Paul A. Backman –Curriculum Vitae

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EDUCATION

University of California, Davis, CA

Ph.D., Plant Pathology, Minor in Plant Physiology 1970
Major Professor J. E. DeVay (Bacterial Phytotoxins)
NDEA Fellow

University of California, Davis, CA

B.S., Plant Pathology, 1966

Yuba College, Marysville, CA

A.A., Biological Sciences, 1964

OTHER TRAINING

1. NASULGC Deans/Directors Leadership training 1998
2. Natl. Conf. On Continuous Quality Improvement: Malcolm Baldrige Award Criteria in Education. 1995.
3. ESCOP Leadership Courses, Class 4, Indianapolis, 1994, Washington D.C. 1995

EMPLOYMENT EXPERIENCE

Pennsylvania State University, 1998-present

- Professor of Plant Pathology & Biological Control 1998-present
- Director, Pennsylvania Agricultural Experiment Station, and Associate Dean for Research and Graduate Education 1998-2001

Auburn University, 1971-1997

1. Director, Biological Control Institute, 1993-1997
2. Board of Directors, Alabama Center for Biotechnology, 1994-1995
3. Alabama Agricultural Experiment Station, IPM Research Coordinator 1993-1997
4. Emeritus Professor, 1998
5. Professor, Asst. and Assoc. Professor of Plant Pathology, Auburn University, 1971-1998
6. Graduate Faculty, 1978-1998

USDA ARS at Clemson University

Research Plant Pathologist (GS-12) USDA/ARS @ Clemson University, September, 1970 - October, 1971. Emergency appointment on etiology and control of peach decline and bacterial canker in the southeastern region

N.C. State University

Post-doctoral Research Associate, January, 1970 - August, 1970 under G.B. Lucas and Ron Welty, evaluating role of tobacco mycotoxins in animal health

University of California, Davis Campus

Graduate Research Fellow (NDEA), University of California, 1966-1969

California Dept. of Agriculture, Bureau of Fruit and Vegetable Standardization

Inspector (Tomato and Peach), 1963-1965 (Summers)

SIGNIFICANT INTERNATIONAL ACTIVITIES:

1. Senior Plant Pathologist/ Consultant, Uruguay, FAO United Nations, 1978-79 (Leave of Absence), Developing Management Methods for Sugar Beet Sclerotium rot.
2. Consultant/Expert, Intl. Atomic Energy Agency of United Nations 1989-1991, Evaluating and Recommending Changes in Thailand project on mutation breeding for crops and animals.
3. Numerous fact-finding, research, cooperative agreement visits to Central and South America, Europe and Australia.
4. Research leave to USDA/ARS, European Biological Control Laboratory, Montpellier France, to strengthen pathology at the station, and to provide linkage to Auburn's BCI. Also, worked with Spain's (Catalonia) IRTA group (Cabrils) on biological control of weeds. 1997.

AWARDS AND HONORS

1. USDA, Group Honor Award for Excellence, 2002, For Multistate Project NE-501, Serving as project developer and administrative advisor.
2. Penn State University Outreach, Pathfinder Award, 2002
3. NERA Project of the year (2001) for NE-501, serving as administrative advisor
4. AL Agricultural Experiment Station's Directors Award for Research, 1991 Senior Award, with $10,000 to professional development
5. AL Agricultural Experiment Station's Director's Award for Research, 1981 Junior Award (First Recipient),
6. NSF Travel Grant, 1970 (while at North Carolina State University)
7. NDEA Fellow, 1966-1969 (Univ. of California—Davis)
8. Memberships in: Sigma Xi, N.Y. Academy of Sciences, Gamma Sigma Delta, and AAAS

COMMITTEES AND OTHER RESPONSIBILITIES AT PENN STATE

COLLEGE, UNIVERSITY AND DEPARTMENT

1. Member of the executive committee of the Research Council to the Vice President for Research, to develop policies and procedures supportive of the Universities research agenda. 2000-2001
2. Member of the Implementation Committee to the Graduate School, to develop

policies and procedures supportive of University efforts to recruit and retain the best graduate students. 1998-2001

3. Member, vice chair and chair of the International Council to the University's Office of International Programs 1998-2001
4. PSU Representative to the Lake Erie Regional Grape Program (Cooperating with Cornell to Coordinate Research & Extension Needs for the Erie Grape Industry.
5. Guidance Committee Co-chair for the Eastern Division of The Viticulture Consortium.
6. Advisory Board member for the Environmental Resources Research Institute 1998-2000.
7. Committee member to develop the guidelines for an inter-college consortium for Environmental Research 1998-99.
8. Selection Committee for the associate vice president for research for multidisciplinary and integrated programs. 1998-99.
9. Development of the Research Plan of Work required by the federal AREERA act.
10. Development of the response to the civil rights review of the Agricultural Experiment Station.
11. Member of a committee that developed the College of Agricultural Sciences strategic plan.
12. University Committee on Sensor Technologies
13. University Steering Committee on Defense Threat Reduction Agency Relationship
14. Departmental DAIR Committee.

REGIONAL AND NATIONAL ACTIVITIES WHILE AT PENN STATE

1. Member of the Board of Directors of the National Agricultural Biotechnology Council (NABC) 1998-2001
2. Member of the Board of Directors of Global Research on Environment and Agricultural Nexus (GREAN), a 16 member University consortium to do international research—group terminated August 2001
3. Member of the Board of Directors of AID's Integrated Pest Management CRSP. 1998-2001
4. Member of the Research Coordinating Committee for NE regional activities supported by Northeastern Agricultural Experiment Stations (NERA) 2000/01
5. Regional administrative advisor for the Pasture consortium, and NE-187 regional research project on turfgrass management
6. Member of the ESCOP (Experiment Station Committee on Policy) committee on Science and Technology 1999-2001
7. Administrative advisor to a regional research and extension team to contain the invasive pathogen called Plum Pox (Sharka), NE-501
8. Administrative advisor to research and extension team on best management practices for turfgrass. NE-187.

PRINCIPAL INSTRUCTION CONTRIBUTIONS

Penn State University Courses:

PPath 540 Plant Disease Control	3
PPath 496 Individual Research	var.

