

# CURRICULUM VITAE

## FORREST W. NUTTER, JR.



### POSITION

Professor, Department of Plant Pathology and Microbiology, Iowa State University – responsibilities in research and teaching related to the ecology and epidemiology of plant pathogens.

### EDUCATION

1976 – B.S., University of Maryland (Botany)

1978 – M.S., University of New Hampshire  
(Botany and Plant Pathology)

June 1978, Nov. 1980 – The Pennsylvania State University  
(Plant Pathology)

May 1983 – Ph.D., North Dakota State University  
(Plant Pathology with Agronomy Minor in Plant Breeding  
and Statistics)

### PROFESSIONAL EXPERIENCE

1999 to present - Professor, Department of Plant Pathology and Microbiology, Iowa State University, Ames, Iowa 50011

1993 to 1999 - Associate Professor (with Tenure), Department of Plant Pathology, Iowa State University, Ames, Iowa 50011

1990 to 1993 - Associate Professor of Plant Pathology Department of Plant Pathology Iowa State University Ames, Iowa 50011

1984 to 1990 - Assistant Professor of Plant Pathology Department of Plant Pathology University of Georgia Athens, Georgia 30602

1983 to 1984 - Post-Doctoral Research Associate Department of Plant Pathology North Dakota State University Fargo, North Dakota 58105

### HONORS AND AWARDS

2014 - Outstanding Achievement in Teaching Award, College of Agriculture and Life Sciences, Iowa State University

2009 - **APS North Central Division Distinguished Service Award**

1999 - Elected to Gamma Sigma Delta

1998 - Iowa State University Inventors Award – Recognized for developing educational training software

1994 - **APS-CIBA Geigy Award for significant contributions to the knowledge of Plant diseases and their control**

1989 - Bailey Award Nominee (Best Paper) American Peanut Research and Education Society

1988 - **APS Foundation Genesis Teaching Award for innovative teaching**

1983 - Sigma Xi

## **RESEARCH AND TEACHING INTEREST**

Dr. Nutter's teaching and research interests are in quantitative epidemiology and plant disease management using a system approach to optimize and integrate pest management tactics. Quantitative epidemiological principles and models are being developed to assess the risks and benefits of new agricultural biotechnologies as well as to assess the risks and predicted impacts of new and emerging plant diseases. Global positioning systems (GPS), geographic information systems (GIS) and remote sensing technologies are being used to better understand, quantify, and forecast the occurrence of plant disease epidemics (and their impacts on crop yield). Theoretical and practical approaches for quantifying spatial and temporal component processes of epidemics are being developed and incorporated into larger agroecosystem models to help safeguard US agriculture.

## **TEACHING RESPONSIBILITIES (15%)**

Responsible for teaching a graduate course in quantitative epidemiology (4 credits) and a graduate course in epidemiology and disease management (2 credits). I have also organized a number of colloquia and special topics courses for the department and University Honors Program. Also responsible for advising graduate students.

## **COURSES TAUGHT AT IOWA STATE UNIVERSITY**

**Plant Pathology 543. Plant Disease Epidemiology.** Analysis of genetic, environmental and disease management factors that alter the course of plant disease epidemics. Four credits.

**Plant Pathology 507. Epidemiology and Disease Management.** Principles of pathogen population dynamics as affected by environment and host genetics. Two credits.

**Honors 321 P Global Change and Terrestrial Ecosystems.** This course focuses on the science of predicting the impacts of global change on natural and agricultural ecosystems. Two credits.

**Plant Pathology 490/590. Special Problems in Epidemiology.** Tailored for undergraduate students participating in the ISU Freshman Honors Program, the Undergraduate Research Assistantship Program, or the summer internship program for Women in Science and Engineering (1-2 credits).

**Plant Pathology 694 (Fall 2010). Plant Pathology Colloquium.** Back to the Future: Plant Diseases Never Die. Two credits.

**Plant Pathology 694 (Spring 2007). Plant Pathology Colloquium (Biological Control).** Theory and practice of biological control strategies to manage plant pathogens. Two credits.

**Plant Pathology 694 (Fall 2003). Crop Bioterrorism and Food Safety (Colloquium).** Weekly seminars by invited guest speakers followed by a 2-hr class discussion period concerning topics related to crop bioterrorism and food security issues. Two credits.

**Plant Pathology 694. Epidemiological Assessment of Resistance-Based Strategies (Colloquium).** The theory, principles, and methods applied to the development of crop plants and their potential risks and benefits. Two credits.

**Plant Pathology 698. Seminar.** Plan and organize schedule of topics and speakers. One credit.

**RESEARCH GRANTS AND CONTRACTS RECEIVED:** \$12,168. 202 total.

**TEACHING GRANTS RECEIVED:** \$86,966 total.

**PUBLICATIONS (A T in the left margin indicates use primarily for teaching purposes)**

**REFEREED JOURNAL ARTICLES (100 total):**

Byamukama, E., Robertson, A., and **Nutter, F. W., Jr.** 2014. Geospatial analyses of *Bean pod mottle virus* of soybean at different spatial scales. *Phytopathology* 104: 365-378.

Gougherty, A. V., Pazdernik, K. T., Kaiser, M. S., and **Nutter, F. W., Jr.** 2014. An Evaluation of the sampling and testing efficiencies of *Plum pox virus* eradication programs in Pennsylvania and Ontario. *Plant Dis.*: XX: XXX-XXX (accepted).

Gougherty, A. V., and **Nutter F. W., Jr.** 2014. Impact of eradication programs on the temporal and spatial dynamics of *Plum pox virus* in Pennsylvania and Ontario, Canada. *Plant Dis*: XX: XXX-XXX (accepted).

Kaiser, M.S., Pazdernik, K.T., Hoeksmea, A.B. and Nutter, F.W. 2014. Modeling the spread of plant disease using a sequence of binary random field with absorbing states. *Spatial Statistics* (accepted for publication).

Varenheerst, A., Robertson, A.E., **Nutter, F.W., Jr.**, and O'Neal M.E, 2014. Determining the relationship between alate aphids and the prevalence of *Soybean mosaic virus* in Iowa. *Plant Dis.* xx (submitted).

Gongora-Canul, C., **Nutter, F. W. Jr.**, and Leandro, L. F. S. 2012. Temporal dynamics of root and foliar symptoms of soybean sudden death syndrome. *European J. of Plant Pathology* 132:71-79.

Gougherty, A. V., and **Nutter, F. W., Jr.** 2012. An epidemiological comparison of the US and Canadian *Plum pox virus* eradication programs. Online. *Plant Health Progress* doi:10.1094/PHP-2012-0723-03-RS.

**Nutter, F. W., Jr.** 2012. The 11<sup>th</sup> I. E. Melhus graduate student symposium: Today's students making a difference in plant disease epidemiology and disease management. Online. *Plant Health Progress* doi:10.1094/PHP-2012-0723-01-PS.

Byamukama E., Robertson, A. E., and **Nutter, F. W., Jr.** 2011. Quantifying the within-field temporal and spatial dynamics of *Bean pod mottle virus* in soybean. *Plant Dis.* 95:126-136 (**Plant Disease Editor's Pick of the Month, February 2011 issue**).

Byamukama, E., Robertson, A. R., and **Nutter, F. W., Jr.** 2010. Quantification of temporal and spatial dynamics of *Bean pod mottle virus* at different spatial scales. Online. *Plant Health Progress* doi:10.1094/PHP-2010-05XX-01-SY.

Kim, K. S., Taylor, S. E., Gleason, M. L., **Nutter, F. W. Jr.**, Coop, L. B., Pfender, W. F., Seem, R. C., Sentelhas, P. C., Gillespie, T. J., Marta, A. D., and Orlandini, S. 2010. Spatial portability of numerical models of leaf wetness duration based on empirical approaches. *Agricultural and Forrester Meteorology* 150:871-880.

Lu, X., Robertson, A. E., and **Nutter, F. W., Jr.** 2010. Evaluating the importance of stem canker of soybean in Iowa. *Plant Dis.* 94:167-173.

Lu, X., Byamukama, E., Robertson, A., and **Nutter, F. W., Jr.** 2010. Prevalence, incidence and spatial dependence of *Soybean mosaic virus* in Iowa. *Phytopathology* 100:931-940.

**Nutter, F.W., Jr.** 2010. The 8<sup>th</sup> I.E. Melhus graduate student symposium: Forty-Five years after Van der Plank, new visions for the future of plant disease epidemiology. Online. *Plant Health Progress* doi:10.1094/PHP-2010-0526-01-SY.

Pethybridge, S. J., Gent, D. H., Esker, P. D., Turechek, W. W., Hay, F. S., and **Nutter, F. W., Jr.** 2009. Identification of site-specific risk factors for ray blight in Tasmanian pyrethrum fields. *Plant Disease* 93:229-237.

Pethybridge, S. J., Hay, F. S., Esker, P. D., Gent, D. H., Wilson, C. R., Groom, T., and **Nutter, F. W., Jr.** 2008. Disease of pyrethrum in Tasmania: Challenges and prospects for management. *Plant Disease* 92:1260-1272.

Pethybridge, S. J., Hay, F., Esker, P. D., Groom, T., Wilson, C., **Nutter, F. W., Jr.** 2008. Visual and radiometric assessments for yield losses caused by ray blight in pyrethrum. *Crop Science* 48:343-352.

Esker, P. D., Gibb, K. S., Dixon, P. M., and **Nutter, F. W., Jr.** 2007. Use of survival analysis and space-time point pattern analysis to improve the epidemiological understanding of the papaya-papaya yellow crinkle pathosystem. *Plant Health Progress* doi:10.1094/PHP-2007-0726-02-RS.

**Nutter, F. W., Jr.** 2007. The 5<sup>th</sup> I. E. Melhus Graduate Student Symposium: Today's students preparing to meet tomorrow's challenges in epidemiology and plant disease management. *Plant Health Progress* doi: 10.1094/PHP-2007-0726-01-PS.

Pethybridge, S. J., Esker, P. D., Dixon, P., Hay, F. S., Groom, T., Wilson, C. R., and **Nutter, F. W., Jr.** 2007. Quantifying loss caused by ray blight disease in Tasmanian

pyrethrum fields. *Plant Disease* 91:1116-1121. **This article was the Plant Disease Editor's pick of the month.**

Pethybridge, S. J., Hay, F., Esker, P. D., Wilson, C., and **Nutter, F. W., Jr.** 2007. Use of a multispectral radiometer for non-invasive assessments of foliar disease caused by ray blight in pyrethrum. *Plant Disease* 91:1397-1406.

Aubertot, J. N., Sohbi, Y., Brun, H., Penaud, A., **Nutter, F. W., Jr.** 2006. Phomadidacte: a computer-aided training program for the severity assessment of phoma stem canker of oilseed rape. *Plant Pathology. Integrated Control of Oilseed Crops* 29:247-254.

Esker, P. D., Gibb, K. S., Dixon, P. M., and **Nutter, Jr., F. W.** 2006. Use of survival analysis to determine the time-to-death of papaya due to phytoplasma diseases in Australia. *Plant Disease* 90:102-107.

Esker, P.D., Harri, J., Dixon, P.M., and **Nutter, F.W., Jr.** 2006. Comparison of models for forecasting of Stewart's disease of corn in Iowa. *Plant Dis.* 90: 1353-1357.

Menelas, B., Block, C.C., Esker P.D. and **Nutter, F.W., Jr.** 2006. Quantifying the acquisition access and transmission feeding periods of corn flea beetles to acquire and transmit *Pantoea stewartii*. *Plant Dis.* 90:319-324.

**Nutter, F.W., Jr.**, and Esker, P.D. 2006. The role of psychophysics in phytopathology: the Weber-Fechner Law revisited. *European Journal of Plant Pathology* 114:199-213.

**Nutter, F.W., Jr.**, Esker, P.D., and Coelho Netto, R.A. 2006. Disease assessment concepts and the advancement made in improving the accuracy and precision of plant disease data. *European Journal of Plant Pathology* 115: 99-103.

Savary, S., Teng, P.S., Willocquet, L., and **Nutter, F.W., Jr.** 2006. Quantification and modeling of crop losses: A review of purposes. *Annu. Rev. Phytopathol.* 44:89-112.

Cook, K.A., Weinzier, R.A., Pataky, J.K., Esker, P.D., and **Nutter, F.W., Jr.** 2005. Seasonal fluctuations in population densities of the corn flea beetle, *Chaetocnema pulicaria* (Melsheimer) (Coleoptera: Chrysomelidae) and the impact on the incidence of Stewart's wilt in sweet corn. *Journal of Economic Entomology* 98: 673-682.

Pethybridge, S. J., Esker, P. D., Hay, F. Wilson, C. and **Nutter, F. W., Jr.** 2005. Spatiotemporal description of epidemics caused by *Phoma ligulicola* in Tasmanian pyrethrum fields. *Phytopathology* 95:648-658.

Esker, P. D., J. Obrycki, and **Nutter, F.W., Jr.** 2004. Trap height and orientation of yellow sticky traps affect capture of *Chaetocnema pulicaria* (Coleoptera: Chrysomelidae). *J. Econ. Ento.* 97:145-149.

- Guan, J., and **Nutter, F. W., Jr.** 2004. Comparison of single-point alfalfa yield models based on visual disease intensity and remote sensing assessments. *Canadian Journal of Plant Pathology* 26: 314-324.
- Esler, P. D., and **Nutter, F. W., Jr.** 2003. The temporal dynamics of flea beetle populations infested with *Pantoea stewartii*, the causal agent of Stewart's disease of corn. *Phytopathology* 93: 210-218.
- Guan, J., and **Nutter, F. W., Jr.** 2003. Quantifying the intra-rater repeatability and inter-rater reliability of visual disease and remote sensing assessment methods in the alfalfa foliar disease pathosystem. *Canadian Journal of Plant Pathology* 25:143-149.
- Leandro, L. F. S., Gleason, M. L., **Nutter, F. W., Jr.**, Wegulo, S. N., and Dixon, P. M. 2003. Influence of temperature and wetness duration on the ecology of *Colletotrichum acutatum* on symptomless strawberry leaves. *Phytopathology* 93: 513-520.
- Leandro, L. F. S., Gleason, M. L., **Nutter, F. W., Jr.**, Wegulo, S. N., and Dixon, P. M. 2003. Strawberry plant extracts stimulate secondary conidiation by *Colletotrichum acutatum* on symptomless leaves. *Phytopathology* 93: 1285-1291.
- Batzer, J. C., Gleason, M. L., Dixon, P. M., and **Nutter, F. W., Jr.** 2002. Evaluation of post-harvest removal of sooty blotch and flyspeck on apples using sodium hypochlorite. *Plant Dis.* 86: 1325-1332.
- Esler, P. D., and **Nutter, F. W., Jr.** 2002. Assessing the risk of Stewart's disease of corn through improved knowledge of the role of the corn flea beetle. *Phytopathology* 92: 668-670.
- Esler, P. D., Obricki, J. J., and **Nutter, F. W., Jr.** 2002. Temporal distribution of *Chaetonema pulicaria* (*Coleoptera: Chrysomelidae*) populations. *Journal of Economic Entomology* 95: 739-747.
- Guan, J., and **Nutter, F. W., Jr.** 2002. Relationships between defoliation, leaf area index, canopy reflectance, and forage yield in the alfalfa-leaf spot pathosystem. *Computers and Electronics in Agriculture* 37: 97-112.
- Guan, J., and **Nutter, F. W., Jr.** 2002. Relationships between percentage defoliation, dry weight, percentage reflectance, leaf-to-stem ratio, and green leaf area index in the alfalfa leaf spot pathosystem. *Crop Sci.* 42:1264-1273.
- Leandro, L. F. S., Gleason, M. L., Wegulo, S. N., and **Nutter, F. W., Jr.** 2002. Survival and sporulation of *Colletotrichum acutatum* on symptomless strawberry leaves. *Acta Horticulturae* 567: 627-629.

- McKirdy, S. J., Jones, R. A. C., and **Nutter, F. W., Jr.** 2002. Quantification of yield losses caused by barley yellow dwarf in oats and wheat in Western Australia. *Plant Dis.* 86: 769-773.
- Nutter, F. W., Jr.**, Guan, J., Gotlieb, A. R., Rhodes, L. H., Grau, C. R., and Sulc, R. M. 2002. Quantifying alfalfa yield losses caused by foliar diseases in Iowa, Ohio, Wisconsin, and Vermont. *Plant Dis.* 86:269-277.
- Nutter, F. W., Jr.**, Rubsam, R. R., Taylor, S. E., Harri, J. A., and Esker, P. D. 2002. Geospatially-referenced disease and weather data to improve site-specific forecasts for Stewart's disease of corn in the U.S. corn belt. *Computers and Electronics in Agriculture* 37:7-14.
- Nutter, F. W., Jr.**, Tylka, G. L., Guan, J., Moreira, A. J. D., Maret, C. C., Rosburg, T. R., Basart, J. P., and Chong, C. S. 2002. Use of remote sensing to detect plant stress caused by soybean cyst nematode. *Journal of Nematology* 34: 222-231.
- Steinlage, T. A., Hill, J. H., and **Nutter, F. W., Jr.** 2002. Temporal and spatial spread of soybean mosaic virus (SMV) in soybeans transformed with the coat protein gene of SMV. *Phytopathology* 92: 478-486.
- Guan, J., and **Nutter, F. W., Jr.** 2001. Factors affecting the quality and quantity of sunlight reflected from alfalfa canopies. *Plant Dis.* 85:865-874.
- Leandro, L. F. S., Gleason, M. L., **Nutter, F. W., Jr.**, Wegulo, S. N., and Dixon, P. M. 2001. Germination and sporulation of *Colletotrichum acutatum* on symptomless strawberry leaves. *Phytopathology* 91:659-664.
- Wang, X., Eggenberger, A. L., **Nutter, F. W., Jr.**, and Hill, J. H. 2001. Pathogen-derived transgenic resistance to soybean mosaic virus in soybean. *Molecular Breeding* 8:119-127.
- T** **Nutter, F. W., Jr.** 1999. Disease assessment theory and practice: "What we think we see is what we get". *Fitopatol. Bras.* 24:229-231.
- T** **Nutter, F. W., Jr.** 1999. Epidemiological concepts in human, veterinary, and botanical epidemiology. *Ecosystem Health* 5:128-130.
- T** **Nutter, F. W., Jr.** 1999. Understanding the interrelationships between botanical, human, and veterinary epidemiology: The Y's and R's of it all. *Ecosystem Health* 5:131-140.
- Ward, J. M. J., Stromberg, E. L., Nowell, D. C., and **Nutter, F. W., Jr.** 1999. Gray leaf spot: A disease of global importance in maize production. *Plant Disease* 83:884-895.

