, sterol demethylation inhibitor and strobilurin fungicides in populations of *Venturia inaequalis* from the eastern USA. *Phytopathology* 101:S56 (Abstract).
41. Cox, K. D., Villani, S. M., Biggs, A. R., Cooley, D., and Ramaekers, L. 2012 .Status of dodine resistance and possibilities for renewed use against *Venturia inaequalis* populations in the northeastern US. *Phytopathology* 102:P238 (Abstract).
42. Da Silva, G. A., MacDonald, W. L., and Biggs, A. R. 2013 Characterization of fungi isolated from apple leaves and fruits obtained from Maryland, Pennsylvania, West Virginia, and New York. APS – Potomac Division Meeting, April 4, 2013. Shepherdstown, WV.

Invited Seminars:

1. Wilfred Laurier University, Department of Biology, Waterloo, Ontario, Canada. Histology of wounds and infections in tree bark. Oct. 26, 1983.
2. Agriculture Canada, Research Station, Vineland Station, Ontario, Canada. The peach canker pathosystem: Clues on the trail to disease resistance. Nov. 21, 1984.
3. Cornell University, Department of Plant Pathology, N.Y. State Agric. Expt. Stn., Geneva, NY. Studies of boundary zone formation in tree bark: Application to the peach/*Cytospora* interaction. March 6, 1985.
4. University of Waterloo, Department of Biology, Waterloo, Ontario, Canada. Detection of suberin in wounded tissue. April 11, 1985.
5. University of Minnesota, Department of Plant Pathology, St. Paul, MN. Histochemistry and temporal relations of wound response in trees and applications to studies in pathogenesis. Sept. 9, 1986.
6. Simon Fraser University, Department of Biological Sciences, Burnaby, British Columbia, Canada. Histochemistry of wound response in trees. May 27, 1987.
7. West Virginia University, Division of Plant and Soil Sciences, Morgantown, WV, Histological studies of fruit tree diseases. April 24, 1989.
8. U.S.D.A. - A. R.S. Appalachian Fruit Research Station, Bardane, WV. Tree defense mechanisms and control of *Cytospora* canker of peach. Dec. 5. 1989.
9. West Virginia University, Division of Plant and Soil Sciences, Morgantown, WV, Defense mechanisms in tree bark in relation to *Leucostoma* canker of peach, October 2, 1990.
10. University of Kentucky, Department of Plant Pathology, Lexington, KY. Association of suberin deposition in bark of wounded peach trees with resistance to *Leucostoma* spp. October 16, 1990.

11. University of Maryland, Department of Botany, College Park, MD. Role of suberin in the defense mechanisms of woody plants against fungi. November 30, 1990.
12. West Virginia University, Department of Biology, Morgantown, WV, Role of suberin in the defense and repair systems of woody plants, March 25, 1991.
13. University of Wisconsin, Department of Plant Pathology, Madison, WI. Wound response in trees: Histochemistry, temporal relations, and applications to studies in pathogenesis. March 27, 1991.
14. University of Massachusetts, Department of Plant Pathology, Amherst, MA. Tree defense mechanisms and control of Leucostoma canker of peach. October 23, 1992.
15. University of Massachusetts, Department of Plant Pathology, Amherst, MA. An alternative production system for processing apples. April 4, 1995.
16. West Virginia University, Division of Plant and Soil Sciences, Morgantown, WV, Managing apple diseases without fungicides: Fantasy or reality?, February 20, 1996.
17. Pennsylvania State University, Department of Plant Pathology, University Park, PA. Peach diseases, Leucostoma canker and infection court dynamics. October 21, 1996.
18. Cornell University, Department of Plant Pathology, N.Y. State Agric. Expt. Stn., Geneva, NY. Spatial-temporal spread of fire blight in high density apple orchards. October 3, 2000.
19. West Virginia University, Division of Plant and Soil Sciences, Morgantown, WV, Fruit Pathology in West Virginia: Finding new solutions to perennial problems. November 27, 2007.
20. Shepherd University, Department of Biology, Applied plant pathology research: the Land Grant University approach to solving practical problems. November 14, 2009.
21. Fire blight forecasting in the Mid-Atlantic Region. Washington State University, Department of Plant Pathology, April 5, 2010, Pullman, WA, Invited speaker.
22. Comparison of fire blight forecasting models and opportunities for improvement. Washington State University, Irrigated Agriculture Research and Extension Center, April 6, 2010, Prosser, WA, Invited speaker.
23. Aspects of host resistance to the Leucostoma canker pathogen, College of Plant Protection, Northwest A&F University, October 12, 2010, Yangling, Shaanxi, P. R. China, Invited speaker.
24. Management of Leucostoma canker, College of Plant Protection, Northwest A&F University, October 13, 2010, Yangling, Shaanxi, P. R. China, Invited speaker.
25. Apple Production in China: Diseases and Emerging Issues, Penn State University, Fruit Research Laboratory, Biglerville, PA, August 24, 2011, Invited speaker.