Auburn University *Courses Taught*

PLP 551, Foliar & Post Harvest Disease	3
PLP 553, Principles of Plant Disease Control	3
PLP 407, Concepts in Pest Management	5
PLP 554, Practical Plant Pathology	5
PLP 719, Adv. Plant Pathology for Ph.D. students	3
PLP 728, Field Research in Plant Pathology	5
	5

Graduate Students Directed

John T. Turner, Jr., Ph.D.
Elisa F. Smith, M.S.
Nancy Kokalis, M.S.
Richard F. Davis, M.S.
H. Gary Hancock, M.S.
Ronald Clay, M.S.
John M. Hammond, M. Agr.
James Jacobi, Ph.D.
Kanchalee Jetiyanon, M.S.
George Boyhan, Ph.D.
Susan Sheng, M.S.
Charles Crawford, M.Agr.
Walter F. Mahaffee, M.S.
Barbara H. Cosper, M.S.
Mary J. Williams, Ph.D.
Nina Knox Zidack, Ph.D.
Kenneth Seebold, M.S.
Benjaporn Tangsukkasemsan, M.Agr.
Phillip M. Brannen, Ph. D.
Gloria Garner, M.S.
Jason Burkett, M.S.
Anissa Demers, M.S
Rachel Melnick, M.S.

RESEARCH ACTIVITIES

Patents

1. P. A. Backman, and S. Tuzun. 1999. Induced Systemic Resistance of plants to pathogenic microorganisms. U.S. Patent No. 5,888,501.
2. P. A. Backman, R. Rodriguez-Kabana. N. B. Kokalis. 1996. Method of controlling foliar microorganism populations. U. S. Patent No. 5,288,488.

Refereed Journal and Book Publications *(* indicates a book chapter)*

1. Stevens, C., V. Khan, R. Rodriguez-Kabana, L. Ploper, P.A. Backman, D. Collins, J.E. Brown, M. Wilson, & E. Igwegbe. 2003. Integration of Soil Solarization with Chemical, Biological and Cultural Control for the Management of Soilborne Diseases of Vegetables. Plant and Soil 253:493-506.
2. Elliott, M., E. Des Jardin, W. Batson, J. Caceres, P. Brannen, C. Howell, M. Benson, K. Conway, D. Rothrock, R. Schneider, B. Ownley, C. Canaday, A. Keinath, D. Huber, D. Sumner, C. Motsenbocker, P. Thaxton, M. Cubeta, P. Adams, P. Backman, J. Fajardo, M. Newman, and R. Pereira. 2001. Viability and Stability of Biological Control Agents Used for Disease Management on Cotton and Snap Bean Seeds. Pest Management Science 57:695-706.
3. Keinath A., W. Batson, J. Caceres, M. Elliott, D Sumner, P. Brannen, C. Rothrock, D. Huber, M. Benson, K. Conway, R. Schneider, C. Molsenbocker, M. Cubeta, B. Ownley, C. Canaday, P. Adams, P. Backman, and J. Fajardo. 2000. Evaluation of biological seed treatments to improve stand of snap bean across the southern United States. Crop Protection 19(7):501-509.

4. *Wilson, M.A. and P.A. Backman. 1999. Biological Control of Plant Pathogens. In: Handbook of Pest Management. J. R. Ruberson, Ed. Marcel Dekker, N.Y.
5. *Backman, P.A., M. Wilson and J.F. Murphy. 1998. Bacteria for Biological Control of Plant Diseases. Pp 95-109. In: Environmentally safe approaches to plant disease control. N.A. Rechcigl and J.E. Rechcigl Eds. CRC/Lewis Press, Boca Raton, FL, 386 p.
6. Bauske, E.M., P. A. Backman, K.M. Harper, P.M. Brannen, R. Rodriguez-Kabana, & J. W. Kloepper. 1997. Effect of Botanical Aromatic Compounds and Seed-surface pH on Growth and Colonization of Cotton Plant Growth-Promoting Rhizobacteria. Biocontrol Science & Technology 7:415-421.
7. *Backman, P.A. 1997. Agricultural Pesticide Inputs: Now and into the 21st Century. Pp 93-99, In: Proceedings of the RCA III Symposium on Crop and Livestock Technologies. The Iowa State University Press, Ames, Iowa.
8. *Backman, P. A., and J. C. Jacobi. 1997. Developing thresholds for plant disease management. Pp 114-127 In: Economic Thresholds for Integrated Pest Management. L. Higley and L. Pedigo eds. University of Nebraska Press 356 p.
9. *Backman, P.A. and T.B. Brenneman. 1997. Stem Rot. Pp 36-37 In: Compendium of peanut diseases, 2nd Ed. Kokalis-Burelle, N., et al Eds. APS Press, St. Paul 94 p.
10. *Backman, P.A. 1997. *Bacillus subtilis*. Pp 73-74 In: Compendium of peanut diseases, 2nd Ed. Kokalis-Burelle, N., et al eds. APS Press, St. Paul 94 p.
11. Zidack, N.K. and P. A. Backman. 1996. Biological Control of Kudzu (*Pueraria lobata*), with the plant pathogen *Pseudomonas syringae* pv. *phaseolicola*. Weed Science 44:645-649.
12. Jacobi, J. C., P. A. Backman, and D. P. Davis. 1995. AU-Pnuts leaf spot advisory I: Development of a weather-based system to time leaf spot fungicide applications. Plant Disease 79:666-671.
13. Jacobi, J. C., and P. A. Backman. 1995. AU-Pnuts leaf spot advisory II: Modification of the rule based system for a partially resistant peanut cultivar. Plant Disease 79:672-676.
14. *Melouk, H., and P.A. Backman. 1995. Management of Soilborne Fungal Pathogens. Pgs. 75-82. In: Peanut Health Management. H. A. Melouk and F. M. Shokes, Eds. APS Press, St. Paul MN, 117p.
15. *Backman, P. A., Phillip M. Brannen, and Walter F. Mahaffee. 1994. Plant response and disease control following seed inoculation with *Bacillus subtilis*. Proceedings of the Third International Workshop on Plant Growth-Promoting Rhizobacteria . pp. 3-8. Adelaide, South Australia.
16. Runion, G.G., Curl, E.A., H.H. Rogers, P. A. Backman, R. Rodriguez-Kabana, and B. E. Helms. 1994. Effects of free-air CO2 enrichment on microbial populations in the rhizosphere and phyllosphere of cotton. Agricultural and Forest Meteorology 70:117-130.
17. *Brannen, Phillip M. and Paul A. Backman. 1994. Suppression of Fusarium wilt of cotton with *Bacillus subtilis* hopper box formulations. Proceedings of the Third International Workshop on Plant Growth-Promoting Rhizobacteria. pp. 83-85. Adelaide, S. Australia.
18. Jacobi, J. C., and P. A. Backman. 1994. Comparison of yield, value and seed quality factors of Florunner and Southern Runner peanut. Peanut Sci. 21:28-34.
19. Moar, William, John T. Trumble, Robert H. Hice, and Paul A. Backman. 1994. Insecticidal Activity of the CryIIA Protein from the NRD-12 Isolate of *Bacillus*