- Nutter, F. W., Jr.**, Schultz, P. M., and Hill, J. H. 1998. Quantification of within-field spread of soybean mosaic virus in soybean using strain-specific monoclonal antibodies. *Phytopathology* 88:895-901.
- Epstein, A. H., Hill, J. H., and **Nutter, F. W., Jr.** 1997. An evaluation of the augmentation of rose rosette disease for the biological control of multiflora rose. *Weed Sci.* 45:172-178.
- Habili, N., and **Nutter, F. W., Jr.** 1997. Temporal and spatial analysis of grapevine leafroll-associated virus 3 in Pinot Noir grapevines in Australia. *Plant Disease* 81:624-628.
- T Nutter, F. W., Jr.** 1997. Quantifying the temporal dynamics of plant viruses: a review. *Crop Prot.* 16:603-618.
- Parker, S. K., **Nutter, F. W. Jr.**, and Gleason, M. L. 1997. Temporal and spatial spread of *Septoria* leafspot of tomato. *Plant Disease* 81:272-276.
- Webb, D. H., and **Nutter, F. W., Jr.** 1997. Effect of temperature and duration of leaf wetness on two disease components of alfalfa rust on alfalfa. *Phytopathology* 87:946-950.
- Wegulo, S. N., **Nutter, F. W., Jr.**, and Martinson, C. A. 1997. Benefits assessment of fungicide usage on seed corn in Iowa. *Plant Disease* 81:415-422.
- Wegulo, S. N., Martinson, C. A., and **Nutter, F. W., Jr.** 1997. Fungicide usage to control common rust and other fungal disease in hybrid corn seed production in Iowa. *Plant Disease* 82:547-554.
- Alberts, E. V., **Nutter, F. W., Jr.**, Corbett, A. J., and Graetz, D. K. 1996. First report of alfalfa mosaic virus in lupins in Australia. *Plant Disease* 80:1302.
- Nutter, F. W., Jr.** and Littrell, R. H. 1996. Relationships among percent defoliation, canopy reflectance, and pod yield in the peanut-late leafspot system. *Crop Protection* 15:135-142.
- Webb, D. H., **Nutter, F. W., Jr.**, and Buxton, D. R. 1996. Lack of effect of leaf lignin content on component resistance to alfalfa rust. *Plant Disease* 80:1184-1188.
- Aquino, V. M., Shokes, F. M., Gorbet, D. W., and **Nutter, F. W., Jr.** 1995. Late leafspot disease progression on peanuts as affected by components of partial resistance. *Plant Disease* 79:74-78.
- Madden, L. V., and **Nutter, F. W., Jr.** 1995. Modeling crop losses at the field scale. *Can. J. Pl. Pathol.* 17:124-137.



- Nutter, F. W., Jr.**, and Schultz, P. M. 1995. Improving the accuracy and precision of disease assessments: selection of methods and use of computer - aided training programs. *Can. J. Pl. Pathol.* 17:174-185.
- Parker, S. K., Gleason, M. L., and **Nutter, F. W., Jr.** 1995. Influence of rain events on spatial distribution of *Septoria* leaf spot of tomato. *Plant Disease* 79:148-152.
- Alderman, S. C. and **Nutter, F. W., Jr.** 1994. Effect of temperature and relative humidity on development of *Cercosporidium personatum* on peanut in Georgia. *Plant Disease* 78:690-694.
- Guillebrau, L. P., All, J. N., **Nutter, F. W., Jr.**, and Kuhn, C. W. 1993. Comparison of foliar and soil-drench applications of aqueous rubidium chloride solutions to plants for marking feeding aphids (*Homoptera: Aphidae*). *J. of Entomol. Sci.* 28:370-375.
- Labrinos, J. L., and **Nutter, F. W., Jr.** 1993. Comparative effects of a protectant versus a sterol inhibiting fungicide on disease components of late leafspot of peanut. *Plant Disease* 77:837-845.
- Nutter, F. W., Jr.**, Gleason, M. L., Jenco, J. H., and Christians, N. C. 1993. Accuracy, intra-rater repeatability, and inter-rater reliability of disease assessment systems in the dollar spot-bentgrass pathosystem. *Phytopathology* 83:806-812.
- T** **Nutter, F. W., Jr.**, Teng, P. S., and Royer, M. H. 1993. Terms and concepts for yield, crop loss, and disease thresholds. *Plant Disease* 77:211-215.
- Rizvi, S. S. A., and **Nutter, F. W., Jr.** 1993. Seasonal dynamics of alfalfa foliar pathogens in Iowa. *Plant Disease* 77:1126-1135.
- Mills, F. D., Jr., and **Nutter, F. W., Jr.** 1991. Late leaf spot control: can the costs be reduced? Page 36 in: *The Peanut Grower* 3.
- Mills, F. D., Jr., and **Nutter, F. W., Jr.** 1991. That dirty ring: new approaches to fighting late leaf spot. Pages 48-49 in: *The Peanut Grower* 3.
- Nutter, F. W., Jr.** 1991. Assessing the benefits associated with the planned introduction of genetically engineered organisms. *Phytopathology* 81:344-348.
- T** **Nutter, F. W., Jr.**, Teng, P. S., and Shokes, F. M. 1991. Disease assessment terms and concepts. *Plant Disease* 75:1187-1188.
- Adcock, T. E., **Nutter, F. W., Jr.**, and Banks, P. A. 1990. Measuring herbicide injury to soybeans using a radiometer. *Weed Science* 38:625-627.
- Nutter, F. W., Jr.**, Littrell, R. H., and Brenneman, T. B. 1990. Evaluation of fungicide efficacy to control late leaf spot in peanut using a multispectral radiometer. *Phytopathology* 80:102-108.

Padgett, G. B., **Nutter, F. W., Jr.**, and Kuhn, C. W. 1990. Quantification of disease resistance that reduces the rate of tobacco etch virus epidemics in bell pepper. *Phytopathology* 80:451-455.

Alderman, S. C., **Nutter, F. W., Jr.**, and Labrinos, J. L. 1989. Spatial and temporal analysis of spread of *Cercosporidium personatum* in peanut. *Phytopathology* 79:837-844.

Kuhn, C. W., **Nutter, F. W., Jr.**, and Padgett, G. B. 1989. Multiple levels of resistance to tobacco etch virus in pepper. *Phytopathology* 79:814-818.

**Nutter, F. W., Jr.** 1989. Detection and measurement of plant disease gradients in peanut using a multispectral radiometer. *Phytopathology* 79:958-963.

Benner, C. P., Kuhn, C. W., Demski, J. W., Dobson, J. W. Colditz, P., and **Nutter, F. W., Jr.** 1985. Identification and incidence of pepper viruses in northeastern Georgia. *Plant Disease* 69:999-1001.

**Nutter, F. W., Jr.**, Pederson, V. D., and Foster, A. E. 1985. Effect of inoculations with *Cochliobolus sativus* at specific growth stages on grain yield and quality of malting barley. *Crop. Sci.* 25:933-938.

**Nutter, F. W., Jr.** and Pederson, V. D. 1985. Receptivity, incubation period, and lesion size as criteria for screening barley genotypes for resistance to *Pyrenophora teres*. *Phytopathology* 75:603-606.

Zitko, S. E., Statler, G. D., and **Nutter, F. W., Jr.** 1985. Chlorophyll of wheat leaves with differences in leaf rust severity and reaction type. *Can. J. Plant Pathol.* 7:146-150.

**Nutter, F. W., Jr.**, Pederson, V. D., and Pyle, R. E. 1984. Effect of spot blotch (*Cochliobolus sativus*) on malting quality and yield. *Brewers Digest.* 59:24-28.

**Nutter, F. W., Jr.**, Pederson, V. D., and Timian, R. G. 1984. Relationship between seed infection by barley stripe mosaic virus and yield loss. *Phytopathology* 74:363-366.

**Nutter, F. W., Jr.** 1983. Crop Loss Models for Yield and Malting Quality of Barley Affected by *Cochliobolus sativus*, Ph.D. dissertation. North Dakota State University, Fargo, ND. 123 p.

**Nutter, F. W., Jr.**, Cole, H., Jr., and Schein, R. D. 1983. Disease forecasting system for warm weather Pythium blight of turfgrass. *Plant Disease* 67:1126-1128.

**Nutter, F. W., Jr.** and Pederson, V. D. 1983. Effect of differing levels of *Barley stripe mosaic virus* infected seed and rate of field spread on yield loss in barley. *North Dakota Acad. Sci.* 36:111.

Pederson, V. D. and **Nutter, F. W., Jr.** 1983. Low-cost portable multispectral radiometer for assessment of onset and severity of foliar disease of barley. *SPIE* 356:126-130.

**Nutter, F. W., Jr.**, Cole, H., Jr., and Schein, R. D. 1982. Conidial sampling of *Drechslera poae* from Kentucky bluegrass to determine role of mowing in spore dispersal. *Plant Disease* 66:721-723.

**Nutter, F. W., Jr.** and Pederson, V. D. 1982. Disease efficiency and lesion size as criteria for screening barley genotypes for resistance to net blotch (*Pyrenophora teres*). *North Dakota Acad. Sci.* 35:83.

**Nutter, F. W., Jr.**, and MacHardy, W. E. 1981. Timing of additional sprays for control of potato early blight (*Alternaria solani*) when following a late blight forecasting spray schedule in New Hampshire, USA. *Protection Ecology* 3:47-54.

**Nutter, F. W., Jr.** 1980. BLIGHT FORECAST: A simplified program for grower determination of fungicide scheduling. *Protection Ecology* 2:219-22.

**Nutter, F. W., Jr.**, and MacHardy, W. E. 1980. A procedure for selecting components of a potato late blight forecasting and fungicidal control program. *Plant Disease* 64:1103-1105.

**Nutter, F. W., Jr.** 1978. A Forecasting Program for Chemical Control of Late Blight and Early Blight of Potato in New Hampshire. M.S. thesis. Univ. of New Hampshire, Durham, NH. 129 p.

**Nutter, F. W., Jr.**, C. G. Warren, Wells, O. S., and MacHardy W. E. 1978. Fusarium foot and root rot of tomato in New Hampshire. *Plant Dis. Repr.* 60:976-978.

---

#### **EXTENSION PUBLICATIONS (15 total):**

Eggenberger, S., **Nutter, F. W., Jr.**, Gougherty, A., Robertson, A., and Hodgson, E. 2012. Recent status of *Bean pod mottle virus* insect vectors in Iowa. *Integrated Crop Management News*. Online. <http://www.extension.iastate.edu/CropNews/2012/0703eggenbergernuttergoughertyrobertsonhodgson.htm>. Iowa State University Extension, Ames, IA.

**Nutter, F.W., Jr.** and Gougherty, A. 2011. Japanese beetle distribution in 2010. *Iowa State University Crop Management Newsletter*. doi: 25 May, 2011. Iowa State University Extension, Ames, IA. (<http://www.extension.iastate.edu/CropNews/2011/0525nutter.htm>).

**Nutter, F.W., Jr.**, Robertson, A., Eggenberger, S.K., and Hodgson, E. 2011. A 2011 prediction for Stewart's disease of corn. *Iowa State University Crop Management Newsletter*. 7 April, Iowa State University Extension, Ames, IA.

(<http://www.extension.iastate.edu/CropNews/2011/0407nutterhodgsonrobertson.htm>).

Byamukama, E., Robertson, A., and **Nutter, F.W., Jr.** 2010. Predicted risk of *Bean pod mottle virus* in 2010. Integrated Crop Management Newsletter, 12 April, Iowa State University, Ames, IA (<http://www.iastate.edu/CropNews/2010/0412/robertsonbyamukamanutter>).

**Nutter, F.W., Jr.**, Robertson, A., Tollefson, J., Pope, R. 2009. The cold winter may have helped: Stewart's Disease of Corn in Iowa—2009 prediction. Integrated Crop Management Newsletter. 15 April, Iowa State University Extension, Ames, IA. <http://www.extension.iastate.edu/CropNews/2009/041409pope.htm>

**Nutter, F.W., Jr.**, Lu, L., Pope, R., and Rice, M. 2008. Iowa 2008 prediction for Stewart's disease of corn. Integrated Crop Management Newsletter. 17 April, Iowa State University Extension, Ames, IA. <http://www.extension.iastate.edu/CropNews/2008/0414FNutterLiLui.htm>

Robertson, A.E., **Nutter, F.W., Jr.**, Byamukama, E., Lu, X., and Stedman, J. 2007. *Soybean mosaic virus* and *bean pod mottle virus* in Iowa: Occurrence, interactions, impact and identification of preplant risk factors. Page 115-121 in: 2007 Integrated Crop Management Conference, 28-29 November, Iowa State University, Ames, Iowa.

**Nutter, F.W., Jr.** and A. Robertson. 2005. Iowa soybean rust team tests Fast Track System. Pages 96-97 in: ISU Integrated Crop Management, Iowa State University Extension, (23 May, Vol. 93).

Rice, M.E., Pope, R., Robertson, A., and **Nutter, F.W., Jr.** 2005. Corn flea beetles and Stewart's disease risk for 2005. Pages 50-51 in: Integrated Crop Management, Iowa State University Extension, Ames, IA.

Robertson, A. and **Nutter, F.W., Jr.** 2005. Survey of soybean disease in Iowa. Pages 123-127 in: Proceedings of the 17<sup>th</sup> Annual Integrated Crop Management Conference, November 30-December 1, 2005, Iowa State University, Ames, IA.

**Nutter, F. W., Jr.**, and Adcock, E. 2002. Warm winter increases risk of Stewart's disease. News Release, 15 May, Communications Service, Iowa Agriculture and Home Economics Experiment Station, Ames, IA.

**Nutter, F. W., Jr.** Munkvold, G., Esker, P., and Rice, M. 2002. High risk for Stewart's disease of corn predicted for the 2002 growing season. Pages 50-51 in: Integrated Crop Management. Iowa State University Extension, Ames, IA.

Esker, P. D., and **Nutter, F. W., Jr.** 2001. Predicted risk for Stewart's disease in 2001. Pages 68-69 in: Integrated Crop Management, Department of Entomology, Iowa State University, Extension Service, Ames, Iowa (March 15 issue).

Esiker, P. D., and **Nutter, F. W., Jr.** 2000. Severe-risk for Stewart's disease. Integrated Crop Management News Letter, May 1, Iowa State University Extension Service, Ames, IA.

**Nutter, F. W., Jr.**, Munkvold, G., and Meyer, B. 1999. Conditions favor Stewart's disease. Pages 1-2 in: Integrated Crop Management Newsletter, Special Edition, (April), Iowa State University Extension Service, Ames, IA.

---

## **BOOKS, REVIEWS, AND BOOK CHAPTERS**

### ***Published Books (one total):***

Chakraborty, S., Leath, D. T., Skipp, R. A., Pederson, G. A., Bary, R. A., Latch, G. C. M., and **Nutter, F. W., Jr.** 1997. Pasture and Forage Crop Pathology. Am. Soc. Agron., Crop Sci. Soc. Am., and Soil Sci. Soc. Am., Madison, WI. 653 p.

### ***Book Chapters (30 total):***

**Nutter, F.W., Jr.**, Eggenberger, S.K., and Streit, A.J. 2013. Intrarater and Interrater Agreement in Disease Assessment. Pages 197-202 in: Exercises in Plant Disease Epidemiology, 2<sup>nd</sup> edition, K. Stevenson and M. Jeger, eds. APS Press, St. Paul, MN.

**Nutter, F.W., Jr.**, Eggenberger, S.K., and Streit, A.J. 2013. Disease severity assessment training using **DISEASE.PRO**. Pages 189-196 in: Exercises in Plant Disease Epidemiology, 2<sup>nd</sup> edition, K. Stevenson and M. Jeger, eds. APS Press, St. Paul, MN.

**Nutter, F.W., Jr.**, Eggenberger, S.K., and Littlejohn, K.J. 2013. Visualizing, Describing, and Modeling Disease Progress Curves Using **EPIMODEL**. Pages 21-30 in: Exercises in Plant Disease Epidemiology, 2<sup>nd</sup> edition, K. Stevenson and M. Jeger, eds. APS Press, St. Paul, MN.

Bock, C.H. and **Nutter, F.W., Jr.** 2011. Detection and measurement of plant disease symptoms using visible-wavelength photography and image analysis. CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources 6, No. 27. Pp 15. doi: 10.1079/PAVSNNR20116027 (Online ISSN 1749-8848).

Fletcher, J., Barnaby, N. G., Burans, J. P., Melcher, U., **Nutter, F. W., Jr.**, Thomas, C., and Corona, F. M. O. 2010. Forensics plant pathology. Pages 89-105 in Microbial Forensics, 2<sup>nd</sup> edition, B. Budowle, S. E. Schutzer, R. G. Breeze, P. S. Keim, and S. A. Morse, eds. Elsevier Press, San Diego, CA.

**Nutter, F. W., Jr.** 2010. Weber-Fechner Law. Pages 1612-1615 in: Encyclopedia of Research Design, Vol. 3, N. J. Salkind, ed. Sage Publications, Thousand Oaks, CA.

**Nutter, F. W., Jr.**, Byamukama, E., Coelho-Netto, R. A., Eggenberger, S. K., Gleason, M. L., Gougherty, A., Robertson, A. E., and Van Rij, N. 2011. Integrating GPS, GIS, and remote sensing technologies with disease management principles to

- improve plant health. Pages 59-90 in: GIS Applications in Agriculture-Invasive Species, S. Clay, ed. Taylor & Francis Group LLC, Boca Raton, FL.
- Nutter, F. W., Jr.**, Van Rij, N., Eggenberger, S. K., and Holah, N. 2010. Spatial and temporal dynamics of plant pathogens. Pages 27-50 in: Precision Crop Protection - the Challenge and Use of Heterogeneity, E.-C. Oerke, R. Gerhards, G. Menz, and R. A. Sikora, eds. Springer, NY, NY.
- Nutter, F. W., Jr.**, and L. V. Madden. 2009. Plant pathogens as biological weapons against agriculture. Pages 335-363 in: Beyond Anthrax: The Weaponization of Infectious Disease. L. I. Lutwick and S. M. Lutwick, eds. Springer, NY, NY.
- T Nutter, F. W., Jr.** 2007. The role of plant disease epidemiology in developing successful integrated disease management programs. Pages 43-77 in: General Concepts in Integrated Pest and Disease Management, A. Ciancio and K.G. Mukerji, eds. Springer-Verlag, Dordrecht, The Netherlands.
- Nutter, F. W., Jr.**, Esker, P. D., and Coelho Netto, R. A. 2006. Disease assessment concepts and the advancements made in improving the accuracy and precision of plant disease data. Pages 95-103 in: Plant Disease Epidemiology: Facing Challenges of the 21<sup>st</sup> Century. S. Savery and B. M. Cooke, eds. Springer, The Netherlands.
- Coelho Netto, R. A., and **Nutter, F. W., Jr.** 2005. Use of GPS and GIS technologies to map the prevalence of Moko disease of banana in the Amazonas region of Brazil. Pages: 431-436 in: 3<sup>rd</sup> International Bacterial Wilt Symposium, White River, South Africa, APS Press, St. Paul, MN.
- Nutter, F. W., Jr.**, and L. V. Madden. 2005. Plant diseases as a possible consequence of biological attacks. Pages 793-818 in: Biological Terrorism. R. A. Greenfield and M. S. Bronze, eds. Horizon Scientific Press, Caister Scientific Press, Norfolk, UK.
- T Aubertot, J. N.**, Sohbi, Y., Brun, H., Penaud, A., and **Nutter, F. W., Jr.** 2004. A computer-aided training program for the severity assessment of phoma stem canker of oilseed rape. Integrated Control in Oilseed Crops: Proceedings of a Meeting 11-12 October 2004 in Poznan, Poland. IOBC Bulletin 29.387 p. B. Koopman, S. Cook, N. Evans, and B. Ulber, eds.
- T Nutter, F. W., Jr.** 2001. Disease assessment terms and concepts. Pages 312-323 in: Encyclopedia of Plant Pathology, O. C. Maloy and T. D. Murray, eds. John Wiley and Sons, Inc., NY.
- T Nutter, F. W., Jr.**, and Esker, P. D. 2001. Disease assessment keys. Pages 323-326 in: Encyclopedia of Plant Pathology, O. C. Maloy and T. D. Murray, eds. John Wiley and Sons, Inc., NY.
- T Nutter, F. W., Jr.**, and Guan, J. 2001. Disease losses. Pages 340-351 in: Encyclopedia of Plant Pathology, O. C. Maloy and T. D. Murray, eds. John Wiley and Sons, Inc., NY.