thuringiensis subsp. *kurstaki* Expressed in *Escherichia coli* and *Bacillus thuringiensis* and in a Leaf-Colonizing Strain of *Bacillus cereus*. Applied and Environmental Microbiology 60-3:896-902.

20. Davis, D. P., J. C. Jacobi, and P. A. Backman. 1993. 24-hour Rainfall, A Simple Variable for Predicting Peanut Leaf Spot Epidemics. Plant Dis. 77-7:722-725.
21. Jacobsen, Barry J., P. A. Backman. 1993. Biological and Cultural Plant Disease Controls: Alternatives and Supplements to Chemicals in IPM Systems. Plant Dis. 77-3:311-315.
22. Mahaffee, W. F., and Paul A. Backman. 1993. Effects of Seed Factors on Spermosphere and Rhizosphere Colonization of Cotton by *Bacillus subtilis* GBO3. Phytopathology 83:1120-1125.
23. Kokalis-Burelle, N., P. A. Backman, Rodrigo Rodríquez-Kábana, and L. Daniel Ploper 1992. Potential for Biological Control of Early Leafspot of Peanut Using *Bacillus cereus* and Chitin as Foliar Amendments. Biological Control 3:321-328.
24. *Backman, P. A., and Jacobsen, B. J. 1992. Soybean Disease Management: Chemical and Biological Control in Temperate Regions. pp. 155-163. In Pest Management in Soybean. (L. G. Copping, M. B. Green, and R. T. Rees, eds.). Elsevier Applied Science, London. 369 p.
25. *Ploper, L. D., and Backman, P. A. 1992. Nature and Management of Fungal Diseases Affecting Soybean Stems, Pods, and Seeds. pp. 174-184. In Pest Management in Soybean. Elsevier Applied Science, London. 369 p.
26. Davis, R. F., Backman, P. A., Rodríguez-Kábana, R., and Kokalis-Burelle, N. 1992. Biological control of apple fruit diseases by Chaetomium globosum formulations containing cellulose. Biological Control 2:118-123.
27. Zidack, N. K., Backman, P. A., and Shaw, J. J. 1992. Promotion of bacterial infection of leaves by an organosilicone surfactant:: implications for biological weed control. Biological Control 2:111-117.
28. Herbert, D. A., Jr., Mack, T. P., Backman, P. A., and Rodríguez-Kábana, R. 1992. Validation of a model for estimating leaf-feeding by insects in soybean. Crop Protection 11:27-34.
29. Kloepper, J. W., Mahaffee, W., McInroy, J. A., and Backman, P. A. 1991. Comparative analysis of methods for recovering plant growth-promoting rhizobacteria from roots. Can. J. Microbiol. 37:953-957.
30. *Mahaffee, W. F., Backman, P. A., and Shaw, J. J. 1991.Visualization of root colonization by rhizobacteria using a luciferase marker. In: PGPR Progress and Prospects. C. Keel, B. Koller, and G. Défago, eds. IOBC/WPRS Bulletin XIV/8:248-251.
31. *Kloepper, J. W., Mahaffee, W., McInroy, J. A., and Backman, P. A. 1991. Comparative analysis of isolation methods for recovering root-colonizing bacteria from roots. In: PGPR Progress and Prospects. C. Keel, B. Koller, and G. Défago, eds. IOBC/WPRS Bulletin XIV/8:252-255.
32. *Mahaffee, W. F. and Backman, P. A. 1991. Effects of seed factors on colonization of cotton cultivars by *Bacillus subtilis* GB-03. In: PGPR Progress and Prospects. C. Keel, B. Koller, and G. Défago, eds. IOBC/WPRS Bulletin XIV/8:346-349.
33. Turner, J. T. and Backman, P. A. 1991. Factors relating to peanut yield increases after seed treatment with *Bacillus subtilis*. Plant Dis. 75:347-353.
34. **Sinclair, J. B., and P. A. Backman (eds.). 1989. Compendium of Soybean Diseases, 3rd Ed. American Phytopathological Soc., St. Paul, MN. 106 p.

35. *Backman, P. A., D. C. McGee, and G. Morgan-Jones. 1989. Stem Canker. pp 41-43. In: Compendium of Soybean Diseases, 3rd Ed. (J. B. Sinclair and P. A. Backman, eds.). American Phytopathological Society, St. Paul, MN. 106 p
36. *Jacobsen, B. J., and P. A. Backman. 1989. Soybean Disease Management Strategies. pp. 94-100. In Compendium of Soybean Diseases, 3rd Ed. (J. B. Sinclair and P. A. Backman, eds.). American Phytopathological Society, St. Paul, MN. 106 p.
37. Smith, E. F., and P. A. Backman. 1989. Epidemiology of southern stem canker: effect of time of inoculum application on disease severity. Plant Disease 73:464-468.
38. Turner, J. T., and P. A. Backman. 1989. Severity, distribution, and losses from taproot cankers caused by *Rhizoctonia solani* in peanuts. Peanut Science 15:73-75.
39. *Smith, E. F., and P. A. Backman. 1988. Soybean Stem Canker: An Overview. In Soybean Diseases of the North Central Region. T. D. Wylie, ed. APS Press, St. Paul, MN. pp. 47-55.
40. Weaver, D. B., S. A. Sedham, E. F. Smith, and P. A. Backman. 1988. Screening for resistance to stem canker in soybean. Crop Sci.. 28:626-630.
41. Rodríguez-Kábana, R., H. Ivey, and P. A. Backman. 1987. Peanut-cotton rotations for the management of *Meloidogyne arenaria*. J. of Nematology. 19(4):484-486.
42. Herbert, D. A., R. Rodríguez-Kábana, P. A. Backman, and T. P. Mack. 1987. Effects of aldicarb on nematodes, early season insect pests, and yield of soybean. Annals of Applied Nematology 1:78-83.
43. Davis, N. D., R. J. Cole, J. W. Dorner, J. D. Weete, P. A. Backman, E. M. Clark, C. C. King, S. P. Schmidt, and U. L. Diener. 1986. Steroid metabolites of *Acremonium coenophialum*. J. Agric. Food Chem. 34:105-108.
44. *Backman, P. A. 1986. Evaluation of fungicides applied through irrigation systems for control of diseases on peanuts. pp. 221-223. In Methods for Evaluating Pesticides for Control of Plant Pathogens. Am. Phytopathological Soc., St. Paul. 312 p.
45. Backman, P. A., D. B. Weaver, and G. Morgan-Jones. 1985. Soybean Stem Canker: An emerging problem. Plant Disease 69:641-647.
46. *Backman, P. A., D. B. Weaver, and G. Morgan-Jones. 1985. Etiology, Epidemiology, and Control of Stem Canker. pp. 589-597. In Proc. World Soybean Research Congress III (R. Shibles, Ed.). Westview Press, Boulder, CO 1262 p.
47. Weaver, D. B., B. H. Cosper, P. A. Backman, and M. A. Crawford. 1984. Soybean Stem Canker: cultivar resistance to field infestations. Plant Disease 68:877-879.
48. Backman, P. A. 1984. Relationship between yield loss and severity of early and late leafspot diseases of peanuts (*Arachis hypogaea* L.). Phytopathology 74:1101-1103.
49. Williams, M. J., P. A. Backman, M. A. Crawford, S. P. Schmidt, and C. C. King. 1984. Chemical control of the tall fescue endophyte and its relationship to animal performance. New Zealand J. Exp. Agr. Res. 12:165-171.
50. Pedersen, J. F., M. J. Williams, E. M. Clark, and P. A. Backman. 1984. Indications of yearly variation of *Acremonium coenophialum* in seed from a permanent tall fescue sward. Crop Science 24:367-368.
51. *Backman, P. A. 1984. Stem rot of peanuts. pp. 15-16. In A Compendium of Peanut Diseases (M. Porter, Ed.) Am. Phytopathological Soc., St. Paul 73 p

52. Williams, M. J., P. A. Backman, E. M. Clark, and J. F. White. 1984. Seed treatments for the control of the tall fescue endophyte *Acremonium coenophialum*. Plant Disease 68:49-52.
53. Backman, P. A., M. A. Crawford, and J. M. Hammond. 1984. Comparison of meteorological and standardized timings of fungicide applications for soybean disease control. Plant Disease 68:44-46.
54. Backman, P. A., J. C. Williams, and M. A. Crawford. 1982. Yield losses in soybeans from anthracnose caused by *Colletotrichum truncatum*. Plant Disease 66:1032-1034.
55. *Backman, P. A. 1982. Cercospora, Brown Spot, and Anthracnose. pp. 10-14. In Compendium of Soybean Diseases, 2nd Ed. (J. B. Sinclair, Ed.) Am Phytopathological Soc., St. Paul, 104 pp.
56. Backman, P. A. and J. M. Hammond. 1981. Suppression of peanut stem rot with the insecticide chlorpyrifos. Peanut Science 8:129-130.
57. Rehim, M. A. Abd El, P. A. Backman, R. Rodríguez-Kábana, and M. A. Crawford. 1981. Peanut seed treatment with hot calcium hydroxide solutions. Peanut Science 8:32-35.
58. Backman, P. A., R. Rodríguez-Kábana, M. C. Caulin, E. Beltramini, and N. Ziliane. 1981. Utilization of the soil tray technique to predict disease caused by *Sclerotium rolfsii* in sugar beet. Plant Disease 65:419-421.
59. Rodríguez-Kábana, R., M. K. Beute, and P. A. Backman. 1980. A method for determining numbers of viable sclerotia of *Sclerotium rolfsii* in soil. Phytopathology 70:917-919.
60. Backman, P. A., R. Rodríguez-Kábana, J. M. Hammond, and D. L. Thurlow. 1979. Cultivar, environment, and fungicide effects on foliar disease losses in soybeans. Phytopathology 69:562-564.
61. Rodríguez-Kábana, R., M. K. Beute, and P. A. Backman. 1979. Effect of dibromochloropropane fumigation on the growth of *Sclerotium rolfsii* and on the incidence of southern blight in the field-grown peanuts. Phytopathology 69:1219-1222.
62. Rodríguez-Kábana, R., P. A. Backman, P. S. King, and J. M. Hammond. 1979. Evaluation of several methods of application for DBCP on peanuts. Nematropica 9(1):48-54.
63. *Backman, P. A. 1978. Fungicide formulation: Effects on biological activity. Ann. Rev. Phytopathology 16:211-237.
64. *Rodríguez-Kábana, R., P. A. Backman, and E. A. Curl. 1977. Control of seed and soil-borne plant diseases. pp. 117-162. In Malcolm Siegal (ed.). Antifungal Compounds. Marcel Dekker, Inc., New York, NY.
65. Backman, P. A., R. Rodríguez-Kábana, and G. Buchanan. 1977. Effects of oxidiazon and dinoseb on stem rot in peanuts. Weed Science 25:260-263.
66. *Backman, P. A. and R. Rodríguez-Kábana. 1977. Predisposition of peanuts to disease and suppression of Sclerotium rolfsii by pesticides: The role of antagonists. pp. 209-214. In Current Topics in Plant Pathology. Academic Press (Budapest).
67. Backman, P. A. and E. M. Clark. 1977. Effect of carbofuran and other pesticides on vesicular-arbuscular mycorrhizae in peanuts. Nematropica 7(1):13-17.
68. Backman, P. A., J. D. Harper, J. M. Hammond, and E. M. Clark. 1977. Antifeeding effects of the fungicide guazatine on insect defoliators of soybean and peanuts. J.