- Kaiser, W. J., Ramsey, M. D., Makkouk, K. M., Bretag, T. W., Acikgoz, N., Kumar, J., and **Nutter, F. W., Jr.** 2000. Foliar Diseases of cool season food legumes and their control. Pages 437-455 in: *Current Plant Science and Biotechnology in Agriculture: Linking Research and Marketing Opportunities for Pulses in the 21<sup>st</sup> Century*. R. Keight, ed. Kluwer Academic, New York, NY.
- Nutter, F. W., Jr.**, Wegulo, S. N., Litwiller, D., Emmitt, R. W., and Magarey, P. A. 2000. A computer program to improve the accuracy and precision of severity assessments in grapevines. Pages 64-69 in: *Proceedings of the Third International Workshop on Grapevine Downy and Powdery Mildew, March 1998, Loxton, South Australia*, P. A. Magarey, S. A. Thiele, K. L. Tschirpigg, R. W. Emmett, K. Clark, and R. D. Magarey, eds. South Australian Research and Development Institute Series Report No. 50.
- Nutter, F. W., Jr.** 1997. Disease severity assessment training. Pages 1-7 in: **T** *Exercises in Plant Disease Epidemiology*, L. Francl and D. Neher, eds. APS Press, St. Paul, MN. 233 p.
- Nutter, F. W., Jr.** and Parker, S. K. 1997. Fitting disease progress curves using **T** EPIMODEL. Pages 24-28 in: *Exercises in Plant Disease Epidemiology*, L. Francl and D. Neher, eds. APS Press, St. Paul, MN. 233 p.
- Nutter, F. W., Jr.**, and Gaunt, R. E. 1996. Recent developments in methods for assessing disease losses in forage/pasture crops. Pages 93-118 in: **T** *S. Chakraborty, D. T. Leath, R. A. Skipp, G. A. Pederson, R. A. Bray, G. C. M. Latch, and F. W. Nutter, Jr. (eds.) Pasture and Forage Crop Pathology*. American Soc. Agronomy, Crop Sci. Soc. America and Soil Sci. Soc. America, Madison, WI. 653 p.
- Teng, P. S., Heong, K. L., Kropff, M. J., **Nutter, F. W., Jr.**, and Sutherst, R. W. 1996. Linked pest-crop models under global change. Pages 291-316 in: *Global Change and Terrestrial Ecosystems*, B. Walker and W. Steffen, eds. Cambridge University Press, Cambridge, U. K.
- Nutter, F. W., Jr.**, and Shokes, F. M. 1995. Management of foliar fungal pathogens. Pages 65-73 in: *Peanut Health Management*, eds. H. A. Melouk and F. M. Shokes. APS Press, St. Paul, MN.
- Nutter, F. W., Jr.** 1992. Quantification of components contributing to rate-reducing resistance in a plant-virus pathosystem. Pages 299-310 in: *Systems Approaches to Agricultural Development*. F.W.T. Penning de Vries, et al., eds. Kluwer Acad. Press, The Netherlands.
- James, W. C., Teng, P. S., and **Nutter, F. W., Jr.** 1991. Estimated losses of crops from plant pathogens. Pages 15-51 in: *CRC Handbook of Pest Management in Agriculture*, ed. D. Pimentel. CRC Press, Inc., Boca Raton, FL. 765 p.

**Nutter, F. W., Jr.,** and Kuhn, C. W. 1991. Quantification of epidemiological components in the bell pepper/tobacco etch virus/aphid pathosystem that contribute to rate reducing resistance. Pages 334-339 in: 3rd International Conference on Plant Protection in the Tropics, Vol. VI, Malaysian Plant Protection Society.

**Nutter, F. W., Jr.** 1990. Generating plant disease epidemics in yield loss experiments. Pages 139-160 in: Crop Loss Assessment in Rice. International Rice Research Institute, Los Banos, Philippines. 324 p.

**Nutter, F. W., Jr.** 1990. Remote sensing and image analysis for crop loss assessment. Pages 93-105 in: Crop Loss Assessment in Rice. L. Pollard and E. Cervantes, eds. International Rice Research Institute. Los Banos, Philippines. 324 p.

**Nutter, F. W., Jr.,** Cole, H., Jr., and Sanders, P. L. 1979. Preliminary results concerning the feasibility of developing a forecasting program for chemical control of Pythium blight. Pages 192-193 in: Advances in Turfgrass Pathology, P. O Larsen and B. G. Joyner, eds. Harcourt Brace Jovanovitch, Duluth, MN. 197 p.

***Published Book Reviews (one total):***

**Nutter, F. W., Jr.** 1991. Book review: Introduction to Plant Disease Epidemiology, C. L. Campbell and L. V. Madden. 1990. Wiley Press, In: ASB Bull 37:137-138.

---

**TECHNICAL PUBLICATIONS (124 total):**

Robertson, A., Diaz-Arias, M., and **Nutter, F. W., Jr.** 2013. Within field spread of Goss's bacterial wilt and leaf blight of corn, 2012. Iowa State University Horticulture Research Station Report, Ames, IA.

**Nutter, F. W., Jr.,** Robertson, A., Byamukama, E., and Eggenberger, S. K. 2012. Toward integrated management of *bean pod mottle virus* and the prediction of the winter vector: bean leaf and Japanese beetle. Report to the Iowa Soybean Association, May 2012, 9 p.

Gougherty, A., Eggenberger, S.K., Byamukama, E., and **Nutter, F.W., Jr.** 2011. Impact of soybean row spacing on *Bean pod mottle virus*. Iowa State University Southeast Research Farm Report, College of Agriculture and Life Sciences, Ames, IA.

**T** Kilburg, B.J., Byamukama, E., and **Nutter, F.W., Jr.** 2008. Quantifying the infectious period of bean leaf beetles and the latent period of *Bean pod mottle virus* in Soybean. Department of Energy – Iowa State University Student Undergraduate Laboratory (Summer) Internship (SULI) Program, Ames, Iowa. 11 p.

**T** Lutz, A.L., Liu, L., and **Nutter, F.W., Jr.** 2008. Quantifying the infectious period, aggressiveness, and spatial spread of *Pantoea stewartii*. Iowa State



- University Program for Women in Science and Engineering Summer Internship Program Project Report, Ames, Iowa. 8 p.
- Nutter, F. W., Jr.**, Holah, N. S., Eggenberger, S. K., Byamukama, E., Wright, D. L., Marois, J., and Van Rij, N. 2009. Integrating GPS, GIS, and remote sensing technologies for improved crop Biosecurity. Pages 116-117 in: Proceedings of the 10<sup>th</sup> International Epidemiology Workshop. 7 - 12 June, Cornell University, Geneva, NY. (ISBN).
- Nutter, F.W., Jr.** Robertson, A., and Byamukama, E. 2008. Quantifying the temporal and spatial spread of *Bean pod mottle virus* and to identify seasonal and farm-level risk factors to improve BPMV management and increase yield. Annual Report to the Iowa Soybean Association, November 2008, Iowa State University, Ames, Iowa. 19 p.
- T Bullard, A., Byamukama, E., Lagneaux, A., Mansini, M., and **Nutter, F.W., Jr.** 2007. Quantitative study of the spatial spread of *bean pod mottle virus* in soybean. Iowa State University Program for Women in Science and Engineering Summer Internship Program Project Report, Ames, IA. 9 p.
- T Imonugo, O., Liu, L., and **Nutter, F.W., Jr.** 2007. Quantifying the aggressiveness of bacterial isolates of *Pantoea stewartii* in sweet corn. Iowa State University George Washington Carver Summer Internship Program Project Report, Ames, IA. 9 p.
- T Lagneaux, A., Byamukama, E., and **Nutter, F.W., Jr.** 2007. The temporal spread of *bean pod mottle virus* in soybean in 2007. Iowa State University Program for Women in Science and Engineering Summer Internship Program Project Report, Ames, IA. 9 p.
- Robertson, A. and **Nutter, F.W., Jr.** 2007. Survey of plant diseases in Iowa, Final Report to the Iowa Soybean Association, Des Moines, IA. 13 p.
- T Turner, C., Liu, L., and **Nutter, F.W., Jr.** 2007. Determining the spatial pattern of Stewart's disease in corn fields using a marked isolate. ISU, U of I, and UNI Alliance for Graduate Education and Professoriate (AGEP) Summer Internship Project Report, Ames, IA. 9 p.
- T Choi, Y.E., Byamukama, E., Robertson, A., and **Nutter, F.W., Jr.** 2006. The within-field temporal and spatial spread of bean pod mottle virus in soybean. The Iowa State University Program for Women in Science and Engineering Summer Internship Report, Ames, IA. 11 p.
- T Heidfeld, D. and **Nutter, F.W., Jr.** 2006. Developing EPIMODEL2: A computer program for teaching population growth modeling. Department of Energy Ames Lab Science Undergraduate Laboratory Intern Program Final Report, Ames, IA. 9 p.

- T Schuessler, K., Lu, X, Robertson, A., and **Nutter, F.W., Jr.** 2006. Determining the temporal and spatial patterns for soybean mosaic virus (SMV). ISU, UNI, U of I George Washington Carver Summer Internship Program Report, Ames, IA. 6 p.
- T Bottjen, S., Nguyen, Q., Robertson, A., and **Nutter, F.W., Jr.** 2005. Early season prevalence and incidence of bacterial blight in soybeans throughout Iowa. Poster presentation, Internship Program for Women in Science and Engineering, 22 July, Ames, Iowa.
- T Nguyen, Q., Bottjen, S., Robertson, A., and **Nutter, F.W., Jr.** 2005. Early season prevalence and spatial distribution of bean pod mottle virus in Iowa in 2005. Poster presentation, Internship Program for Women in Science and Engineering, 22 July, Ames, Iowa.
- Nutter, F. W., Jr.** 2006. Linear vs. logarithmic disease assessment scales: the repeal of the Weber-Fechner law. Pages 123-124 in: Proceedings of the 5<sup>th</sup> International Workshop on Grapevine Downy and Powdery Mildew. I. Pertot, C. Gessler, D. Gadoury, W. Gubler, H.H. Kassemeyer, and P. Magarey, eds. SafeCrop Centre, San Michele all'Adige, Italy.
- Nutter, F.W., Jr.** 2005. Integrated management of the corn flea beetle-Stewart's Disease of Corn Pathosystem: A GIS and web-based approach. Page 20-21 in USDA-CSREES North Central Region Integrated Pest Management Grants Program. North Central IPM Center, East Lansing, Michigan.
- Esler, P., and **F. W. Nutter, Jr.** 2004. Population dynamics of corn flea beetles and their importance for Stewart's disease of corn. Pages 43-44 in: Northeast Research and Demonstration Farm Annual Progress Report-2003. Iowa Agriculture and Home Economics Experiment Station, Cooperative Extension Service, ISRF 03-13, Ames, IA.
- Esler, P. D., and **F. W. Nutter, Jr.** 2004. The 2004 Stewart's disease prediction for Iowa and Illinois. Dept. of Plant Pathology, Iowa State University, Ames, IA 3 p.
- Nutter, F. W., Jr.** 2004. Countering the threat of agricultural bioterrorism in the Americas. Pages 587-598 in: Proceedings of the VII World Soybean Research Conference, IV International Soybean Processing and Utilization Conference, and the III Congresso Brasileiro de Soja. Edited by F. Moscardi, O. F. Saraiva, P. R. Galerani, and F. C. Krzyzanowski. Embrapa Soybean, Londrina, PR, Brazil. 1,344 p.
- Esler, P. D., and **Nutter, F. W., Jr.** 2003. Monitoring changes in corn flea beetle populations, 1999-2002. Pages 19-20 in: Northwest Research and Demonstration Farm Annual Progress Reports – 2002, Iowa Agriculture and Home Economics Experiment Station, Cooperative Extension Service. ISRF 02-29, 31, Ames, IA.
- Esler, P. D., and **Nutter, F. W., Jr.** 2003. Sampling for corn flea beetles using yellow sticky cards placed at different heights and orientations. Page 31 in: Southeast Research and Demonstration Farm Annual Progress Reports – 2002, Iowa

- Agriculture and Home Economics Experiment Station, Cooperative Extension Service, ISRF 02-34, Ames, IA.
- Esler, P.D., and **Nutter, F.W., Jr.** 2003. The 2004 Stewart's disease prediction. Stewart's Disease Consortium Report, 20 December, Iowa State University, Ames, IA. 4 p.
- Nutter, F. W., Jr.** 2003. Countering the Threat of Bioterrorism in Iowa. Pages 233-243 in: Proceedings of the 15<sup>th</sup> Annual Integrated Crop Management Conference, Iowa State University, Ames, IA. 243 p.
- Nutter, F. W., Jr.** 2003. Use of remote sensing and GIS to model plant disease epidemics and to quantify disease impact on crop yield and quality. Pages 25-26 in: Mathematical Modeling of the Spread of Agricultural Bioterrorism Agents. Scientific and Technical Intelligence Committee, National and Intelligence Council, A. D. Steinberg, M. Warwick, and Elana Solon, eds. The Mitre Corporation, McLean, VA. 53 p.
- Nutter, F. W., Jr.,** Menelas, B., and Esler, P. D. 2003. Using seed and foliar insecticides to control corn flea beetles and Stewart's disease of corn. Pages 29-30 in: Southeast Research and Demonstration Farm Annual Progress Reports – 2002, Iowa Agriculture and Home Economics Experiment Station, Cooperative Extension Service, ISRF 02-34, Ames, IA.
- Pethybridge, S. J., Hay, F., Wilson, C., **Nutter, F. W., Jr.,** and Esler, P. 2003. Spatio-temporal description of epiphytotics of foliar diseases caused by *Phoma ligulicola* in pyrethrum in Tasmania. Annual Research Report for Botanical Resources Australia Pty. Ltd. Tasmanian Institute of Agricultural Research (TIAR), North West Centre – University of Tasmania, New Town 7008, Tasmania, Australia. 85 p.
- T** Aalsburg, J. D., Esler, P. D., and **Nutter, F. W., Jr.** 2002. Assessment of alternative hosts for *Pantoea stewartii*. Iowa State University Program for Women in Science and Engineering Internship Research Report, Ames, IA. 11 p.
- Leandro, L. F. S., Gleason, M. L., Wegulo, S. N., and **Nutter, F. W., Jr.** 2002. Ecology of *Colletotrichum actutatum* on symptomless strawberry leaves. Pages 74-76 in: Strawberry Research to 2001, S. C. Hokanson and A. R. Jamieson, eds, Proceedings of the North American Strawberry Conference, 15 January 2000, Niagara Falls, Ontario, Canada, ASHS Press, Alexandria, VA.
- Nutter, F. W., Jr.,** Menelas, B., and Esler, P. 2002. Effects of seed and foliar insecticides on corn flea beetles and Stewart's disease of corn. Pages 39-40 in: Southeast Research and Demonstration Farm Annual Progress Reports – 2001, Iowa Agriculture and Home Economics Experiment Station, Cooperative Extension Service, ISRF-01-34, Ames, IA.

- Chong, C. S., Basart, J. P., **Nutter, F. W., Jr.**, Tylka, G. L., and Guan, J. 2001. Use of remote sensing to determine plant health and productivity. Pages 484-493 in: Infrared Spaceborne Remote Sensing IX, 29 July - 3 August, San Diego, CA. Proceedings of the 46<sup>th</sup> Annual Meeting of the International Society for Optical Engineering, M. Strojnik, and B. F. Andersen, eds. Vol. 4486.
- Chong, C. S., Basart, J. P., **Nutter, F. W., Jr.**, Tylka, G. L., and Guan, J. 2001. Use of remote sensing to determine plant health and productivity. SPIE 46<sup>th</sup> Annual Meeting, International Symposium on Optical Science and Technology, 29 July – 3 August 2001, San Diego, CA.
- Chong, C. S., Basart, J. P., **Nutter, F. W., Jr.**, Tylka, G. L., Guan, J., and Marett, C. C. 2001. Determining the health and productivity of crops using high altitude images. Proceedings of the American Society for Photogrammetry and Remote Sensing, 23-27 April, St. Louis, MO.
- Nutter, F. W., Jr.** 2001. New tools for epidemiology applied to disease management. Pages 146-156 in: Understanding Epidemics for Better Disease Management, 8<sup>th</sup> International Workshop on Plant Disease Epidemiology, 6-11 May, Ouro Preto, Brazil. 161 p.
- Nutter, F. W., Jr.**, Menelas, B., and Esker, P. D. 2001. Effects of seed and foliar insecticides on corn flea beetles and Stewart's disease of corn. Iowa State University Southeast Research Farm 2001 Annual Report, Curtiss Hall, Iowa State University, Ames, IA. 2 p.
- T Haindfield, S., Esker, P., and **Nutter, F. W., Jr.** 2001. Alternative vectors and hosts in the Stewart's disease of corn pathosystems, Iowa State University Program for Women in Science and Engineering, Ames, IA. 11 p.
- Nutter, F. W., Jr.**, Rubsam, R. R., Taylor, S. E., Harri, J. A., and Esker, P. D. 2001. Use of geospatially-referenced disease and weather data to improve site-specific risks for Stewart's disease of corn in the U.S. Corn Belt. Pages 37-45 in: 23<sup>rd</sup> Annual Seed Technology Conference, 20 February, Iowa State University, Ames, IA.
- T Cruz, A., Percifield, R. J., and **Nutter, F. W., Jr.** 2000. Analyzing the effects of incident radiation, litter, and green leaf tissue on percentage reflectance. College of Agriculture Minority Internship Program, Iowa State University, Ames, IA. 12 p.
- Guan, J., **Nutter, F. W., Jr.**, Gotlieb, A. R., Grau, C. R., and Rhodes, L. H. 2000. Modeling yield losses caused by alfalfa foliar diseases. Pages 120-124 in: Proceedings of the American Forage and Grassland Council and the 37<sup>th</sup> North American Alfalfa Improvement Conference, 16 - 19 July 2000, Madison, WI.
- Guan, J., and **Nutter, F. W., Jr.** 2000. Relationships between defoliation, leaf area index, canopy reflectance and forage yield in the alfalfa leaf spot pathosystem. Pages 319-326 in: Second International Conference on Geospatial Information in Agriculture and Forestry, 10-12 January, Lake Buena Vista, FL.

T Heins, J. L., Steinlage, T. A., and **Nutter, F. W., Jr.** 2000. Studies to quantify the effects of transgenic soybean genotypes on the spread of soybean mosaic virus. Iowa State University Program for Women in Science and Engineering, Iowa State University, Ames, IA. 9 p.

**Nutter, F. W., Jr.** 2000. Plant Disease Losses Committee. American Phytopathological Society on Web Page, St. Paul, MN.

**Nutter, F. W., Jr.,** Esker, P. D., and Rubsam, R. R. 2000. Use of geospatially-referenced disease and weather data to improve site-specific forecasts for Stewart's disease. In: NCR-25 (Corn Disease) Report for Iowa. Meeting of the NCR-25 Corn Disease, February 2000, Baltimore, MD.

**Nutter, F. W., Jr.,** Esker, P. D., and Rubsam, R. R. 2000. Use of geospatially-referenced disease and weather data to improve site-specific forecasts for Stewart's disease of corn in the U.S. Corn Belt. Pages 241-248 in: Second International Conference on Geospatial Information in Agriculture and Forestry, 10-12 January, Lake Buena Vista, FL.

**Nutter, F. W., Jr.,** Guan, J., and Percifield, R. 2000. Assessing crop health in time and space by measuring spectral reflectance of solar radiation from plant canopies. Pages 165-176 in: Second International Conference on Geospatial Information in Agriculture and Forestry, 10-12 January, Lake Buena Vista, FL.

T Binder, J., Esker, P., **Nutter, F. W., Jr.** 1999. Detection of *Pantoea stewartii* in corn flea beetles using ELISA and immunomagnetic bead assay. Iowa State University Program for Woman in Science and Engineering Project Report Poster, Iowa State University, Ames, IA. 6 p.

T Langreck, L, Steinlage, T., **Nutter, F. W., Jr.** 1999. Determination of methods for the quantification of infection efficiency in SMV Strain AL5. Iowa State University Program for Women in Science and Engineering Project Report, Iowa State University, Ames, IA. 11 p.