Econ. Entomology 70:374-376.
69. Buchanan, G. A., P. A. Backman, and R. Rodríguez-Kábana. 1977. Influence of oxidiazon on peanuts and weeds. Peanut Science 4:37-41.
70. Hammond, J. M., P. A. Backman, and J. A. Lyle. 1976. Peanut foliar fungicides: Relationship between leafspot control and kernel quality. Peanut Science 3:70-72.
71. Backman, P. A. and J. M. Hammond. 1976. Germination losses associated with delayed application of seed treatment fungicides. Plant Disease Reporter 60:1-3.
72. Rodríguez-Kábana, R., and P. A. Backman. 1976. Antifungal activity of the nematicide ethoprop. Plant Disease Reporter 60:255-259.
73. Backman, P. A. and R. Rodríguez-Kábana. 1976. Development of a medium for the selective isolation of *Sclerotium rolfsii*. Phytopathology 66:234-236.
74. Rodríguez-Kábana, R., P. A. Backman, and G. W. Karr, Jr. 1976. Effects of the nematicide Fensulfothion on soilborne pathogens. Plant Disease Reporter 60:521-524.
75. Backman, P. A., G. D. Munger, and A. F. Marks. 1976. The effects of particle size and distribution on performance of the fungicide Chlorothalonil. Phytopathology 66:1242-1245.
76. Backman, P. A., R. Rodríguez-Kábana, and J. C. Williams. 1975. The effect of peanut leafspot fungicides on the non-target pathogen, *Sclerotium rolfsii*. Phytopathology 65:773-776.
77. Backman, P. A. and R. Rodríguez-Kábana. 1975. A system for the growth and delivery of biological control agents to the soil. Phytopathology 65:819-821.
78. Rodríguez-Kábana, R., P. A. Backman, and C. McLeod. 1975. A soil plate method for rapid screening of pesticides against *Sclerotium rolfsii*. Plant Disease Reporter 59:439-442.
79. Rodríguez-Kábana, R., and P. A. Backman. 1975. Applications of sodium azide for control of soilborne pathogens in potatoes. Plant Disease Reporter 59:528-532.
80. Rodríguez-Kábana, R., P. A. Backman, and J. C. Williams. 1975. Determination of yield losses to *Sclerotium rolfsii* in peanut fields. Plant Disease Reporter 59:855-858.
81. Rodríguez-Kábana, R., P. A. Backman, and Elizabeth A. Wiggins. 1974. Determination of sclerotial populations of *Sclerotium rolfsii* in soil by a rapid flotation-sieving technique. Phytopathology 64:610-615.
82. Clark, E. M., P. A. Backman, and R. Rodríguez-Kábana. 1974. Resistance of *Cercospora arachidicola* and *Cercosporidium personatum* to benomyl in Alabama peanut fields. Phytopathology 64:1476-1477.
83. Rodríguez-Kábana, R., and P. A. Backman. 1973. Comparative study of sucrose vs. molasses for the extraction of soil nematodes by the flotation method. Nematropica 3:3-7.
84. Backman, P. A. and J. E. DeVay. 1971. Mode of action and biogenesis of the phytotoxin syringomycin. Physiological Plant Pathology 1:215-233.
85. Sinden, S. L., J. E. DeVay, and P. A. Backman. 1971. The nature of the wide-spectrum antibiotic produced by pathogenic strains of *Pseudomonas syringae*. Physiological Plant Pathology 1:199-214.
86. Backman P. A. 1970. The mode of action and further characterization of the phytotoxin syringomycin. Ph.D. Thesis, University of California, Davis. 72 p
87. Penner, D. E., J. E. DeVay, and P. A. Backman. 1969. Effect of syringomycin on ribonucleic acid synthesis. Plant Physiology 44:806-808.

88. Moller, W. J., J. E. DeVay, and P. A. Backman. 1969. Effect of some ecological factors on Ceratocystis canker in stone fruits. Phytopathology 59:938-942.
89. DeVay, J. E., S. L. Sinden, F. L. Lukezic, L. F. Warenfels, and P. A. Backman. 1968. Poria root and crown rot of cherry. Phytopathology 58:1239-1241.

Major Non-Refereed Publications

1. Fajardo, J.E., and P. A. Backman. 1997. Evaluation of in-furrow fungicides for control of seedling disease in cotton, 1996. Fungicide Nematicide Tests. 52:256.
2. Burkett, J.E. and P.A. Backman. 1997. Evaluation of rate and timing of fungicide applications for control of soilborne peanut diseases, 1995. Fungicide Nematicide Tests 52:263.
3. Burkett, J.E. and P.A. Backman. 1997. Evaluation of Moncut and ICIA5504 for control of soilborne diseases. 1995. Fungicide and Nematicide Tests 52:264.
4. Farardo, J.E., and P.A. Backman. 1997. Timing of application and combinations of fungicides for control of peanut leaf spot, 1996. Fungicide and Nematicide Tests 52:265.
5. Fajardo, J.E., and P.A. Backman. 1997. Effect of application number and tank mixes of fungicides for management of peanut diseases, 1996. Fungicide and Nematicide Tests 52:267.
6. Fajardo, J.E., and P.A. Backman. 1997. Comparison of calendar and AU-Pnuts advisory program for timing of fungicide sprays to control foliar and soilborne diseases in peanut. 1996. Fungicide and Nematicide Tests 52:266.
7. Farjardo, J.E., and P.A. Backman. 1997. Screening of fungicides for foliar and soilborne disease resistance management programs in peanut, 1996. Fungicide and Nematicide Tests. 52:268.
8. Fajardo, J.E. and P.A. Backman. 1997. Triazole fungicides and different formulations of chlorothalonil for disease resistance management programs in peanut, 1996. Fungicide and Nematicide Tests 52:269.
9. Fajardo, J.E. and P.A. Backman. 1997. Evaluation of registered and non-registered fungicides for control of diseases in peanut, 1996. Fungicide and Nematicide Tests 52: 270.
10. Jacobi, J.C. and P.A. Backman. 1995. Comparison of fungicides for management of peanut diseases, Fungicide Nematicide Tests. 50:259.
11. Jacobi, J.C. and P.A. Backman. 1995. Control of peanut leafspot with various formulations of chlorothalonil. Fungicide Nematicide Tests. 50:258
12. Jacobi, J.C. and P.A. Backman. 1995. Evaluation of in-furrow fungicides for control of cotton seedling diseases. Fungicide Nematicide Tests 50:242.
13. Jacobi, J. C., and P. A. Backman. 1994. Evaluation of chlorothalonil fungicides for control of early and late leaf spot of peanut. Fungicide and Nematicide Tests 9:254.
14. Jacobi, J. C., and P. A. Backman. 1994. Evaluation of fungicides for control of foliar and soilborne diseases of peanut. Fungicide and Nematicide Tests 49:255.
15. Seebold, K. W. and P. A. Backman. 1994. Effects of adjuvants and applications methods on fungicide performance in peanut. Fungicide and Nematicide Tests 49:261.
16. Jacobi, J. C., and P. A. Backman. 1993. Evaluation of chlorothalonil fungicides for the control of foliar diseases of peanut. Fungicide and Nematicide Tests 48:275.
17. Jacobi, J. C., and P. A. Backman. 1993. Evaluation of fluazinam and ASC-67049 for suppression of soilborne diseases of peanut Fungicide and Nematicide Tests

48:276.
18. Seebold, K. W., J. C. Jacobi and P. A. Backman. 1993. Evaluation of Fungicides for control of soilborne diseases of peanut. Fungicide and Nematicide Tests 48:283.
19. Ploper, L. D., P. A. Backman, and R. Rodríguez-Kábana. 1992. Enhanced natural biological control of apple fruit diseases by application of biopolymers, 1990. Biological and Cultural Tests 7:3.
20. Ploper, L. D., and P. A. Backman. 1992. Effects of soil mulch, row cover, and biological and chemical foliar treatments on early blight of tomato, 1991. Biological and Cultural Tests 7:38.
21. Stevens, C., V. A. Khan, D. J. Collins, R. Rodríguez-Kábana, L. D. Ploper, O. Adeyeye, J. E. Brown, and P. A. Backman. 1992. Effects of soil solarization on early blight, southern blight, and root-knot on tomato, 1990-1991. Biological and Cultural Tests 7:43.
22. Jacobi, J. C., and P. A., Backman. 1992. Evaluation of foliar fungicides for control of soilborne and foliar diseases of peanut. Fungicide and Nematicide Tests. 47:230.
23. Jacobi, J. C., and P. A., Backman. 1992. Evaluation of experimental fungicides for suppression of soilborne diseases of peanut. Fungicide and Nematicide Tests. 47:231.
24. Jacobi, J. C., and P. A. Backman. 1992. Evaluation of biological control agents for suppression of soilborne diseases of peanut, 1991. Biological and Cultural Tests 7:64.
25. Jacobi, J. C., and P. A., Backman. 1991. Evaluation of timing sterol inhibiting fungicides to control peanut diseases. Fungicide and Nematicide Tests. 46:257.
26. Jacobi, J. C., and P. A., Backman. 1991. Evaluation of fungicide timing to control both soilborne and foliar diseases of peanut. Fungicide and Nematicide Tests. 46:258.
27. Jacobi, J. C., and P. A. Backman. 1990. Insertion of sterol inhibiting fungicides into a chlorothalonil spray schedule to optimize peanut disease control and yield. Fungicide and Nematicide Tests 45:214.
28. Jacobi, J. C., and P. A. Backman. 1989. Evaluation of fungicides for control of peanut diseases. Fungicide and Nematicide Tests 44:186.
29. Jacobi, J. C., and P. A. Backman. 1989. Evaluation of fungicides for suppression of southern stem rot on peanuts. Fungicide and Nematicide Tests 44:187.
30. Kokalis, N. M., and P. A. Backman. 1989. Evaluation of fungicides for control of leafspot and white mold. Fungicide and Nematicide Tests 44:190.
31. Crawford, M. A., and P. A. Backman. 1987. Evaluation of fungicides and application timing for control of peanut stem rot, 1986. Fungicide and Nematicide Tests 42:127-128.
32. Crawford, M. A., and P. A. Backman. 1987. Evaluation of fungicides for the control of peanut diseases, 1986. Fungicide and Nematicide Tests 42:128.
33. Turner, J. T., and P. A. Backman. 1986. Quantum 4000 (Bacillus subtilis) as a bacterial seed treatment of peanuts. p. 49. In Cultural and Biological Tests. Am. Phytopathological Soc.
34. Williams, M. J. and P. A. Backman. 1985. Activity of Prochloraz 400 EC against the tall fescue endophyte, 1984. Fungicide and Nematicide Tests 40:175.
35. Crawford, M. A. and P. A. Backman. 1985. Control of peanut diseases with sterol

inhibitor fungicides, 1984. Fungicide and Nematicide Tests 40:150.

Agricultural Experiment Station Publications, and Theses and Dissertations Directed