T Menelas, B., Percifield, R. J., Rosburg, T., and **Nutter, F. W., Jr.** 1999. Utilizing remote sensing to determine the health and productivity of Iowa's tallgrass prairies. College of Agriculture, Minority Internship Program Presentations, July 30, Ames, IA. 5 p.

**Nutter, F. W., Jr.** 1999. Plant Disease Losses Committee Report. American Phytopathological Society Web page, St. Paul, MN.

**Nutter, F. W., Jr.** 1999. Potato late blight images of sporangia, zoospores, geminating zoospores, diseased leaves and tubers (Introduction plus seven images). American Phytopathological Society Images of the Week, APSnet, July 1999, St Paul, MN.

**Nutter, F. W., Jr.** 1999. Slowing soybean mosaic virus may be best defense. Iowa State University Biotechnology Update X111(4):13.

**Nutter, F. W., Jr.,** Guan, J., Percifield, R. J., Menelas, B., Rosburg, T., Bidney, S., Basart, J., Chong, C., and Cook, M. 1999. Use of remote sensing to quantify the impact of plant disease epidemics on plant biomass and productivity. Ninth Annual Space Grant Conference, 5 November, University of Northern Iowa, Cedar Falls, IA. 16 p.

**Nutter, F. W., Jr.,** Hill, J. H., Wang, X., and Eggenberger, A. L. 1999. Characterization of soybean mosaic virus coat protein-mediated resistance in transgenic soybeans. Pages 156-157 in: Plant Virus Epidemiology: Current Status and Future Prospects. VII ' the International Plant Virus Epidemiology Symposium, 11-16 April, Almeria, Spain.

Gleason, M. L., **Nutter, F. W., Jr.,** and Christians, N. E. 1998. Radiometric assessment of dollar spot severity on a creeping bentgrass green. Pages 70-71 in: Iowa Turfgrass Research Report FG-466, University Extension, Iowa State University, Ames, IA.

Gotlieb, A., Bosworth, S., Aleong, J., Rhodes, L., **Nutter, F.W., Jr.,** and Grau, C. 1998. Benefits assessment of fungicide usage for management of foliar disease in alfalfa. <http://www.uvm.edu/pss/vtcrops/research/AlfalfaFungicide.html>.

**Nutter, F. W., Jr.** and Munkvold, G. 1998. Impact and importance of foliar diseases of Alfalfa in Iowa. Pages 189-197 in: The 10th Annual Integrated Crop Management Conference Proceedings, 17-18 November, 1998. Iowa State University, Ames, IA.

**Nutter, F. W., Jr.,** Wegulo, S. N., Guan, J., Percifield, R., Klinnert, M., Hartman, J., Rosburg, T., Busing, C., Waddell, C., Basart, J. P., Lee, J., and Cook, M. 1998. Use of remote sensing to quantify the impact of plant disease epidemics on plant biomass and productivity. Pages 35-52 in: Eighth Annual Iowa Space Grant Conference, 30 October, 1998, University of Iowa, Iowa City, IA.

Emmett, B., Magarey, P., and **Nutter, F. W., Jr.** 1997. Assessing damage from grapevine diseases and pests. Australian Grape grower and Winemaker, Annual Technical Issue 402:49-52.

**Nutter, F. W., Jr.** and Guan, J. 1997. Reflectance measurements for quantifying the impact of foliar epidemics on alfalfa fields. Proceedings of the Seventh Annual Iowa Space Grant Conference, Drake University, Des Moines, Iowa. 7 p.

**Nutter, F. W., Jr.** 1996. Disease distribution, dynamics and severity under global change. Pages 21-28 in: Pests, Diseases, and Weeds. Global Change and Terrestrial Ecosystems Report No. 11. Canberra, Australia.

**Nutter, F. W., Jr.** 1996. Impacts of climate change: Plant Diseases. Pages 35-41 in: Impacts of Climate Change on Pests, Diseases, and Weeds in Australia. Report

- commissioned by the Australian Department of Environment, Spatial Territories of the Australian Government, and the Rural Industries Research and Development Corporation, R. W. Sutherst, ed. CSIRO Division of Entomology, Brisbane, Australia.
- Engle, T. E., Parker, S. K., Gleason, M. L., Braun, E. J., and **Nutter, F. W., Jr.** 1995. Germination of *Septoria lycopersici* spores following intermittent wet-dry periods. Pages 69-73 in: 10th Annual Tomato Disease Workshop, Dec. 8-9, East Lansing, MI.
- Gleason, M. L., **Nutter, F. W., Jr.**, Braun, E. J., McGee, D. C., Parker, S. K., and Verdeman, S. B. 1995. Improving detection and eradication of *Clavibacter michiganensis* subsp. *michiganensis* in tomato seed lots. Pages 33-35 in Tenth Annual Tomato Disease Workshop, Dec. 8-9, East Lansing, MI.
- Gleason, M. L., Vitosh, M. A., Leininger, B. L., Nonnecke, G. R., Lewis, D. R., Obrycki, J. J., and **Nutter, F. W., Jr.** 1995. Spray strategies to control anthracnose fruit rot in day-neutral strawberries, 1994. APS Fungicide and Nematicide Tests 50:85.
- Livingston, J., **Nutter, F. W., Jr.**, and Christians, N. E. 1995. A greenhouse study on the environmental requirements for forecasting pythium blight on golf courses. Pages 95-97 in: Iowa Turfgrass Research Report, N. E. Christians and D. Minner, eds. Report FG463 Iowa State University Extension Service, Ames, IA.
- Nutter, F. W., Jr.**, and Ott, R. A. 1995. Epidemiology of gray leaf spot in Iowa. In: NCR-25 (Corn Diseases) Report for Iowa. Meeting of the NCR-25 Corn Diseases, 21-22 February, Bettendorf, IA.
- Martinson, C. A., **Nutter, F. W., Jr.**, Wegulo, S. N., and Rivera, J. M. 1994. Foliar fungicides in seed corn production. Pages 167-171 in: Proceedings of the Integrated Crop Management Conference, 1994. Iowa State University Extension, Ames, IA.
- Martinson, C. A., Wegulo, S. N., Rivera-C., J. M. and **Nutter, F. W., Jr.** 1994. Fungicidal spray program for seedcorn production. Pages 71-79 in: D. Wilkinson. Proc. 49th Annual Corn & Sorghum Research Conf., Dec. 7-8, 1994, Chicago, IL. Amer. Seed Trade Assn., Wash. D.C.
- Nutter, F. W., Jr.** 1994. NCR-138 Alfalfa Diseases 1993 Report for Iowa. Page 154 in: Report of the 34th North American Alfalfa Improvement Conference, July 10-14, University of Guelph, Guelph, Ontario.
- Martinson, C. A., Munkvold, G. P., Vakili, N., and **Nutter, F. W., Jr.** 1993. 1993 Corn Disease Situation in Iowa. NCR-25 Report, Corn Diseases. Nov. 1993, Nashville, TN.
- Nutter, F. W., Jr.** 1993. Minutes of NCR-138 Alfalfa Diseases Committee Meeting. Pages 38-50 in: Twenty-Third Central Alfalfa Improvement Conference, June 20-22, 1993, Omaha, NE.

**Nutter, F. W., Jr.** 1993. NCR-138 Alfalfa Diseases 1992 Report for Iowa. Pages 46-47 In: Twenty-Third Central Alfalfa Improvement Conference, June 20-22, Omaha, NE.

**Nutter, F. W., Jr.,** Hill, J. H., and Schultz, P. M. 1993. Soybean Mosaic Virus. 1992 Report to NCR-137, Soybean Diseases in the North Central Region.

Parker, S. K., Gleason, M. L., and **Nutter, F. W., Jr.** 1993. Wetness/temperature influences on Septoria leaf spot infection. Pages 71-75 in: 9th Annual Tomato Disease Workshop, Dec. 1-2, 1993, Indianapolis, IN.

Jenco, J. H. and **Nutter, F. W., Jr.** 1992. Epidemiology and disease management of gray leaf spot in Iowa. Report of NCR-25, Corn Diseases, Bettendorf, IA.

**Nutter, F. W., Jr.** 1992. Disease.Pro - a computerized disease assessment training program. Page 139 in: Changes in Soybean Production Practices. Crop Production and Protection Conference, Dec. 2-3, Iowa State University, Ames, IA.

**Nutter, F. W., Jr.** 1992. Epidemiology and disease management of alfalfa diseases. Pages 22-41 in: Alfalfa IPM Issue Team Report-1992. Leopold Center for Sustainable Agriculture, Ames, IA. 67 p.

**Nutter, F. W., Jr.** 1992. Global database on pest-induced losses proposed. Phytopathology News 26:9.

**Nutter, F. W., Jr.** 1992. NCR-138 Alfalfa Diseases 1991 Report for Iowa. Page 80 in: Report of the Thirty-Third North American Improvement Conference, June 14-18, Atlanta, GA.

**Nutter, F. W., Jr.** 1992. Strategic Plan For Developing a Global Database on Pest-Induced Losses. 91-COOP-1-5823.

Parker, S. K., Gleason, M. L., and **Nutter, F. W., Jr.** 1992. Dissemination of *Septoria lycopersici* spores during rain events. Pages 86-93 in: 8th Annual Tomato Disease Workshop, Dec. 3-4, 1992, Columbus Ohio.

Rivera-C, J. M., Martinson, C. A., and **Nutter, F. W., Jr.** 1992. Fungicidal control of leaf diseases in commercial seed corn production fields. Reports to NCR-25, Corn Diseases, Nashville, TN.

**Nutter, F. W., Jr.** 1991. Epidemiology and disease management of alfalfa diseases. Pages 26-53 in Leopold IPM Issue Team Report - 1991, J. J. O'brycki, Team Leader. The Leopold Center for Sustainable Agriculture. Ames, IA. 69 p.

**Nutter, F.W., Jr.** 1990. Use of radiation data to develop crop loss models. Pages 13-15 in: Proc. Of a Workshop on Modeling Crop-Pest Interactions. P. Teng and J. Yuen., eds. 7-10 January, University of Hawaii-Maoa. Res. Ext. Series 120:13-15.



- Nutter, F. W., Jr.**, and Briggles, L. W. 1989. Evaluation of the world collection of winter barley for resistance to net blotch (*Pyrenophora teres*). Barley Newsletter 32:57-65.
- Nutter, F. W., Jr.**, Brenneman, T. B., and Jenco, J. H. 1989. Field evaluation of a weather-based, late leaf spot forecasting system to schedule fungicide applications. Pages 190-197, In 1988 Georgia Peanut Research-Extension Report. Coop. Res.-Ext. Pub. No. X, Tifton, GA. 199 p.
- Nutter, F. W., Jr.** and Pederson, W. L. 1989. Report on the Activities of the APS Plant Disease Losses Committee. Phytopathology News 23:126.
- Nutter, F. W., Jr.**, and Labrinis, J. T. 1988. Differential reduction of the apparent infection rate of late leaf spot by the use of Folicur and Chlorothalonil. 1987 Georgia Peanut Research-Extension Report 1:136-139.
- Nutter, F. W., Jr.** 1988. Effect of different late leaf spot defoliation levels and digging dates on pod yield of Florunner and Southern Runner peanuts. 1987 Georgia Peanut Research-Extension Report 1:133-135.
- Nutter, F. W., Jr.**, Briggles, L. W., and Johnson, J. W. 1988. Evaluation of the world collection of winter barley for resistance to spot blotch (*Cochliobolus sativus*). Barley Newsletter 31:161-163.
- Nutter, F. W., Jr.** 1988. Report of the APS Plant Disease Losses Committee. Phytopathology 78:23.
- Brown, A. R., **Nutter, F. W., Jr.**, Cunfer, B. M., Johnson, J. W., and Roberts, J. J. 1986. Barley production and breeding in Georgia. Barley Newsletter 30:48.
- Brown, A. R., **Nutter, F. W., Jr.**, Cunfer, B. M., Johnson, J. W., and Roberts, J. J. 1985. Barley production and breeding in Georgia. Barley Newsletter 29:43.
- Nutter, F. W., Jr.** and Pederson, V. D. 1984. Modeling yield loss of barley due to spot blotch (*Cochliobolus sativus*). Barley Newsletter 27:50.
- Pederson, V. D. and **Nutter, F. W., Jr.** 1984. American Malting Barley Progress Report. 1984 Annual Progress Report on Malting Barley Research. Pages 9-20 in: Am. Malt Barley Assoc., Inc. Milwaukee, WI.
- Pederson, V. D. and **Nutter, F. W., Jr.** 1984. Estimation of barley yield loss from spot blotch using remote sensing techniques. Barley Newsletter 27:49.
- Gilbride, E. P., **Nutter, F. W., Jr.**, Sanders, P. L., Cole, H., Jr., and Duich, J. M. 1981. Control of *Helminthosporium* leaf spot and crown rot on Kentucky bluegrass, 1980. APS Fungicide and Nematicide Tests 36:145-146.

Cole, H., Jr., **Nutter, F. W., Jr.**, Sanders, P. L., and Duich, J. M. 1980. Influence of spray dilution on control of Helminthosporium leaf spot and crown rot, 1979. APS Fungicide and Nematicide Tests 35:157.

**Nutter, F. W., Jr.**, Sanders, P. L., and Cole, H., Jr. 1980. Chemical control of Typhula and Fusarium snow molds, 1978 APS Fungicide and Nematicide Tests 35:156.

**Nutter, F. W., Jr.**, Sanders, P. L., Cole, H., Jr., and Duich, J. M. 1980. Control of Helminthosporium leaf spot and crown rot on Kentucky bluegrass, 1979. APS Fungicide and Nematicide Tests 35:160-161.

**Nutter, F. W., Jr.**, Sanders, P. L., Cole, H., Jr., and Duich, J. M. 1980. Control of Rhizoctonia brown patch, 1979. APS Fungicide and Nematicide Tests 35:153-154.

**Nutter, F. W., Jr.**, Sanders, P. L., Cole, H., Jr., and Broschius, S. 1980. Evaluation of nematicides for control of nematodes in turfgrass, 1979. APS Fungicide and Nematicide Tests 35:235.

**Nutter, F. W., Jr.** 1980. Disease Forecasting: To spray or not to spray. Pages 147-154 in: Proceedings 51st International Turfgrass Conference, Feb. 17-22, St. Louis, MO.

Sanders, P. L., **Nutter, F. W., Jr.**, and Cole, H., Jr. 1980. Control of Fusarium blight with fungicides under fairway conditions in mixed Kentucky bluegrass - annual bluegrass, 1979. APS Fungicide and Nematicide Tests 35:164.

Sanders, P. L., **Nutter, F. W., Jr.**, and Cole, H., Jr. 1980. Control of pink and gray snow mold on bentgrass under golf course conditions, 1979. APS Fungicide and Nematicide Tests 35:152.

Sanders, P. L., **Nutter, F. W., Jr.**, Cole, H., Jr., and Duich, J. M. 1980. Control of Pythium blight with fungicide treatments, 1979. APS Fungicide and Nematicide Tests 35:165.

Sanders, P. L., **Nutter, F. W., Jr.**, Cole, H., Jr., and Duich, J. M. 1980. Evaluation of fungicides for control of Sclerotinia dollar spot, 1979. APS Fungicide and Nematicide Tests 35:154-155.

Loughner, D., Sanders, P. L., Cole, H., Jr., **Nutter, F. W., Jr.**, and Duich, J. M. 1979. Control of Rhizoctonia brown patch, 1978. APS Fungicide and Nematicide Tests 34:135-136.

Loughner, D., Sanders, P. L., **Nutter, F. W., Jr.**, Cole, H., Jr., and Duich, J. M. 1979. Evaluation of various experimental fungicides against Sclerotinia dollarspot, 1978. APS Fungicide and Nematicide Tests 34:136.

Loughner, D., Sanders, P. L., **Nutter, F. W., Jr.**, and Cole, H., Jr. 1979. Suppression of Fusarium blight symptoms of Merion Kentucky bluegrass with single and double applications of fungicide, 1978. APS Fungicide and Nematicide Tests 34:144.

**Nutter, F. W., Jr.**, Sanders, P. L., Loughner, D., and Cole, H., Jr. 1979. Control of Fusarium blight with fungicides under fairway conditions in mixed Kentucky bluegrass - annual bluegrass, 1978. APS Fungicide and Nematicide Tests 34:145.

**Nutter, F. W., Jr.**, Sanders, P. L., Loughner, D., and Cole, H., Jr. 1979. Fungicide suppression of red thread in Iowa nutrient status red fescue turf, 1978. APS Fungicide and Nematicide Tests 34:148.

**Nutter, F. W., Jr.**, Sanders, P. L., Loughner, D., Cole, H., Jr., and Duich, J. M. 1979. Influence of water dilution on control of Sclerotinia dollar spot with Bayleton and Tersan 1991, 1978. APS Fungicide and Nematicide Tests 34:138.

**Nutter, F. W., Jr.**, Warren, C. G., Gotlieb, A. R., and Justis, S. 1979. Chemical control of Fusarium and Typhula snow molds, 1977-1978. APS Fungicides and Nematicide Tests 34:138-139.

Sanders, P. L., Cole, H., Jr., Loughner, D., and **Nutter, F. W., Jr.** 1979. Long term control of Pythium blight with fungicide treatment, 1978. APS Fungicide and Nematicide Tests 34:149.

MacHardy, W. E., and **Nutter, F. W., Jr.** 1978. Kingman Farm orchard evaluations of fungicides for control of apple diseases, 1977. APS Fungicide and Nematicide Tests 326.

MacHardy, W. E., and **Nutter, F. W., Jr.** 1978. Evaluations of fungicides for control of apple diseases, 1977. APS Fungicide and Nematicide Tests 33:27.

**Nutter, F. W., Jr.**, and MacHardy, W. E. 1978. Evaluation of one standard and two predictive spray schedules for control of early blight, 1977. APS Fungicide and Nematicide Tests 33:84.

Warren, C. G., and **Nutter, F. W., Jr.** 1978. Fungicidal evaluation for the control of Sclerotinia dollarspot, 1977. APS Fungicide and Nematicide Tests 33:137.

Warren, C. G., and **Nutter, F. W., Jr.** 1978. Chemical control of Fusarium and Typhula snow molds, 1977. APS Fungicide and Nematicide Tests 33:139.

Warren, C. G., and **Nutter, F. W., Jr.** 1978. Fungicide evaluations for the control of Helminthosporium leaf and crown decay, 1977. APS Fungicide and Nematicide Tests 33:145.

Warren, C. G., and **Nutter, F. W., Jr.** 1978. Insecticide evaluations for the control of Japanese beetle grubs, 1977. Insecticide and Acaricide Tests 3:246.

## **POPULAR PUBLICATIONS (14 total):**

**Nutter, F. W., Jr.** Computer program, products for plant disease assessment. Page 6 in: IPMnet News, Integrated Pest Management Network, No. 195, June 2012.

**Nutter, F.W., Jr.** 2011. The 11<sup>th</sup> I.E. melhus graduate student symposium 2011 awardees. *Phytopathology News* 45:94.

**Nutter, F.W., Jr.** 2010. Agronomic tip of the week: ISU model predicts counties at risk for soybean disease, BPMV. E-Gold Standard, Iowa Soybean Association, Ankeny, IA.

Anderson, R. and **Nutter, F. W., Jr.** 2000. News release: "Farmers Advised to Check Fields for Stewart's Disease". 14 February, Ames Tribune.

Anderson, C., and **Nutter, F. W., Jr.** 1999. Soybean mosaic virus vastly underestimated. Page 2 in: *Decision Maker, Iowa Farm Bureau Spokesman*. Volume 2, 30 October.

McManus, B., and **Nutter, F. W., Jr.** 1999. Slowing the spread of soybean mosaic virus. *Soybean Review* 10(4):24-25.

**Nutter, F. W., Jr.** 1999. Slowing the spread of soybean mosaic virus. Pages 24-25 in: *Iowa Soybean Review*, January 1999.

**Nutter, F. W., Jr.**, and Meyer, B. 1998. News release: "ISU Researchers Able to Predict Severity of Disease in Corn Fields". Information Service, College of Agriculture, Iowa State University, Ames, IA.

**Nutter, F.W., Jr.** 1992. Alfalfa.Pro. Software. *Abstr. Agron. News*. 23 p.

**Nutter, F. W., Jr.** 1990. Barley. Pro - A computerized diseases assessment training and evaluation program. *Barley Newsletter* 33:120.

**Nutter, F. W., Jr.** 1980. Forecasting Pythium. *Golf Course Management* 48:18-25.

**Nutter, F. W., Jr.** 1980. Forecasting Pythium blight development. *Grounds Maintenance* 15 (11):28-30.

**Nutter, F. W.**, Cole, H., Jr., and Sanders, P. 1980. Leaf spot research. The Keynoter. *Pa. Turfgrass Council* 8 (3):1-2.

**Nutter, F. W., Jr.**, Cole, H., Jr., and Sanders, P. L. 1979. Pythium blight in Pennsylvania. *The Keynoter, Pa. Turfgrass Council* 8:2.

## **ABSTRACTS**

Roberts, N., Thomas, C., Martyn, R., Brown, J., Stack, J., Nutter, F. 2014. Title: national Plant Disease Recovery System (NPDRS) Meeting, 10 August, Annual Meeting of the American Phytopathological Society, 9-13, Minneapolis, MN.

Eggenberger, S. K., Nutter, F. W. Jr., and Robertson A. E., 2014. Influence of resistance and surface residue on incidence of epiphytic *Clavibacter michiganensis* subsp. *Nebraskensis* and Goss's leaf blight of corn. *Phytopathology*: XXX

Nutter, F.W., Jr. 2014. Comparison of the Pennsylvania and Ontario Plum pox virus survey and eradication programs. Global Food Security Consortium: Closing the Yield Gap, 29-30 April, Iowa State University, Ames, IA.

Nutter, F.W., Jr. 2014. Spatial and temporal analyses to find the epicenters of soybean rust disease foci using remote sensing GPS, and GIS technologies. Global Food Security Consortium: Closing the Yield Gap, 29-30 April, Iowa State University, Ames, Iowa.

Diaz Arias, M. M., Toperek, S., Nutter, F. W., Jr., and Robertson, A. E. 2013. Within-field spatial and temporal analysis of *Clavibacter michiganensis* subsp. *Nebraskensis* and Goss's leaf blight of corn in Iowa. *Phytopathology* 103:S2 35.

Gougherty, A. V. and Nutter, F. W., Jr. 2013. An epidemiological comparison of the US and Canadian Plum pox virus eradication programs. *Can. J. of Plant Pathology* 35:135. Paper presented at the International Plum Pox Virus Meeting, 2012/1a réunion du International Plum Pox Virus, 20121, June 24-27, 2012, Niagara Falls, Ontario, Canada. *Canadian Journal of Plant Pathology*, 35:1, 133-139.

Gougherty, A., Pazdernik, K., Kaiser, M., and Nutter, F. W., Jr. 2013. Comparison of the Pennsylvania and Ontario *Plum pox virus* survey and eradication programs. *Phytopathology* 103: S2 51.

McRoberts, N., Brown, J., Nutter, F., Stack, J., Thomas, C., and Martin, R. 2013. Development of generic disease recovery plans using an iterative, deliberative process. 10<sup>th</sup> International Congress of Plant Pathology, 25-30 August, Beijing, China. Martyn, R., McRoberts, N., Thomas, C. Nutter, F.W., Jr., and Brown, J. 2013. The Development of generic recovery plans: the cluster analysis model. USDA/APS Workshop on the Review and Selection of Response Guidelines and Recovery Plans, National Plant Disease Recovery System (NPDRS), 15-16 April, Falls Church, VA.

Nutter, F. W., Jr. 2013. Forensic epidemiology: New sensor-based plant pathogen detection: Where to look for evidence in a 300-acre crop. *Phytopathology* S2 176.

Nutter, F. W., Jr. 2013. Integrating remote sensing, GPS, and GIS technologies for plant disease forensics: Where to look for evidence in a 300-hectare crop. *Phytopathology* 103:.

- Nutter, F. W., Jr., Byamukama, E., and Eggenberger, S. 2013. Geospatial and temporal analyses of *Bean pod Mottle virus* epidemics in soybean. Page 34 in: Evolution, Ecology, and Control of Plant Viruses, 12<sup>th</sup> International Symposium on Plant Virus Epidemiology, 27 January-1February, 2013, Arusha, Tanzania.
- Nutter, F. W., Jr. and Gougherty, A. V. 2013. PP-002: Spatial and temporal analyses of the impacts of *Plum pox virus* in Pennsylvania and Ontario, Canada. Page 103 in: Evolution, Ecology, and Control of Plant Viruses, 12<sup>th</sup> International Symposium on Plant Virus Epidemiology, January 1-February 1, 2013, Arusha, Tanzania.
- Nutter, F. W., Jr., and Coelho Netto, R. A. 2012. Moko disease of banana: Use of GPS and GIS tools to map disease risk. 45<sup>th</sup> Congresso Brasileiro de Fitopatologia, 19-23 August, Manaus AM, Brazil, p. 44.
- Gougherty, A., and Nutter, F. W., Jr. 2011. Epidemiological analysis of the U.S. and Canadian *Plum pox virus* eradication programs. *Phytopathology* 101:S222.
- Gougherty, A., and Nutter, F. W., Jr. 2011. Spatial dynamics of *Plum pox virus* in *Prunus* spp. in Ontario and Pennsylvania. *Phytopathology* 101:S63.
- Nutter, F. W., Jr., Byamukama, E., and Eggenberger, S. 2011. Within-field temporal and spatial dynamics in the Soybean mosaic virus – aphid and Bean pod mottle virus - beetle soybean pathosystems. *Phytopathology* 101:S274.
- Byamukama, E., Robertson, A.E., Nutter, F.W. Jr. 2010. Identifying pre-plant risk factors for *Bean pod mottle virus* in Iowa. *Phytopathology* 100:S183.
- Coelho-Netto, R. A. and Nutter, F.W. Jr. 2010. Moko disease of banana: Use of GPS and GIS tools to map disease risk. Page 56 in: 3<sup>rd</sup> Conference on Precision Agriculture, E.C. Oreke, ed. University of Bonn, Bonn, Germany.
- Gougherty, A., Welliver, R., Richwine, N., Nutter, F.W. Jr. 2010. Spatial and temporal analyses of *Plum pox virus* survey data. *Phytopathology* 100:S42.  
**Received the Luis Sequeira APS Foundation Travel Award.**
- Hagopian, D., Schmale, D., and Nutter, F.W., Jr. 2010. Integrating GPS, GIS, and remote sensing to detect and quantify plant disease gradients. Iowa State University College of Agriculture and Life Sciences “Science with Practice” undergraduate mentor program, 8 December, Ames, IA.
- Holah, N.S., Marois, J., Wright, D., and Nutter, F.W. Jr. 2010. Spatial and temporal analyses to find the epicenters of soybean rust disease foci using remote sensing, GPS, and GIS technologies. *Phytopathology* 100:S186.
- Liu, L., Block, C.C., Nutter, F.W. Jr. 2010. Quantifying and comparing the aggressiveness of *Pantoea stewartii* isolates from Iowa. *Phytopathology* 100:S188.

Nelson, M.E., Basart, J.P., and Nutter, F.W. Jr. 2010. Engineering payload designs for remote sensing applications for plant pathology using latex weather balloons. *Phytopathology* 100:S188.

Nutter, F.W. Jr., Holah, N.S., and Eggenberger, S.K. 2010. Developing integrated GPS, GIS, and satellite remote sensing technologies to locate the epicenters of plant disease foci. Page 56 in: 3<sup>rd</sup> Conference on Precision Agriculture, E.C. Oreke, ed. University of Bonn, Bonn, Germany.

Nutter, F.W. Jr., Holah, N., Van Rij, N., Wright, D., Marois, J. 2010. Meeting the challenges of U.S. crop Biosecurity: Pre- and post threat introduction. *Phytopathology* 100:S181.

Byamukama, E., Robertson, A., and Nutter, F.W. Jr. 2009. Abiotic and biotic risk factors associated with *Bean pod mottle virus* in Iowa. *Phytopathology* 99:S18.

Holah, N.S., Marois, J., Wright, D., and Nutter, F.W. Jr. 2009. Spatial and temporal analysis to find the epicenters of Asian soybean rust disease foci using remote sensing, GPS, and GIS technologies. 2009. BIGMAP Symposium “Food and Fuel Crops: Issues, Policies, and Regulation”, 21-22 April, Iowa State University, Ames, Iowa.

Nutter, F.W. Jr. 2009. Role of imagery, spatial pattern analysis, and sampling in plant pathogen forensics. *Phytopathology* 99:S160.

Pethybridge, S., Hay, F., Gent, D., Esker, P., Nutter, F. W. Jr., Wilson, C., and Groom, T. 2009. Development of management strategies for ray blight of pyrethrum: A case study of successful diffusion. *Phytopathology* 99:S174.

Thomas, C., Coggeshall, A., Bostock, R., Luke, E., Hill, M., Creswell, T., Estep, C., Barber, D., Coop, L., Jepson, P., Beck, H., Nutter, F., Madden, L. 2009. Meeting of the National Plant Disease Network.

Thomas, C., Coggeshall, A., Bostock, R., Luke, E., Hill, M., Creswell, T., Estep, C., Barber, D.D., Coop, L., Jepson, P., Beck, H., Nutter, F. W. Jr., and Madden, L. 2009. NPDN launches epidemiology analysis program 2009. Second National Meeting of the National Plant Diagnostic Network (NPDN), 6-10 December, Miami, FL.

Byamukama, E., Robertson, A., and Nutter, F. W., Jr. 2008. *Bean pod mottle virus* spatial pattern and its relationship with bean leaf beetle winter mortality. *Phytopathology* 98:S202. **This poster received First Place in the Graduate Student Poster Competition held during the North Central Division Meeting of the American Phytopathological Society, 19-21 June 2007, in Indianapolis, IN.**

Byamukama, E., Robertson, A., and Nutter, F. W., Jr. 2008. Integrating GPS, GIS, and geostatistics for risk assessment of *Bean pod mottle virus* in Iowa. *Phytopathology* 98:S28.

Byamukama, E., Robertson, A., and Nutter, F. W., Jr. 2008. Quantification of the temporal and spatial dynamics of *Bean pod mottle virus* at different spatial scales. *Phytopathology* 98:S189.

Byamukama, E., Robertson, A., and Nutter, F. W., Jr. 2008. Within-field spatial and temporal analysis of *Bean pod mottle virus* in Iowa. *Phytopathology* 98:S29.

Byamukama, E., Robertson, A., and Nutter, F. W., Jr. 2008. Spatial and temporal spread of *Bean pod mottle virus* (BPMV) relationship between time of BPMV infection and soybean yield. *Phytopathology* 98:S202. **This paper was 1 of 5 competitively chosen to be presented at the 8<sup>th</sup> I.E. Melhus Graduate Student Symposium held during the 2008 Annual Meeting of the American Phytopathological Society, Minneapolis, MN.**

Gongora-Canul, C., Nutter, F. W., Jr., and Leandro, L. F. S. 2008. Temporal dynamics of root and foliar symptoms of soybean sudden death syndrome at different inoculum densities. Southern Soybean Disease Workers, 35<sup>th</sup> Annual Meeting, 12-13 March, Pensacola Beach, FL. **This presentation received second place in the graduate student oral paper competition.**

Kilburg, B. J., Byamukama, E., and Nutter, F. W., Jr. 2008. Quantifying the infectious period of bean leaf beetles and the latent period of *Bean pod mottle virus* in soybean. Department of Energy - Iowa State University Student Undergraduate Laboratory (Summer) Internship (SULI) Poster Presentations, 1 August, Ames, IA.

Kilburg, B. J., Byamukama, E., and Nutter, F. W., Jr. 2008. Quantifying the infectious period of bean leaf beetles and the latent period of *Bean pod mottle virus* in soybean. Department of Energy Science and Energy Research Challenge Competition, 9-10 November, Department of Energy Science National Research Laboratory, Oak Ridge, Tennessee. **This presentation received a National 3rd Place Award from the 2008 U.S. Department of Energy Science and Energy Research Challenge Competition.**

Liu, L., Block, C., and Nutter, F. W., Jr. 2008. Quantifying and comparing the aggressiveness of *Pantoea stewartii* isolates under different temperatures. *Phytopathology* 98:S92.

Liu, L., Block, C., and Nutter, F. W., Jr. 2008. Quantifying and comparing the aggressiveness of *Pantoea stewartii* isolates under different temperatures. Graduate Program in Sustainable Agriculture Symposium, 30 April, Iowa State University, Ames, IA.

Liu, L. and Nutter, F. W., Jr. 2008. Quantifying the temporal and spatial spread of *Pantoea stewartii* in sweet corn. *Phytopathology* 98:S91 (Presented in 2007).

Lu, X., Robertson, A., Byamukama, E., and Nutter, F. W., Jr. 2008. Comparison of the prevalence and incidence of *Soybean mosaic virus* in Iowa soybean fields during 2005 to 2007. *Phytopathology* 98:S94.



Lu, X., Robertson, A., and Nutter, F. W., Jr. 2008. Quantification and comparison of components of aggressiveness of isolates of *Diaporthe phaseolorum* var. *caulivora* collected in Iowa soybean fields. *Phytopathology* 98:S95.

Lutz, A.L., Liu, L., and Nutter, F. W., Jr. 2008. Quantifying the infectious period, aggressiveness, and spatial spread of *Pantoea Stewartii*. Iowa State University Program for Women in Science and Education Poster Presentations, 25 July, Molecular Biology Building, Iowa State University, Ames, IA.

Nutter, F. W., Jr. and Byamukama, E. 2008. Modeling yield loss based on time of virus detection: a geostatistical, quadrat-based approach. *Phytopathology* 98:S189.

Ahmad, K., Basart, J., Rij, N. V., and Nutter, F. W., Jr. 2007. Analysis of the spatial and temporal spread of Asian soybean rust using GPS, GIS, and remote sensing satellite technologies. Iowa Geographic Information Council (IGIC) Annual Conference, 23-25 April, Sioux City, IA. (Oral Presentation)

Ahmad, K., Basart, J., Rij, N. V., and Nutter, F. W., Jr. 2007. Development of early warning systems to improve US crop biosecurity. Page 35 in: Food Safety and Public Health: Production, Distribution, and Policy, Iowa State University Institute for Food Safety and Security Symposium, 12 April, Ames, IA.

Ahmad, K., Basart, J., Rij, N. V., and Nutter, F. W., Jr. 2007. Development of early warning systems to improve US crop biosecurity. Iowa Geographic Information Council (IGIC) Annual Conference, 23-25 April, Sioux City, IA. **This poster was awarded First Place out of 40+ posters presented at the Iowa Geographic Information Council (IGIC) Conference.**

Ahmad, K., van Rij, N., Basart, J., and Nutter, F. W., Jr. 2007. Development of early warning systems to improve US crop biosecurity: an integrated remote sensing, GPS, and GIS approach. The Great Midwestern Regional Space Grant Consortium, 6-7 September, Purdue University, Lafayette, Indiana. **This poster was awarded 2<sup>nd</sup> Place in the Graduate Student Poster Competition.**

Ahmad, K., van Rij, N., Basart, J., and Nutter, F. W., Jr. 2007. Detecting and quantifying the temporal and spatial dynamics of plant pathogens using GPS, GIS, and remote-sensing technologies. *Phytopathology* 97:S137.

Aubertot, J. N., Sohbi, Y., Penaud, A., Brun, H., and Nutter, F. W., Jr. 2007. Assessing the severity of phoma stem canker in canola. *Phytopathology* 97:S137.

Bullard, A., Byamukama, E., and Nutter, F. W., Jr. 2007. Quantitative study of the spatial spread of *bean pod mottle virus* in soybean. ISU Program for Women in Science and Engineering Poster Presentations, 27 July, Iowa State University, Ames, IA.

- Byamukama, E., Lu, X., Robertson, A., Nutter, F. W., Jr. 2007. Temporal and spatial patterns of *Bean pod mottle virus* at the county and field scales in Iowa. Department of Plant Pathology, Iowa State University, Ames, IA 50011. *Phytopathology* 97:S160.
- Byamukama, E., Robertson, A., Nordman, D., and Nutter, F. W., Jr. 2007. Quantifying the temporal and spatial dynamics of plant viruses: A quadrat-based approach. 10<sup>th</sup> International Plant Virus Epidemiology Symposium, 15-19 October, ICRISAT, Hyderabad, Andhra Pradesh, India.
- Byamukama, E., Robertson, A., and Nutter, F. W., Jr. 2007. Risk of bean pod mottle virus of soybean in Iowa in 2005 and 2006 based upon spatial distribution. Iowa Geographic Information Council (IGIC) Annual Conference, 23-25 April, Sioux City, IA.
- Byamukama, E., Robertson, A., and Nutter, F. W., Jr. 2007. Spatial patterns of bean pod mottle virus of soybean in Iowa. Page 30 in: Food Safety and Public Health: Production, Distribution, and Policy, Iowa State University Institute for Food Safety and Security Symposium, 12 April, Ames, IA.
- Byamukama, E., Robertson, A., and Nutter, F. W., Jr. 2007. Use of temporal and spatial data to quantify impact of bean pod mottle virus on soybean yield. Page 31 in: Food Safety and Public Health: Production, Distribution, and Policy, Iowa State University Institute for Food Safety and Security Symposium, 12 April, Ames, IA.
- Esler, P. D. and Nutter, F. W., Jr. 2007. Dollars and cents: the economic validation of plant disease forecasting systems. *Phytopathology* 97:S147.
- Imonugo, O., Liu, L., and Nutter, F. W., Jr. 2007. Quantifying the aggressiveness of bacterial isolates of *Pantoea stewartii* in corn plant. ISU College of Agriculture and Life Sciences George Washington Carver Minority Summer Internship Poster Presentation, 27 July, Iowa State University, Ames, IA.
- Lagneaux, A., Byamukama, E., and Nutter, F. W., Jr. 2007. Quantifying temporal and spatial spread of *bean pod mottle virus*. ISU Program for Women in Science and Engineering Poster Presentations, 27 July, Iowa State University, Ames, IA.
- Lu, X., Robertson, A. E., Byamukama, E., and Nutter, F. W., Jr. 2007. The prevalence, incidence, and spatial dependence of soybean mosaic virus in Iowa. *Phytopathology* 97:S68.
- Nutter, F. W., Jr. 2007. Detecting and quantifying the temporal and spatial dynamics of Asian soybean rust epidemics using GPS, GIS, and remote sensing technologies. Seminar Speaker, Iowa Geographic Information Council, GIS Seminar Series, Spring Semester 2007, 5 March, Part of the ISU CRP 452/552 Geographic Data Management and Planning and Analysis Course, GIS Lab, College of Design, Iowa State University, Ames, IA.