Available on request

Meetings With Published Proceedings

Available on request

PROFESSIONAL ACTIVITIES AND OFFICES HELD IN SCIENTIFIC SOCIETIES

1. Assoc. Ed. Plant Disease Reporter,1974-75
2. Plant Pathologist for Office of Technology Assessment, US Congress, 1978 (Soybeans in the South)
3. Biological Control Committee, Am Phytopathological Soc. (APS), 1979-80
4. Assoc. Ed. Peanut Science, 1980-1987
5. Tropical Plant Pathology Comm., APS, 1980-1984
6. Technical Committee, Am. Peanut Res. Educ. Soc. (APRES) 1980
7. Awards Committee, Southern Soybean Disease Workers, 1981
8. Book Revision Committee, APRES, 1981
9. PCNB Benefits Committee, USDA (RPAR), 1979
10. Vice Chairman of Southern Working Group on Soybean IPM, 1981-1983
11. Secretary of Southern Working Group on Pesticide Application Technology, 1980-1981
12. Member, Southern Soybean Disease Workers Fungicide Awareness Committee, 1982
13. Member, Executive Committee Southern Soybean Disease Workers, 1980-1982
14. Chemical Control Committee, Am. Phytopathological Soc. 1988-1991, Chairman 1990
15. Southern Regional Ad Hoc Committee on IPM Grant Proposals, 1984
16. Editorial Board (Associate Editor) Peanut Science 1984-1989SRIEG-29, Pesticide Application Technology, Vice-Chairman, 1987, Chairman 1988
17. USDA/PIAP Peer Panel Grant Review Team Member, Atlanta, January, 1987
18. Organizer Eastern Regional Conference on the Ecology of Root-Infecting Microorganisms, Chairman and Host with W. D. Kelley, Auburn, March, 1987
19. Outside Grant Review Team UN/Intl. Atomic Energy Agency, "Mutation Breeding in soybeans. Oct 1989 and Oct-Nov. 1991, evaluating grant progress in 5 key locations in Thailand
20. Peer Review Panel USDA/SIPM 1989 Grants
21. Member ESCOP panel on Pesticide Application Technology, 1991
22. Member and section facilitator on USDA workshop on alternatives to Methyl Bromide, 1993
23. Member US Congress panel (OTA) assessing current state of development of

Biological Control and needs for legislation, 1994-95
24. Member USDA/CSREES IPM Initiative grant review team, 1995
25. Finance Committee Member, Southern Div. Am. Phytopathological Society 1995-98
26. Chair, American Phytopathological Soc. Phyllosphere Microbiology Committee, 1995-1996
27. Chair, American Phytopathological Society Biological Control Committee, 1996-97
28. President elect, Auburn University Chapter, Gama Sigma Delta, 1996-97
29. IR-4 and USDA/SBIR grant review panels 1996, 1997, 2001
30. Associate Editor, Biological Control (a journal by Academic Press) 1995-2000

UNIVERSITY COMMITTEE ASSIGNMENTS (*Served as Chairman)

- Computer Software Research Committee
- 24c State Pesticide Label Committee*
- Pesticide Impact Assessment Committee
- Pesticide Advisory Committee (State of Alabama)
- Environmental Sciences Service Center (NOAA) Committee
- Internship Committee
- Visiting Scientists Committee*
- Sigma Xi Awards Committee*
- Departmental Self-Study Committee
- Dept. Curriculum Committee
- Plant Protection Curriculum Committee*
- Fescue Toxicity Diagnostic Center Committee*
- University Super Computer Committee
- Integrated Pest Management Committee
- Dean of Agriculture Selection Committee
- Graduate Student Evaluation Committee
- Curriculum Committee
- Greenhouse-Growth Chamber Committee
- Graduate Program Officer (PLP)
- Computer Center Liaison (PLP)
- Dean of Agriculture Advisory Committee
- Selection Committee, E.V. Smith Horticultural Unit Superintendent
- Departmental Budget Committee
- Search Committee Biological Control Position
- Administrator Evaluation Committee (Fac. Senate)
- Search Committee, Forestry Pathology Position
- College of Agriculture Environment Committee
- Field Station Superintendents Selection Committee for the Experiment Station

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INVITED LECTURES (and Invited participations in working groups)

1. Southern Soybean Disease Workers, Ft. Walton Beach, FL, April, 1982, “Disease

Prediction and Control in Soybeans”

2. National Chemigation Conference, Tifton, GA, August, 1982, “Application of Fungicides Through Sprinklers” Abbott Labs, Chicago, IL, October, 1982, “Bacterization of Peanut Roots and Its Effects on Disease and Yield”
3. National Soybean Breeders Workshop, Memphis, TN, February, 1983, “Soybean Diseases in the South" Fescue Toxicity Workshop, Corvallis, OR, May, 1983, “Control of the Tall Fescue Endophyte”
4. Fourth International Congress of Plant Pathology in Melbourne, Australia, August, 1983, “Detection and Quantification of Warning Thresholds for Disease Control"
5. World Soybean Research Congress III, Ames, IA, August, 1984, "Stem Canker of Soybeans"
6. Swedish University of Agriculture, Upsalla, June, 1986, "Control of Foliage Diseases in the Subtropics" and "Approaches to IPM in Row Crops"
7. Kenogard Chemical Co., Stockholm, Sweden, June, 1986 "Inoculation of Peanut Roots with *Bacillus subtilis*, and the Nature of the Host Response"
8. Soybean Breeders Workshop, St. Louis, MO, March, 1986, "Soybean Stem Canker" American Soybean Association Sudden Death Syndrome Workshop, St. Louis, March, 1987
9. North Central Soybean Disease Workshop, Indianapolis, Indiana, April, 1987
10. 1st International Workshop on Plant Growth Promoting Rhizobacteria, Orillia, Ontario, September, 1987 Invited Speaker. Bacillus spp. For Biological Control.
11. American Soybean Association Expo 1987, August, 1987, "Soybean Diseases in the South", St. Louis
12. SRIEG-36, Soybean IPM, Savannah, GA, March, 1987
13. Southern Soybean Disease Workers, Savannah, GA, March, 1987
14. SRIEG-29, Pesticide Application Technology, Vice-Chairman and Speaker, Atlanta, November, 1987
15. Department of Plant Pathology, University of Georgia, Athens, GA, January, 1989, “Biological Control Using *Bacillus subtilis*"
16. National Cotton Council, Nashville, TN, January, 1989 "Biological Control of Cotton Soilborne Disease
17. World Soybean Research Conference IV, Buenos Aires, Argentina, March, 1989, “Control of Soybean Diseases Using Fungicides", and "A Computerized Management Model (AUSIMM) for Control of Soybean Pests". Session chair.
18. College of Agriculture, Chiang Mai, Thailand, October, 1989, "Biological Control of Plant Diseases", and "Breeding for Disease Resistance in Soybeans with Emphasis on Evaluation Techniques"
19. USDA/ARS National Aflatoxin Workshop, Peoria, IL, November, 1989, "Biological Control of *Aspergillus flavus Using Bacteria"*
20. American Association Advancement of Science (AAAS), February, 1990, “The Use of Bacteria for Biological Control of Plant Disease”
21. American Phytopathological Society, 1990, “Use of Computers in Disease Control, Demonstrating AUSIMM Pest Management Program for Soybeans”
22. Crop Genetics International, Hanover, Maryland, September, 1990, Consultancy and Lecture on Use of Surfactants to Potentiate Bacterial Bioherbicides
23. Maejo Institute of Agricultural Technology, and Maejo Crops Research Center, Thailand, October, 1990, lecture on "Peanut Diseases and Their Control".
24. Kesetsart University, and Thai Department of Agriculture, Bangkok, Thailand,