- Nutter, F. W., Jr. 2007. To honor Horsfall-Barrett and repeal their scale. *Phytopathology* 97:S137.
- Nutter, F. W., Jr., and Byamukama, E. 2007. Protecting agriculture at home and abroad: A historical timeline of the ISU Department of Plant Pathology. Iowa State University 150 Year Anniversary, Department of Plant Pathology Committee, April 2007, Ames, IA.
- Nutter, F. W., Jr., and Byamukama, E. 2007. Quantifying yield losses caused by plant viruses. 10<sup>th</sup> International Plant Virus Epidemiology Symposium, 15-19 October, ICRISAT, Hyderabad, Andhra Pradesh, India.
- Nutter, F. W., Jr., Byamukama, E., and Robertson, A. 2007. Use of GPS, GIS, and geostatistics to develop pre-plant virus disease prediction models. 10<sup>th</sup> International Plant Virus Epidemiology Symposium, 15-19 October, ICRISAT, Hyderabad, Andhra Pradesh, India.
- Nutter, F. W., Jr. 2007. Model validation: what comes under the umbrella of validation concepts for pathogen/disease detection and forecasting models. *Phytopathology* 97:S147.
- Nutter, F. W., Jr. 2007. Use of GPS, GIS, and Remote Sensing Technologies in Plant Disease Management. 2<sup>nd</sup> European Conference on Precision Agriculture, 10-12 October, Bonn, Germany.
- Nutter, F. W., Jr., Ahmad, K., VanRij, N., and Basart, J. 2007. Detection of Asian soybean rust disease gradients in soybean using high resolution satellite imagery. *Phytopathology* 97:S85.
- Pethybridge, S. J., Hay, F. S., Esker, P. D., Wilson, C. R., and Nutter, F. W., Jr. 2007. Use of a multispectral radiometer for assessment of ray blight disease caused by *Phoma ligulicola* and yield loss in pyrethrum in Tasmania, Australia. Page 137 in: 16<sup>th</sup> Biennial Australasian Plant Pathology Society Conference "Back to Basics: Managing Plant Disease", 24-27 September, Adelaide, Australia.
- Stedman, J., Robertson, A., Byamukama, E., Nutter, F. W., Jr. 2007. Relationship between percent mortality predictions for bean leaf beetle overwintering populations and incidence of *Bean pod mottle virus* in Iowa. *Phytopathology* 97:S110. **Jana Stedman was awarded the American Phytopathological Society Frank Howard Undergraduate Research Award for this project.**
- Thomas, C., Cresswell, T., Luke, E., Nutter, F. W., Jr., Lanier, W., Durgy, R., Bryne, J., Tidwell, T., and Draper, M. 2007. Expansion of data collection capabilities for the National NPDP database. Page 26 in: National Plant Diagnostic Network National Meeting, Orlando, Florida. 33 pp.
- Thomas, C., Luke, E., Hill, M., Coggeshall, A., Beck, H., Barber, D., Jr., Baldwin, W., Estep, C., Tidwell, T., Coop, L., Luh, H., and Nutter, F. W., Jr. 2007. The

NPDN epidemiology committee. Page 19 in: National Plant Diagnostic Network National Meeting, Orlando, Florida. 33 pp.

Turner, C., Liu, L., and Nutter, F. W., Jr. 2007. Determining the spatial pattern of Stewart's disease in corn fields using a marked isolate. U of I, ISU, and UNI Alliance for Graduate Education and Professoriate (AGEP) Minority Summer Internship Poster Presentations, 24-26 July, University of Iowa, Iowa City, IA.

Turner, G., Byamukama, E., and Nutter, F. W., Jr. 2007. The early-season within-field temporal and spatial spread of *Bean pod mottle virus* in soybean. U of I, ISU, and UNI Alliance for Graduate Education and Professoriate (AGEP) Minority Summer Internship Poster Presentations, 24-26 July, University of Iowa, Iowa City, IA.

Cerra, S.M., Robertson, A.E., and Nutter, F. W., Jr. 2006. Within-field diversity of *Phytophthora sojae* in Iowa. *Phytopathology* 96:S20.

Choi, Y.E., Byamukama, E., Robertson, A., and Nutter, F. W., Jr. 2006. The within-field temporal and spatial spread of bean pod mottle virus in soybean. The Iowa State University Program for Women in Science and Engineering Poster Session, 28 July, Ames, IA. **This poster received First Place in the Iowa State University Norman Borlaug "World Food Issues" Graduate Student Poster Competition for Graduate and Undergraduate Students, held 16 October, Ames, IA.**

Esler, P.D., Harri, J., Dixon, P.M., and Nutter, F. W., Jr. 2006. Improved forecasting for Stewart's disease of corn in Iowa. *Phytopathology* 96:S33

Heidfeld, D. and Nutter, F. W., Jr. 2006. Developing EPIMODEL2: A computer program for teaching population growth modeling. Department of Energy Science Undergraduate Laboratory Intern Program 30 May – 4 August 2006, Ames Laboratory, Iowa State University, Ames, IA.

Lu, X., Robertson, A.E., and Nutter, F. W., Jr. 2006. *Diaporthe phaseolorum* variability and its distribution in soybean fields in Iowa. *Phytopathology* 96:S70.

Nutter, F. W. 2006. Applications of GIS and geostatistics to epidemics in natural systems. *Phytopathology* 96:S144.

Nutter, F. W., Jr., Robertson, A.E., Khalil, A., and Esler, P.D. 2006. Development of mapping tools to generate disease risk contour maps depicting prevalence, incidence, and severity of soybean diseases in Iowa in 2005. *Phytopathology* 96:S86.

Robertson, A.E., Nutter, F. W., Jr., Esler, P.D., Shriver, J.M., and Navi, S.S. 2006. The impact of foliar diseases of soybean in Iowa during the 2005 growing season. *Phytopathology* 96:S98.

Schuessler, K., Lu, X., Robertson, A., and Nutter, F. W., Jr. 2006. Prevalence of soybean mosaic virus (SMV) in Iowa during the 2005 growing season. ISU, UNI and

U of I George Washington Carver Internship Program Symposium, 25-26 July, Ames, IA. **This poster received First Place among 34 posters presented by participants from Iowa State University, The University of Iowa, and The University of Northern Iowa.**

Aubertot, J.N., Sohbi, Y., Brun, H., Penaud, A., and Nutter, F. W., Jr. 2005. Phomadidacte: a computer-aided program for the severity assessment of phoma stem canker of oilseed rape.

Bottjen, S., Nguyen, Q., Robertson, A., and Nutter, F. W., Jr. 2005. Early season prevalence and incidence of bacterial blight in soybeans throughout Iowa. Poster presentation, Internship Program for Women in Science and Engineering, 22 July, Ames, Iowa.

Esker, P.D., Gibb, K.S., Dixon, P.M., and Nutter, F. W., Jr. 2005. Use of space-time point process modeling to determine spatial and temporal dependence of papaya phytoplasmas in Australia. Page 52 in: 9<sup>th</sup> International Workshop on Plant Disease Epidemiology: Facing Challenges of the 21<sup>st</sup> Century. 11-15 April, INRA, IRD, Landerneau, France.

Esker, P.D., Gibb, K.S., Dixon, P.M., and Nutter, F. W., Jr. 2005. Use of survival analysis and space-time point pattern analysis to study the epidemiology of papaya yellow crinkle in Australia. *Phytopathology* 95:S128. **This paper was 1 of 6 competitively chosen to be presented at the 5<sup>th</sup> I.E. Melhus Graduate Student Symposium held during the Annual Meeting of the American Phytopathological Society, Austin, Texas.**

Esker, P. D., Pethybridge, S. J., Hay, F. S., Dixon, P. M., and Nutter, F. W., Jr. 2005. Modeling disease gradients in pyrethrum due to *Phoma ligulicola* using tobit and nonparametric regression. Page 60 in: 9<sup>th</sup> International Workshop on Plant Disease Epidemiology: Facing Challenges of the 21<sup>st</sup> Century. 11-15 April, INRA, IRD, Landerneau, France.

Guan, J., Kaiser, M. S., Caragea, P. C., Tylka, G. L., and Nutter, F. W., Jr. 2005. Improving the relationship between IKONOS satellite image intensity and soybean yield as affected by SCN using geostatistics. *Phytopathology* 95: S162.

Moreira, A. J. A., Guan, J., Tylka, G. L., and Nutter, F. W., Jr. 2005. Use of remote sensing, geographic information systems, and spatial statistics to assess soybean yield and soybean cyst nematode (SCN) populations in soybean fields. *Phytopathology* 95: S164.

Nutter, F. W., Jr. 2005. Application of specialized models for macroscale risk prediction. *Phytopathology* 95:S131.

Nutter, F. W., Jr. 2005. Post-introduction mapping of plant virus spread using GPS and real-time GIS technologies. Page 62 in: IX International Plant Virus

Epidemiology Symposium: Applying Epidemiological Research to Improve Virus Disease Management. 4-7 April, International Potato Center, Lima, Peru.

Nutter, F. W., Jr. 2005. The role of plant virus epidemiology in risk assessment and risk mitigation in response to plant virus biosecurity threats. Page 32 in: IX International Plant Virus Epidemiology Symposium: Applying Epidemiological Research to Improve Virus Disease Management. 4-7 April, International Potato Center, Lima, Peru.

Nutter, F. W., Jr., and Esker, P. D. 2005. Evaluation of the Iowa State Model to predict the seasonal risk for Stewart's disease of corn. *Phytopathology* 95:S165.

Nutter, F. W., Jr., Esker, P. D., and Coelho Netto, R. A. 2005. Disease assessment concepts and the role of psychophysics in phytopathology. Page 90 in: 9<sup>th</sup> International Workshop on Plant Disease Epidemiology: Facing Challenges of the 21<sup>st</sup> Century. 11-15 April, INRA, IRD, Landerneau, France.

Nutter, F. W., Jr. and Guan, J. 2005. Where damage functions meet price functions: finding the bottom line is disease management decisions. *Phytopathology* 95:S131.

Nutter, F. W., Jr., Hill, J. H., and Steinlage, T. A. 2005. Temporal and spatial spread of soybean mosaic virus (SMV) in soybeans transformed with the coat protein gene of SMV. Page 61 in: IX International Plant Virus Epidemiology Symposium: Applying Epidemiological Research to Improve Virus Disease Management. 4-7 April, International Potato Center, Lima, Peru.

Stedman, J. K., Esker, P. D., Robertson, A. E., and F. W. Nutter, Jr. 2005. Prevalence of foliar diseases of soybean in Iowa in 2005. American Society for Microbiology, North Central Branch 65<sup>th</sup> Annual Meeting, 22-24 September, Ames, Iowa. Page 13.

Tuke, G., Stedman, J. K., Robertson, A. E., and F. W. Nutter, Jr. 2005. Use of GIS technologies to map the prevalence and incidence of foliar disease of soybean in Iowa. American Society for Microbiology, North Central Branch 65<sup>th</sup> Annual Meeting, 22-24 September, Ames, Iowa. Page 51.

Bradshaw, J., Esker, P., Hernandez, S., Moreira, A. J., Murillo-Williams, A., Nutter, F. W., Jr., and Tollefson, J. 2004. Teaching pest risk assessment: A case study in Iowa. *Phytopathology* 94: S10.

Esker, P. D., Dixon, P. M., and Nutter, F. W., Jr. 2004. Survival analysis of phytoplasma-infected papaya causing yellow crinkle disease in Australia. *Phytopathology* 94: S28.

Guan, J., Yang, X. B., Ivancovich, A., and Nutter, F. W., Jr. 2004. Using high-resolution satellite images to assess soybean yield losses caused by leaf blight in Argentina. *Phytopathology* 94: S158.

Menelas, B., and Nutter, F. W., Jr. 2004. Quantifying the acquisition and transmission feeding periods of the corn flea beetle in the Stewart's disease of corn pathosystem. *Phytopathology* 94: S160. **APS North Central Division Best Oral Graduate Student Paper Award.**

Menelas, B., and Nutter, F. W., Jr. 2004. Effect of date of planting on the incidence of Stewart's disease of corn in Iowa. *Phytopathology* 94: S160.

Moreira, A. J., Marett, C. C., Nutter, F. W., Jr., and Tylka, G. L. 2004. Extraction efficiency of cysts of soybean cyst nematode from soils. *Phytopathology* 94: S73.

Nutter, F. W., Jr. 2004. Developing forensic protocols for the post-introduction attribution of threatening plant pathogens. *Phytopathology* 94: S77.

Nutter, F. W., Jr. 2004. Post-introduction mapping of new and emerging agricultural pathogens in real-time using GPS and GIS technologies. *Phytopathology* 94: S130.

Sambo, P., Nutter, F. W., Jr., Guan, J., and Friedrich, H. 2004. Organic cultivation of Radicchio rosso di Chioggia" (*Chicorium intybus* var. *silvestre*) in Iowa. Proceeding of ASHS conference. 17-20 July, Austin, TX.

Coelho Netto, R. A., and Nutter, F. W., Jr. 2003. Relative risk of Moko disease of banana in flooded versus nonflooded plantations in Brazil. Page 358 in: Proceedings of the 8<sup>th</sup> International Congress of Plant Pathology, 2-7 February, Christchurch, NZ. 386 pp.

Cook, K., Weinzierl, R. A., Pataky, J. K., Esker, P. D., and Nutter, F. W., Jr. 2003. Seasonal fluctuations in population densities of the corn flea beetle and their impact on the incidence of Stewart's wilt in sweet corn. 26-29 June 2003 Annual ESA Meeting. Cincinnati, OH.

Esker, P. D., Aalsburg, J., and Nutter, F. W., Jr. 2003. Survey of alternative hosts for *Pantoea stewartii*, casual organism of Stewart's disease in Iowa. *Phytopathology* 93: S24.

Esker, P. D., Dixon, P., and Nutter, F. W., Jr. 2003. Assessing the incidence of Stewart's disease of corn using adaptive cluster sampling. Page 107 in: Proceedings of the 8<sup>th</sup> International Congress of Plant Pathology, Vol. 2, 2-7 February, Christchurch, NZ. 386 pp.

Esker, P., and Nutter, F. W., Jr. 2003. Use of GIS to improve disease forecasting and field research trials in the Stewart's disease of corn pathosystem. 2003 6<sup>th</sup> Iowa Geographic Information Systems Biennial Conference. 30 June – 2 July. Ames, IA. Page T4C.

Guan, J., Rosburg, T., Tylka, G. L., Marrett, C. C., and Nutter, F. W., Jr. 2003. Use of satellite images to detect soybean cyst nematode. Soybean Plant Health Initiative Home Page (<http://planthealth.info/scn/scnremsense.htm>).

Menelas, B., Esker, P. D., and Nutter, F. W., Jr. 2003. Efficacy of using seed and foliar insecticides to control *Chaetocnema pulicaria* and Stewart's disease of corn. *Phytopathology* 93: S61.

Moreira, A., Guan, J., Tylka, G. L., and Nutter, F. W., Jr. 2003. Mapping reflectance from soybean canopies to predict soy yield. 2003 6<sup>th</sup> Iowa Geographic Information Systems Biennial Conference. 30 June – 2 July, Ames, IA.

Nutter, F. W., Jr., and Hill, J. H., and Steinlage, T. A. 2003. Temporal and spatial models to assess the benefits of transgenic resistance to soybean mosaic virus. *Phytopathology* 93: S103.

Nutter, F. W., Jr., and Coelho Netto, R. A. 2003. Use risk of Moko disease of banana in flooded versus non-flooded plantations in Brazil. 2003 6<sup>th</sup> Iowa Geographic Information Systems Biennial Conference. 30 June – 2 July. Ames, IA. Page T4A.

Aalsburg, J. D., Esker, P. D., and Nutter, F. W., Jr. 2002. Assessment of alternative hosts for *Pantoea stewartii*. Iowa State University Program for Women in Science and Engineering Poster Presentations, 9 August, Iowa State University, Ames, IA.

Coelho Netto, R. A., and Nutter, F. W., Jr. 2002. Higher risk of Moko disease of banana associated with banana plantations periodically flooded by rivers in the Amazonas region of Brazil. *Fitopatol. Bras.* 27: S58.

Coelho Netto, R. A., and Nutter, F. W., Jr. 2002. Use of GPS and GIS to map the prevalence of Moko disease of banana in the Amazonas region of Brazil. Page 84 in: Proceedings of the 3<sup>rd</sup> International Bacterial Wilt Symposium, 4-8 February, White River, South Africa.

Cook, K. A., Weinzierl, R. A., Pataky, J. K., Esker, P. D., and Nutter, F. W., Jr. 2002. Corn flea beetle populations and Stewart's wilt in sweet corn in 2001. North Central Branch Meeting of the Entomological Society of America, 24-27 March, Michigan State University, East Lansing, MI.

Esker, P. D., and Nutter, F. W., Jr. 2002. Development and use of degree-day models to improve management of corn flea beetles in the Stewart's disease pathosystem on corn. Iowa State University 9<sup>th</sup> Annual Ecology and Evolutionary Biology Symposium, 30 March, Ames, IA.

Esker, P. D., and Nutter, F. W., Jr. 2002. Development and use of degree-day models to improve management of corn flea beetles in the Stewart's disease pathosystem on corn. *Phytopathology* 92: S24.

Guan, J., Moreira, A. J. A., Tylka, G. L., and Nutter, F. W., Jr. 2002. Relationship between high resolution IKONOS satellite image intensities and soybean stress caused by soybean cyst nematode. *Phytopathology* 92:S32.



Guan, J., Nutter, F. W., Jr., Rosburg, T., Tylka, G. L., and Marett, C. C. 2002. Use of satellite images to detect soybean cyst nematode. *Phytopathology* 92:S138.

Leandro, L. F. S., Gleason, M. L., Wegulo, S. N., and Nutter, F. W., Jr. 2002. Effects of strawberry plant extracts on conidiation and appressorial production by *Colletotrichum acutatum*. *Phytopathology* 92:S45. **First Place, Graduate Student Poster Award, North Central Division Meeting, American Phytopathological Society.**

Menelas, B. and Nutter, F. W., Jr. 2002. Quantifying the acquisition and transmission periods of the corn flea beetle for effective management of Stewart's disease. *Phytopathology* 92:S55. **First Place, Graduate Student Oral Competition, North Central Division, American Phytopathological Society.**

Menelas, B. and Nutter, F. W., Jr. 2002. Quantifying the acquisition and transmission periods of the corn flea beetle for effective management of Stewart's disease. Annual Conference for Minority in Agriculture Natural Resources and Related Sciences, 4-6 April, Portland, OR.

Moreira, A. J. A., Guan, J., and Nutter, F. W., Jr. 2002. Estimating green leaf area index (GLAI) of soybean canopies using a radiometer. *Phytopathology* 92:S58.

Moreira, A. J. A., Nutter, F. W., Jr., Tylka, G. L., Guan, J., and Marett, C. C. 2002. Quantifying soybean cyst nematode injury and its qualitative and quantitative impact on soybean yield using remote sensing. *Phytopathology* 92:S140.

Nutter, F. W., Jr., Coelho Netto, R. A. 2002. Mapping the prevalence of Moko disease of banana using GPS and GIS. *Phytopathology* 92: S60.

Rosburg, R. R., Waddell, C. S., Percifield, R. J., and Nutter, F. W., Jr. 2002. The use of radiometry for the assessment of quality and productivity in Iowa Prairie. Eighteenth North American Prairie Conference, 23-27 July, Truman State University, Kirksville, MO.

Steinlage, T. A., Hill, J. H., and Nutter, F. W., Jr. 2002. Quantifying the spatial and temporal dynamics of soybean mosaic virus (SMV) in transgenic soybeans. *Phytopathology* 92:S140.

Xu, R., Chong, C. S., Basart, J. P., Nutter, F. W., Jr., Guan, J., Tylka, G. L., and Moreira, A. J. D. 2002. Application of remote sensing to plant health and productivity determination. Proceedings of the 47<sup>th</sup> Annual Meeting of the International Society for Optical Engineering, 7-11 July, Seattle, WA.

Batzer, J. C., Gleason, M. L., and Nutter, F. W., Jr. 2001. Post-harvest removal of sooty blotch and flyspeck on apples using commercial disinfections. *Phytopathology* 91: S7

Chong, C. S., Basart, J. P., Nutter, F. W., Jr., Tylka, G. L., Guan, J., and Marett, C.C. 2001. Use of remote sensing to determine plant health and productivity. Proceedings of the 46<sup>th</sup> Annual Meeting of the International Society for Optical Engineering, 29 July -3 August, San Diego, CA.

Chong, C. S., Basart, J. P., Guan, J., Nutter, F. W., Jr., Marett, C. C., and Tylka, G. L. 2001. Determining the health and productivity of crops using high altitude images. American Society for Photogrammetry and Remote Sensing (ASPRS), 23-27 April, St. Louis, MO.

Esker, P. D., Nutter, F. W., Jr. 2001. Assessing the risk of Stewart's disease of corn through improved knowledge of the role of the corn flea beetle vector. APS 2<sup>nd</sup> I. E. Melhus Graduate Student Symposium. *Phytopathology* 91:S166.

Esker, P. D., and Nutter, F. W., Jr. 2001. Coupling GIS with a disease warning system for Stewart's disease of corn. 3<sup>rd</sup> International Conference Geospatial Information in Agriculture and Forestry, 5-7 November, Denver, CO.

Esker, P. D., and Nutter, F. W., Jr. 2001. Risk factors associated with Stewart's disease of corn. *Phytopathology* 91:S177. **I. E. Melhus Graduate Student Symposium Speaker Award.**

Esker, P. D., Nutter, F. W., Jr. 2001. Using GIS in a disease warning system for Stewart's wilt of corn. The 5<sup>th</sup> Iowa Biennial GIS Meeting, October 3-5, 2001. Iowa City, Iowa.

Esker, P. D., Nutter, F. W., Jr. 2001. Using GIS in a disease warning system for Stewart's wilt of corn. The Iowa State University Plant Science Institute Symposium. October 19, 2001. Ames, Iowa.

Gleason, M. L., Nutter, F. W., Jr., Esker, P. D., Dixon, P. M., and Wegulo, S. N. 2001. Use of GPS and GIS to characterize spatial distribution patterns of green ash infected with ash yellows in Iowa, Wisconsin, and Minnesota cities. 8<sup>th</sup> International Workshop on Plant Disease Epidemiology, 6-11 May, Ouro Preto, Brazil.

Guan, J., Nutter, F. W., Jr., Rosburg, T., Tylka, G. L., and Marett, C. C. 2001. Use of satellite images to detect soybean cyst nematode. ISU GIS Day, 14 November, Ames, IA.

Guan, J., Nutter, F. W., Jr., Rosburg, T., Tylka, G. L., and Marett, C. C. 2001. Use of satellite images to detect soybean cyst nematode. The Iowa State University Plant Sciences Institute Symposium. October 19, 2001. Ames, IA.

Haindfield, S., Esker, P. D., and Nutter, F. W., Jr. 2001. Examination of the role of alternative vectors or hosts in the Stewart's disease of corn pathosystems. Iowa State University Program for Women in Science and Engineering Poster Presentations, 10 August, Memorial Union, Iowa State University, Ames, IA. 11 p.

- Leandro, L. F. S., Gleason, M. L., Wegulo, S. N., and Nutter, F. W., Jr. 2001. Environmental factors affecting germination and sporulation of *Colletotrichum acutatum* on symptomless strawberry. *Phytopathology* 91:S53.
- Leandro, L. F. S., Gleason, M. L., Wegulo, S. N., and Nutter, F. W., Jr. 2001. Epidemiology of *Colletotrichum acutatum* on symptomless strawberry leaves. 8<sup>th</sup> International Workshop on Plant Disease Epidemiology, 6-11 May, Ouro Preto, Brazil.
- Moreira, A. J. A., Nutter, F. W., Jr., Tylka, G. L., Guan, J., and Marett, C. C. 2001. Quantifying soybean cyst nematode injury and its qualitative and quantitative impact on soybean yield using remote sensing. The Iowa State University Plant Sciences Institute Symposium. October 19, 2001. Ames, IA.
- Moreira, A. J. A., Nutter, F. W., Jr., Tylka, G. L., Guan, J., and Marett, C. C. 2001. Quantifying soybean cyst nematode injury and its qualitative and quantitative impact on soybean yield using remote sensing. ISU GIS Day, 14 November, Ames, IA.
- Nutter, F. W., Jr., and Esker, P. D. 2001. A GIS approach to improving the seasonal and site-specific risks for Stewart's disease of corn. 8<sup>th</sup> International Workshop on Plant Disease Epidemiology, 6-11 May, Ouro Preto, Brazil.
- Nutter, F. W., Jr., Guan, J., Rosburg, T., Tylka, G. L., and Marett, C. C. 2001. Use of satellite images to detect soybean stress caused by soybean cyst nematode. 3<sup>rd</sup> International Conference Geospatial Information in Agriculture and Forestry, Denver, CO, 5-7 November.
- Nutter, F. W., Jr., Esker, P. D., Guan, J., and Conover, C. 2001. A computer program to quantify the "just noticeable difference" when assessing disease severity. *Phytopathology* 91:S179.
- Nutter, F. W., Jr., Esker, P. D., Guan, J., and Conover, C. 2001. A computer program to quantify the "just noticeable difference" when assessing disease severity. 8<sup>th</sup> International Workshop on Plant Disease Epidemiology, 6-11 May, Ouro Preto, Brazil.
- Nutter, F. W., Jr., Esker, P. D., and Rubsam, R. 2001. Mapping the temporal and spatial spread of gray leaf spot of corn in Iowa using GIS. *Phytopathology* 91:S179.
- Nutter, F. W., Jr., Tylka, G. L., Guan, J., Moreira, A. J. D., Marett, C. C., Basart, J. P., and Chong, C. S. 2001. Use of GIS and remote sensing to detect the plant stress caused by soybean cyst nematode. *Phytopathology* 91:S167.
- Percifield, R. J., Rosburg, T., and Nutter, F. W., Jr. 2001. Quantifying the effect of prescribed burning on disease dynamics in tallgrass prairies. *Phytopathology* 91:S179.

Chong, C. S., Basart, J. P., Guan, J., Nutter, F. W., Jr., Marett, C. C., and Tylka, G. L. 2000. Determining the health and productivity of crops using high altitude images. 10<sup>th</sup> Annual Iowa Space Grant Conference, 1 December, Iowa Valley Community College, Marshalltown, IA.

Esler, P. D., Nutter, F. W., Jr. 2000. Monitoring the dynamics of corn flea beetles infested with *Pantoea stewartii* by ELISA. *Phytopathology* 90:S22. **APS North Central Division Best Oral Graduate Student Oral Paper Award.**

Esler, P. D., Obrycki, J., and Nutter F. W., Jr. 2000. Quantifying the temporal dynamics of corn flea beetle populations for improved management of Stewart's disease. *Phytopathology* 90: S21-22.

Guan, J., and Nutter, F. W., Jr. 2000. Relationships between defoliation, leaf area index, canopy reflectance and forage yield in the alfalfa leaf spot pathosystem. Second International Conference on Geospatial Information in Agriculture and Forestry, 10-12 January, Lake Buena Vista, FL.

Guan, J., Nutter, F. W., Jr., Gotlieb, A. R., Grau, C. R., and Rhodes, L. H. 2000. Modeling yield losses caused by alfalfa foliar diseases. Pages 334-344 in: Proceedings of the American Forage and Grassland Council and the 37<sup>th</sup> North American Alfalfa Improvement Conference, 16 - 19 July 2000, Madison, WI.

Leandro, L. F. S., Gleason, M. L., and Nutter, F. W., Jr. 2000. Quantitative studies on the germination and sporulation of *Colletotrichum acutatum* on strawberry foliage. International Strawberry Symposium, 9-14 July, Tempere, Finland.

Moreira, A. J. A., Guan, J., Nutter, F. W., Jr., Tylka, G. L., and Marett, C. C. 2000. Quantifying soybean cyst nematode injury and its impact on soybean yield using remote sensing. 10<sup>th</sup> Annual Iowa Space Grant Conference, 1 December, Iowa Valley Community College, Marshalltown, Iowa.

Nutter, F. W., Jr. 2000. Remote sensing in plant disease management: assessing crop health in time and space by measuring spectral reflectance from plant canopies. *Phytopathology* 90:S103.

Nutter, F. W., Jr., Esler, P., Guan, J., and Conover, C. 2000. A computer program to quantify the "Just Noticeable Difference" when assessing disease severity. XXXIII Congresso Brasileiro de Fitopatologia, Volume 25 (Supplement): 350.

Nutter, F. W., Jr., Esler, P., and Rubsam, R. 2000. Use of geographic information systems (GIS) to model the temporal and spatial spread of plant pathogens. XXXIII Congresso Brasileiro de Fitopatologia, Volume 25 (Supplement): 401.

Nutter, F. W., Jr., Esler, P. D., and Rubsam, R.R. 2000. Use of geospatially-referenced disease and weather data to improve site-specific forecasts for Stewart's disease of corn in the U.S. corn belt. Second International Conference on Geospatial Information in Agriculture and Forestry, 10-12 January, Lake Buena Vista, FL.

Nutter, F. W., Jr., Guan, J., and Percifield, R. J. 2000. Assessing crop health in time and space by measuring spectral reflectance of solar radiation from plant canopies. Second International Conference on Geospatial Information in Agriculture and Forestry, 10-12 January, Lake Buena Vista, FL.

Nutter, F. W., Jr., and Hill, J. H. 2000. Durability of transgenic disease resistance. *Phytopathology* 90:S101.

Nutter, F. W., Jr. Tylka, G. L., Basart, J. P., Tim, U. S., and Rosburg, T. 2000. Use of remote sensing and GIS technologies to diagnose and quantify plant stress in soybean. 10<sup>th</sup> Annual Iowa Space Grant Conference, 1 December, Iowa Valley Community College, Marshalltown, Iowa. 12 pp.

Peng, G., Gleason, M. L., Nutter, F. W., Jr. 2000. Comparison of two strategies for delaying fungicide resistance in populations of *Pythium aphanidermatum*. *Phytopathology* 90:S59-60.

Percifield, R. J. and Nutter, F. W., Jr. 2000. Effect of healthy green leaf biomass and leaf litter on the percentage of sunlight reflected from tallgrass prairies. *Phytopathology* 90:S60.

Percifield, R. J., Rosburg, T., and Nutter, F. W., Jr. 2000. Quantifying the benefits of prescribed burning on the health and productivity of tallgrass prairies. 7<sup>th</sup> Ecology and Evolutionary Biology Spring Symposium 18 April 2000, Iowa State University, Ames, IA.

Percifield, R. J., Rosburg, T., and Nutter, F. W., Jr. 2000. Remote sensing as a nondestructive tool to quantify the effects of prescribed burning on Iowa's tallgrass prairies. *Phytopathology* 90:S60.

Percifield, R. J., Rosburg, T., and Nutter, F. W., Jr. 2000. The effect of prescribed burning on the onset and development of plant disease epidemics on Iowa's tallgrass prairies. 17<sup>th</sup> North American Prairie Conference, 16-20 July, Mason city, IA.

Binder, J., Esker, P., Nutter, F. W., Jr. 1999. Detection of *Pantoea stewartii* in corn flea beetles using ELISA and an immunomagnetic bead assay. Iowa State University College of Liberal Arts and Sciences Undergraduate Research Competition, 7 April 2000, Ames, IA. (Award and a Second Place \$500 Scholarship).

Binder, J., Esker, P., Nutter, F. W., Jr. 1999. Detection of *Pantoea stewartii* in corn flea beetles using ELISA and an immunomagnetic bead assay. Iowa State University Program for Woman in Science and Engineering Poster Presentations, 6 August, Memorial Union, Iowa State University, Ames, IA.

Esker, P. D., and Nutter, F. W., Jr. 1999. Improving the accuracy of predicting Stewart's disease of corn through the use of new technologies. *Phytopathology*

**89:S105. APS North Central Division Best Oral Graduate Student Oral Paper Award.**

Esker, P. D., Nutter, F. W., Jr., Munkvold, G., Taylor, S. E., and Obrycki, J. 1999. Geographic information systems (GIS) and their practical application to disease warning systems: The Stewart's disease of corn pathosystem. Presented at the 4<sup>th</sup> Iowa GIS Conference, 28-30 July 1999, Buena Vista University, Storm Lake, IA.

Guan, J., and Nutter, F. W., Jr. 1999. Quantifying the relationship between visual and remote sensing assessments in alfalfa. *Phytopathology* 89:S105.

Guan, J., and Nutter, F. W., Jr. 1999. Quantifying the impact of alfalfa foliar pathogens on forage yield using remote sensing data. *Phytopathology* 89:S30.

Guan, J., and Nutter, F. W., Jr. 1999. Comparison of visual disease assessment methods to quantify the impact of alfalfa foliar pathogens on forage yields. *Phytopathology* 89:S30.

Langreck, L., Steinlage, T., Nutter, F. W., Jr. 1999. Determination of methods for the quantification of infection efficiency in SMV Strain AL5. Iowa State University Program for Women in Science and Engineering Poster Presentations, 6 August, Memorial Union, Iowa State University, Ames, IA.

Leandro, L. F. S., Gleason, M. L., and Nutter, F. W., Jr. 1999. Production of secondary spores by *Colletotrichum acutatum* on strawberry leaves in the absence of infection. *Phytopathology* 89:S44.

McKirdy, S. J., Jones, R. A. C., and Nutter, F. W., Jr. 1999. Effect of barley yellow dwarf virus on yield and yield components of wheat and oats. 12<sup>th</sup> Biennial Conference of the Australian Plant Pathology Society, 27-30 September, Canberra, Australia. p 310.

Menelas, B., Percifield, R., Rosburg, T., and Nutter, F. W., Jr. 1999. Utilizing remote sensing to determine the health and productivity of Iowa's tallgrass prairies. Presented at the 1999 Summer Internship Program for Minority Undergraduates and High School Students, Iowa State University, College of Agriculture, 30 July. Reiman Gardens, Ames, IA.

Nutter, F. W., Jr. 1999. Uncertainty in regional and site-specific assessments for Stewart's disease of corn: a GIS approach. Page 81 in: 1999 Program Book, Joint Meeting of the Canadian Phytopathological Society and the American Phytopathological Society, 12-16 August, Montreal, Canada.

Nutter, F. W., Jr. 1999. Up and coming new technologies as tools for implementation. Pages 81 in: 1999 Program Book, Joint Meeting of the Canadian Phytopathological Society and the American Phytopathological Society. 12-16 August, Montreal, Canada.

Nutter, F. W., Jr. 1999. Use of remote sensing to quantify the impact of plant disease epidemics on plant biomass and productivity. Ninth Annual Iowa Space Grant Conference, 5 November, University of Northern Iowa, Cedar Fall, IA.

Nutter, F. W., Jr., Alberts, E., and Graetz, D. 1999. Quantifying the relationship between seed size in narrow-leafed lupin and incidence of cucumber mosaic virus. Pages 97-98 in: Plant Virus Epidemiology: Current Status and Future Prospects. VII the International Plant Virus Epidemiology Symposium, 11-16 April, Almeria, Spain.

Nutter, F. W., Jr., and Esker, P. D. 1999. Use of geographic information systems to improve the accuracy of disease warning systems. 12<sup>th</sup> Biennial Conference of the Australian Plant Pathology Society, 27-30 September, Canberra, Australia. p 309.

Nutter, F. W., Jr., Hill, J. H., Wang, X., and Eggenberger, A.L. 1999. Characterization of soybean mosaic virus coat protein-mediated resistance in transgenic soybeans. Pages 156-157 in: Plant Virus Epidemiology: Current Status and Future Prospects. VII the International Plant Virus Epidemiology Symposium, 11-16 April, Almeria, Spain.

Nutter, F. W., Jr., Padovan, A. C., and Gibb, K. S. 1999. Epidemiology of two phytoplasma strains associated with yellow crinkle in papaya. Pages 142-143 in: Plant Virus Epidemiology: Current Status and Future Prospects, 7th International Plant Virus Epidemiology Symposium, 11-16 April, Almeria, Spain.

Nutter, F. W., Jr., Padovan, A. C., and Gibb, K. S. 1999. Epidemiology of two phytoplasma strains associated with yellow crinkle in papaya. 12<sup>th</sup> Biennial Conference of the Australasian Plant Pathology Society, 27-30 September, Canberra, Australia. p 57.

Nutter, F. W., Jr., and Stromberg, E. L. 1999. Epidemiology and management of gray leaf spot of corn in the U.S. *Phytopathology* 89:S101.

Nutter, F. W., and Tylka, G. L., Batchelor, W. D., Elbasher, K. A., and Wegulo, S. N. 1999. Effect of corn, fallow, and soybean cropping sequences on the population dynamics of soybean cyst nematode. *Phytopathology* 89:S56.

Peng, G., Gleason, M. L., and Nutter, F. W., Jr. 1999. Effect of mefenoxam fungicide on aggressiveness of isolates of *Pythium Aphanidermatum*. *Phytopathology* 89:S59.

Percifield, R. J., and Nutter, F. W., Jr. 1999. Effects of prescribed burning on the health and productivity of tallgrass prairies in Iowa. *Phytopathology* 89:S106.

Rosburg, T. R., Waddell, C. S., Percifield, R. J., and Nutter, F. W., Jr. 1999. The use of radiometry for the assessment of quality and productivity in Iowa prairies. Program Abstracts, The 111<sup>th</sup> Session of the Iowa Academy of Science, April 23-24, Iowa State University, Ames, IA. p 28.

Rubsam, R. R., Esker, P. D., and Nutter, F. W., Jr. 1999. Geospatial and temporal spread of gray leaf spot in Iowa. University Honors Project Poster Presentations, Dec. 1, 1999, Memorial Union, Iowa State University, Ames, IA.

Wegulo, S. N., Marinson, C. A., Rivera-C, J. M., and Nutter, F. W., Jr. 1999. Economic damage thresholds for common rust on corn inbreds. *Phytopathology* 89:S83.

Guan, J., and Nutter, F. W., Jr. 1998. Comparison of alfalfa yield response models using visual virus remotely-sensed disease assessments. *Phytopathology* 88:S111. **APS North Central Division Best Oral Graduate Student Paper Award.**

Guan, J., and Nutter, F. W., Jr. 1998. Effect of incident radiation, sun angle, and sensor height on the percentage of sunlight reflected from alfalfa canopies affected by foliar diseases. *Phytopathology* 88:S115.

Nutter, F. W., Jr., and Litwiller, D. 1998. A computer program to generate standard area diagrams to aid raters in assessing disease severity. *Phytopathology* 88:S117.

Nutter, F. W., Jr., Litwiller, D., Emmitt, B., and Magarey, P. 1998. A computer training program to improve disease severity assessments in grapevines. Third International Workshop on Grapevine Downy and Powdery Mildew, March 1998, South Australian Research and Development Institute, Loxton, South Australia. SARDI Research Report Series 22:21.

Nutter, F. W., Jr., Litwiller, D., and Wegulo, S. N. 1998. Do standard area diagrams improve the accuracy and precision of disease assessments? *Proc. of the 7<sup>th</sup> International Congress of Plant Pathology*, 9-16 August, Edinburgh, Scotland. p. 2.1.16.

Nutter, F. W., Jr., Padovan, A. C., and Gibb, K. S. 1998. Epidemiology of two phytoplasma strains associated with yellow crinkle in papaya. *Phytopathology* 88:S68.

Nutter, F. W., Jr., and Rubsam, R. R. 1998. Relationship between mean monthly temperatures and the risk of the Stewart's disease of corn in Iowa. *Phytopathology* 88:S113.

Nutter, F. W., Jr., Wegulo, S. N., Rubsam, R. R., Taylor, S. E., and Harri, J. A. 1998. Use of geospatially referenced disease and weather data to improve site-specific forecasts for Stewart's disease of corn. *Phytopathology* 88:S68.

Percifield, R., Rosburg, T., and Nutter, F. W., Jr. 1998. Determining the health and productivity of tallgrass prairies using remote sensing. *Proceedings of the Seventh Annual Iowa Space Grant Conference*, 31 October, Drake University, Des Moines, Iowa.