October 1990, seminar on Biological Control of Plant Diseases

25. University of Georgia, Tifton, February, 1991 "Advances in Biological Control of Plant Diseases"
26. American Phytopathological Society, August, 1991, "Biological Control of Weeds with Bacteria" and "Integration of Chemical and Biological Control"
27. Campbell Soup Company, Davis, CA, September, 1991 "Biological Control of Foliage Diseases"
28. Dow-Elanco Chemical Co., March, 1992, "Biological Control of Foliage Diseases"
29. Ciba Geigy Chemical Co., June, 1992, Biological Control of Foliage Diseases
30. Cyanamid Corp., February, 1993, Auburn University's programs in Biological Control
31. Montana State Univ. June, 1993, Biological control of Foliage Diseases
32. Rhone Poulenc Corp., December, 1993 Biological Control of Agricultural Pests
33. 3rd Intl. Symposium on Plant Growth Promoting Rhizobacteria, March, 1994, "Development of *Bacillus subtilis* GB03 as a biological control for soil borne diseases
34. Gordon Conference invited presenter, February, 1995, Chemical-Biological Synergies, Oxnard CA
35. National Resource Conservation Act Symposium, May, 1995, Lead Speaker, Agricultural Inputs in the 21st Century, focusing the activities of USDA-NRCS for the next decade.
36. IPM implementation grants USDA-CSREES national review team, June,1995
37. University of Georgia, April, 1995, New Concepts of Biological Control
38. University of Nebraska, May 1995, Biological Control of plant diseases, mediated by polysilicone adjuvants
39. USDA/NRCS Resource Conservation Act Symposium III: June 1995 Crop and Livestock Technologies. Lead speaker on pesticide inputs for the 21st century.
40. Bayer Chemical, Monheim Germany, June, 1995, Fungicide resistance management in peanuts, June 1995
41. Sipcam-Oxone Chemical, Milan Italy, June, 1995, Strategies for fungicide resistance management in bananas
42. Intl. Plant Protection Cong. The Hague, Netherlands, July, 1995, Development and Commercialization of Bacillus root inoculating Bacteria. July 1995.Gatlingburg Symposium on Agricultural Pest Control, July, 1995, IPM in the 21st Century
43. Office of Technology Assessment, U.S. Congress. July, 1995. Biologically-Based
44. Alternatives to Pesticides Assessment Panel
45. APS annual meeting, invited speaker on Biological Control of Foliage Disease. Aug. 1995.
46. Organized Conference on Integration of Molecular and Traditional Breeding for Crop Improvement, Auburn University, March 1996.
47. Invited presentation Purdue University, the Future of Plant Pathology, Dec. 1996.
48. Organized Conference on Biological Control of Weeds, Auburn Univ. March 1997.

COMPETITIVE GRANTS

1. $40,000 - AID/USDA Seed Treatment Fungicide Effects on Nitrogen Fixation -

1978-1980

2. $10,000 - PIAP/USDA Soybean Fungicide Economics - 1978
3. $48,000 - Abbott Labs. Root Bacterization in Peanuts - 1982-85
4. $45,000 - American Soybean Association. Epidemiology and Control of Stem Canker - 1984-86
5. $40,000/year - 1980-1997. Alabama Peanut and Soybean Commissions. Disease Research and Control
6. $50,000 - American Soybean Association. Ecology, epidemiology, and control of soybean stem canker - 1984
7. $99,000 - Alabama Research Institute. Pest Management System for Soybeans - 1985
8. $100,000 - 85-CRSR-2-265. Soybean IPM (funds allocated for 1986-88 research) with T. P. Mack and R. Rodríguez-Kábana.
9. $50,000 - Alabama Research Institute. Microcomputerized IPM - 1986
10. $150,000 - CRSR/USDA. Soybean Integrated Pest Management - 1986-1988
11. $11,200 - Griffin Corporation. Peanut Disease Control - 1986
12. $11,250 - American Soybean Association. Stem Canker Epidemiology - 1987
13. $93,000 - USDA/SIPM. Development of a computerized management system for peanuts - 1987-89
14. $50,000 - Alabama Research Institute (funds allocated for 1987 research with Dr. T. P. Mack and Dr. R. Rodríguez-Kábana
15. $180,000 - DuPont. Biological Control of Foliage Diseases - 1989-1993
16. $90,000 - USDA/SIPM Cotton IPM-Biological Control, with J. Kloepper and R. Rodriguez Kabana - 1992-94
17. $60,000 - Gustafson grant for training Biocontrol graduate students, with J. Kloepper -1991-93
18. $96,000, USDA/SIPM immunization of cabbages (with S. Tuzun) - 1994-97
19. $146,000, USDA/NRI integrated management of vegetable diseases (with Kloepper and Zehnder) - 1994-97
20. $188,000, USDA/Alternatives: Ecologically-based Alternatives for Management of Pecan Scab - 1996-1998. With University of Georgia, and USDA Scientists
21. $148,000. USDA/NRI Use of Doppler radar for predicting pest outbreaks (with Bowen, Bauske and Hagan). 1996-1998
22. $6,000 USDA/ARS/Intl. Support for project on Biological Control of Weeds, for research in France and Spain. 1997
23. $104,892 USDA/IPM Biological Seed Treatments for cotton and snap bean. 1997-1999. Shared regional project with 10 southern states.
24. <u>MINOR GRANTS NOT INDICATED ABOVE AVERAGED $50,000 per year.</u>