- Wang, X., Eggenberger, A. L., Hill, J. H. and Nutter, F. W., Jr. 1998. Characterization of soybean mosaic virus coat protein-mediated resistance in transgenic soybeans. *Phytopathology* 88:S118.
- Wegulo, S. N., Rivera-C., J. M., Martinson, C. A., and Nutter, F. W., Jr. 1998. Comparison of critical point yield loss models based on disease severity assessments on specific leaf positions in hybrid corn seed fields. *Phytopathology* 88:S118.
- Bierman, K. and Nutter, F. W., Jr. 1997. Effect of lignin concentration on pea aphid reproductive rates. Spring 1997 Honors Projects Poster Presentations, April 30, 1997, Memorial Union, ISU, Ames, IA.
- Nutter, F. W., Jr., and Guan, J., and Duellman, K. M., and Munkvold, G. P. 1997. Impact of foliar pathogens on alfalfa yield in Iowa. *Phytopathology* 87:571.
- Nutter, F. W., Jr. 1997. Introduction: The y's and r's of it all. Annual Meeting of the American Phytopathological Society, August 9-13, 1997, Rochester, New York. p.78
- Wegulo, S. N., Martinson, J. M., Rivera-C, J. M., and Nutter, F. W., Jr. 1997. 109th Session of Iowa Academy of Science April 25-26, 1997, Clarke College, Dubuque, IA. p. 2.
- Geering, A. W. D., Randles, J. W., Nutter, F. W., Jr., and Alberts, E. V. 1996. Use of the Gompertz transformation to quantify the relationship between time of inoculation by cucumber mosaic virus and yield loss in narrow leaf lupin. *Phytopathology* 86:S14.
- Nutter, F. W. Jr. 1996. Assessing crop health in time and space by measuring spectral reflectance of solar radiation from plant canopies. Annual meeting of the American Phytopathological Society, Indianapolis, Indiana. Page 141.
- Nutter, F. W., Jr., Munkvold, G. P., and Wegulo, S. N. 1996. Benefits assessment of fungicide usage in alfalfa in Iowa. Page 16 in: Report of the Thirty-Fifth North American Alfalfa Improvement Conference, June 16-20, 1996, Oklahoma City, Oklahoma, eds. W. T. W. Woodward and J. H. Elgrin, Jr.
- Nutter, F. W., Jr., Jones, R. A. C., Geering, A. W. D., Randles, J. W., Graetz, D., and Alberts, E. V. 1996. Quantification of alfalfa mosaic virus and cucumber mosaic virus epidemics in the lupin-medic pathosystem. *Phytopathology* 86: S14.
- Nutter, F. W., Jr., Schultz, P. M., and Hill, J. H. 1996. Use of Strain specific monoclonal antibodies to quantify within field temporal and spatial spread of soybean mosaic virus in soybean. 8'th symposium on Environmental Releases of Biotechnological Products: Risk Assessment Methods and Research Progress. June 23-26, 1996, Ottawa, Ontario, Canada.

- Engle, T. E., Parker, S. K., Gleason, M. L., Braun, E. J., and Nutter, F. W. Jr. 1995. Germination of *Septoria lycopersici* spores during interrupted wet periods. *Phytopathology* 85:1173.
- Nutter, F. W., Jr. 1995. An analysis of the epidemiological effects of different colors of plastic mulch on the temporal and spatial spread of a plant virus. 6th International Plant Virus Epidemiology Symposium, 23-28 April, 1995, Jerusalem, Israel. p. 13.
- Nutter, F. W., Jr. 1995. Use of multi-spectral data to detect and quantify biological stress in plant populations. Fluorosensing Information Exchange Workshop, 22-24 February, Department of Energy and EPCOT, EPCOT's Living Seas, FL.
- Nutter, F. W., Jr. 1995. Who says what regarding the need for crop loss databases. Annual Meeting of the American Phytopathological Society, 12-16 August, Pittsburgh, PA. Special Session V Abstracts.
- Nutter, F. W., Jr., Gleason, M. L., and Newton, J. 1995. Forecasting pythium blight on turfgrass in Iowa, 1991-1994. *Phytopathology* 85:1045.
- Nutter, F. W., Jr., Hill, J. H., Obrycki, J. J., and Schultz, P. M. 1995. Modeling within field spread of soybean mosaic virus in time and space using strain-specific monoclonal antibodies. 6th International Plant Virus Epidemiology Symposium, 23-28 April, 1995, Jerusalem, Israel. p. 72.
- Nutter, F. W., Jr., Wegulo, S. N., and Martinson, C. A. 1995. Use of geographic information systems to generate disease prevalence, incidence, and severity maps for seed corn production in 1992. *Phytopathology* 85:1173.
- Terry, M. R., and Nutter, F. W., Jr. 1995. Effect of growth medium, spore concentration, and leaf wetness duration on infection efficiency of *Cochliobolus heterostrophus* on corn. *Phytopathology* 85:1046.
- Terry, M. and Nutter, F. W., Jr. 1995. Environmental factors affecting southern corn leaf blight. Spring 1995 Honors Projects Poster Presentations, May 2, 1995, Memorial Union, ISU, Ames, IA.
- Webb, D. H., Nutter, F. W., Jr., and Buxton, D. R. 1995. Effect of temperature and duration of leaf wetness on two disease components of alfalfa rust. Page 6 in: 24th Alfalfa Improvement Conference, 18-20 June, Spearfish, SD, Agricultural Experiment Station, South Dakota State University, Brookings, SD.
- Webb, D. H., Nutter, F. W., Jr., and Buxton, D. R. 1995. Effect of two environmental factors on infection efficiency and latent period of *Uromyces striatus* on Alfalfa (*Medicago sativa* L.). Leopold Center for Sustainable Agriculture Fifth Annual Conference, March 3, 1995, Ames, IA (Poster).
- Daniel, J., Schultz, P. M., and Nutter, F. W., Jr. 1994. Epidemiology of soybean mosaic virus: effect on growth and development of soybean. Research Assistantships

in Biological Sciences Program, Howard Hughes Medical Institute Initiative, Iowa State University, Ames, IA. Summer 1994.

Engle, T. T., Gleason, M. L., Parker, S. K., Braun, E. J., and Nutter, F. W., Jr. 1994. Fluctuations in relative humidity affect germination of *Septoria lycopersici* spores. ISU Women in Science Program Poster, Summer 1994.

Martinson, C. A., Wegulo, S. N., Rivera, J. M., and Nutter, F. W., Jr. 1994. Developing criteria for the use of fungicides for control of leaf diseases of corn for seed corn production in Iowa. Page 128 in: Proc. Second National Integrated Pest Management Symposium Workshop. ESCOP, USDA-CSRS, Las Vegas, NV.

Nutter, F. W., Jr., Hill, J. H., and Schultz, P. M. 1994. A biological assessment of risks and benefits associated with the deployment of transgenic resistance to plant viruses. The Consortium for Plant Biotechnology Research 1994 Symposium, November 1-3, Chicago, IL (Poster).

Nutter, F. W., Jr., Martinson, C. A., Jenco, J. H., and Wegulo, S. N. 1994. Epidemiological studies concerning *Cercospora zae-maydis* on maize. 32<sup>nd</sup> Congress of the South African Society for Plant Pathology, January 23-26, 1994, Chrestiana, South Africa.

Nutter, F. W., Jr., Hill, J. H., and Schultz, P. M. 1994. Modeling within-field spread of soybean mosaic virus with strain-specific monoclonal antibodies. *Phytopathology* 84:1159.

Nutter, F. W., Jr. and Rizvi, S. S. A. 1994. Modeling yield losses caused by foliar diseases. Page 38 in: Report of the 34<sup>th</sup> North American Alfalfa Improvement Conference, July 10-14, University of Guelph, Guelph, Ontario, Canada.

Parker, S. K., Nutter, F. W., Jr., and Gleason, M. L. 1994. Increase of septoria leaf spot in linear tomato plantings. *Phytopathology* 84:1141.

Parker, S. K., Gleason, M. L., and Nutter, F. W., Jr. 1994. Influence of temperature and leaf wetness period on development of septoria leaf spot of tomato. *Phytopathology* 84:1141.

Teng, P. S., Heong, K. L., Kropff, M. J., Nutter, F. W., Jr., and Sutherst, R. W. 1994. Linked pest-crop models under global change. First GCTE Conference, 23-27 May, Woods Hole, MA. pp. 12-13.

Webb, D. H. and Nutter, F. W., Jr. 1994. Effect of temperature and dew period on infection efficiency of *Uromyces striatus* on alfalfa. *Phytopathology* 84:1160.

Webb, D. H., Nutter, F. W., Jr., and Buxton, D. R. 1994. Relationship between lignin content and disease resistance in two alfalfa pathosystems. Page 36 in: Report of the 34<sup>th</sup> North American Alfalfa Improvement Conference, July 10-14, University of Guelph, Guelph, Ontario.

- Wegulo, S. N., Martinson, C. A., and Nutter, F. W., Jr. 1994. Assessing the benefits of using fungicides to control foliar diseases of seed corn in Iowa. *Phytopathology* 84:1160.
- Wegulo, S. N., Martinson, C. A., and Nutter, F. W., Jr. 1994. Benefits assessment of chlorothalonil, mancozeb, and propiconazole in seed corn production in Iowa. 106'th Annual Meeting of the Iowa Academy of Sciences, April 22-23, St. Ambrose University, Davenport, IA.
- Wegulo, S. N., Martinson, C. A., and Nutter, F. W., Jr. 1994. Benefits assessment of fungicide use in the control of foliar diseases of seed corn in Iowa. *Phytopathology* 84:1065.
- Nutter, F. W., Jr., and Litwiller, D. 1993. Alfalfa.Pro - a computerized disease assessment training program for foliar diseases of alfalfa. Proc. 23rd Central Alfalfa Improvement Conference, June 20-22, 1993, Univ. of Nebraska, Lincoln, NE. p. 15.
- Nutter, F. W., Jr., and Hill, J. H. 1993. A biological assessment of risks and benefits associated with the deployment of transgenic resistance. Consortium for Plant Biotechnology Research, November 1-3, 1993, Chicago, IL.
- Nutter, F. W., Jr. 1993. Computerized disease assessment training programs: Do they work? *Phytopathology* 83:886.
- Nutter, F. W., Jr. 1993. Improving the accuracy and precision of disease assessments: selection of methods and use of computerized - aided training programs. Abstracts of the 6th International Congress of Plant Pathology, Symposium paper S9.1, July 28 - Aug. 6, 1993, Montreal, Canada. p.11.
- Nutter, F. W. Jr., Hill, J. H., and Schultz, P. M. 1993. Modeling the spatial and temporal spread of soybean mosaic virus using strain-specific monoclonal antibodies. Abstracts of the 6th International Congress of Plant Pathology, July 28 - August 6, 1993, Montreal, Canada. P.322.
- Nutter, F. W. Jr., Hill, J. H., and Schultz, P. M. 1993. The use of strain - specific monoclonal antibodies to model the spread of soybean mosaic virus. *Phytopathology* 83:1363.
- Parker, S. P., Gleason, M. L., and Nutter, F. W., Jr. 1993. Dissemination of *Septoria lycopersici* spores during rain events. *Phytopathology* 83:1391.
- Parker, S. P., Gleason, M. L., and Nutter, F. W., Jr. 1993. Wetness/temperature influences on septoria leaf spot infection. Pages 71-75 in: Ninth Annual Tomato Disease Workshop, December 2-3, 1993, Indianapolis, IN.
- Rivera-C., J. M., Martinson, C. A., and Nutter, F. W., Jr. 1993. Increase in seed corn yield with foliar fungicide treatments. *Phytopathology* 83:1370.

Tubajika, K. M., Martinson, C. A., and Nutter, F. W., Jr. 1993. Temporal and spatial development of soybean foliar diseases with strip intercropping. *Phytopathology* 83:1358.

Jenco, J. H., and Nutter, F. W., Jr. 1992. Determination of diurnal and seasonal periodicity of *Cercospora zae-maydis* in Iowa. Sixth Annual Life Sciences Symposium, March 6-7, 1992, Ames, IA. p. 61. (Poster).

Jenco, J. H., and Nutter, F. W., Jr. 1992. Diurnal and seasonal periodicity of *Cercospora zae-maydis* in Iowa. *Phytopathology* 82:992.

Nutter, F. W., Jr., and Jenco, J. H. 1992. Development of critical-point yield loss models to estimate yield losses in corn caused by *Cercospora zae-maydis*. *Phytopathology* 82:994.

Nutter, F. W., Jr. 1992. Development of modeling techniques to estimate losses caused by tobacco etch virus in bell pepper. 5th International Plant Virus Epidemiology Symposium on Viruses, Vectors, and the Environment, 27-31 July, 1992, Valenzano, Italy. p. 97.

Nutter, F. W., Jr. 1992. Disease.Pro - A computerize disease assessment training program. Page 39 in: Proceedings of the 1992 Crop Production and Protection Conference: Changes in Soybean Production Practices, December 1992, Iowa State University, Ames, IA.

Nutter, F. W., Jr., and Rizvi, S. S. A. 1992. Population dynamics of alfalfa foliar pathogens in Iowa. *Phytopathology* 82: 1107.

Nutter, F. W., Jr., Kuhn, C. W., and All, J. N. 1992. Quantification of components contributing to rate-reducing resistance in plant virus pathosystems. 5th International Plant Virus Epidemiology Symposium on Viruses, Vectors, and the Environment, 27-31 July, 1992, Valenzano, Italy. p.139. (Poster).

Nutter, F. W., Jr., Bronson, C. R., Rizvi, S. S. A., and Shultz, P. M. 1992. Quantification of differences in infection efficiency among *Cochliobolus heterostrophus* genotypes as a means to map quantitative trait loci. *Phytopathology* 82:1104.

Nutter, F. W., Jr., Iida, H., All, J. N., and Kuhn, C. W. 1992. Relative epidemiological importance of six solanaecious weed hosts in the bell pepper/tobacco etch virus pathosystem. 5th International Plant Virus Epidemiology Symposium on Viruses, Vectors, and the Environment, 27-31 July, 1992, Valenzano, Italy. p. 141. (Poster).

Nutter, F. W., Jr. 1992. Risk assessment and management for the use of bioengineered products in plant protection. Conference on Biotechnologies for Tropical Plant Protection, August 12-13, Malaysian Plant Protection Society, Kuala Lumpur, Malaysia.

Nutter, F. W., Jr. and Rizvi, S. S. A. 1992. Seasonal occurrence of alfalfa foliar diseases in Iowa. The 33rd North American Alfalfa Improvement Conference, June 14-18, 1992, Atlanta, GA. p. 29

Nutter, F. W., Jr. and Rizvi, S. S. A. 1992. Seasonal occurrence of alfalfa foliar pathogens in Iowa. Third Annual Conf. of the Leopold Center for Sustainable Agriculture, Feb. 18-19, 1992, Ames, IA. p. 55. (Poster).

Nutter, F. W., Jr., and Rizvi, S. S. A. 1992. Seasonal periodicity of alfalfa foliar pathogens in Iowa. Sixth Annual Life Sciences Symposium, March 6-7, 1992, Iowa State University, Ames, IA. p. 61. (Poster).

Parker, S. K., Gleason, M. L., and Nutter, F. W., Jr. 1992. Dissemination of *Septoria lycopersici* during rain events. 8th Annual Tomato Disease Workshop Dec. 3-4, 1992, Columbus, OH. pp.86-93.

Rizvi, S. S. A., and Nutter, F. W., Jr. 1992. Seasonal occurrence of alfalfa foliar pathogens in Iowa. 104th Session, Iowa Academy of Science, April 24-29, 1992, The University of Northern Iowa, Cedar Falls, IA. p. 2

Mills, F. D., and Nutter, F. W., Jr. 1991. Sustainability and cost-reduction: The case of a late leaf spot weather-based advisory system in Georgia. Proc. Am. Peanut Res. and Ed. Soc. 23:44.

Nutter, F. W., Jr. 1991. Agricultural biotechnology transfer: bridging molecular and population diseased control strategies. Gordon Research Conference in Agricultural Sciences, Jan. 27 - Feb. 1, 1991, Oxnard, CA.

Nutter, F. W., Jr., Gleason, M. L., Jenco, J. H., and Christians, N. C. 1991. Effect of visual, remote sensing, and image analysis assessment methods on intra-rater and inter-rater reliability estimates in the dollars spot-bentgrass pathosystem. Phytopathology 91:1182.

Nutter, F. W., Jr., and Culbreath, A. K. 1991. Evaluation and validation of the Georgia late leaf spot advisory model. Phytopathology 81:1144.

Nutter, F. W., Jr., and Culbreath, A. K. 1991. The Georgia late leafspot spray advisory system: evaluation and validation experiments conducted in 1990. Proc. Am. Peanut Res. and Ed. Soc. 23:62.

Nutter, F. W., Jr., and Shokes, F. M. 1991. Management of foliar fungal pathogens. Proc. Am. Peanut Res. and Ed. Soc. 23:64.

Nutter, F. W., Jr. 1991. Quantification of agroecosystem components in complex pathosystems. International Symposium on "Systems Approaches for Agricultural Development", 2-6 December 1991, The Asian Institute of Technology, Bangkok, Thailand. p. 31.

Nutter, F. W., Jr. 1991. Quantification of epidemiological components contributing to transgenic resistance in the soybean-soybean mosaic virus pathosystem. Midwest Plant Biotechnology Consortium, Nov. 12-14, 1991, Indianapolis, Indiana (Poster).

Nutter, F. W., Jr. 1990. Quantification of epidemiological components in the bell pepper/tobacco etch virus/aphid pathosystem that contribute to rate-reducing resistance. Proc. 3rd International Conference on Plant Protection in the Tropics. Malaysian Plant Protection Society. March 20-23, 1990. p. 129.

All, J., Nutter, F. W., Jr., and Kuhn, C. W. 1990. Aphid behavior related to transmission of tobacco etch virus in resistant and susceptible cultivars of bell pepper. International Symposium on Aphid-Plant Interactions: Populations to Molecules, Oklahoma State University, Aug.12-17, 1990.

Almihanna, A. A., and Nutter, F. W., Jr. 1990. Comparison of green leaf area, dry weight, disease intensity, and percent reflectance measurements as inputs for model in yield losses in peanuts. Proc. Am. Peanut Res. and Ed. Society 22:20.

Nutter, F. W., Jr., and Worawitlikit, O. 1990. Disease.Pro: A computerized disease assessment training program. Proc. Am. Peanut Res. and Ed. Society 22:38.

Nutter, F. W., Jr. 1990. Disease.Pro: A computerized disease assessment training program. Proc. of a Workshop on Modeling Crop-Pest Interactions, January 7-10, 1990 University of Hawaii-Manoa.

Nutter, F. W., Jr. 1990. Barley.Pro: A computerized disease assessment program for foliar diseases of barley. Proc. of the 14th American Barley Research Workshop, May 13-17, 1990, University of California-Davis, CA.

Nutter, F. W., Jr., and Worawitlikit, O. 1990. EPIMODEL: A computer program to teach principles of modeling pathogen population, growth, and analysis. Phytopathology 80:1031.

Nutter, F. W., Jr., and Mills, F. D. 1990. Cost/benefit comparison of a weather-based fungicide scheduling program versus a calendar spray program to control late leaf spot of peanut. Phytopathology 80:989.

Shokes, F. M., Gorbet, D. W., and Nutter, F. W., Jr. 1990. Quantifying late leaf spot in resistant peanut genotypes with visual and reflectance-based assessments. Proc. Am. Peanut. Res. and Ed. Soc. 22:42.

Adcock, T. E., Nutter, F. W., Jr., and Banks, P. A. 1989. Measuring herbicide injury to soybeans using a radiometer. Southern Weed Sci. Soc. Jan. 1989, Nashville, TN.

Nutter, F. W., Jr., and Worawitlikit, O. 1989. Disease.Pro: A computerized program for evaluating and improving a person's ability to assess disease proportion. Phytopathology 79:1135.

- Nutter, F. W., Jr., and Brenneman, T. B. 1989. Development and validation of a weather-based, late leaf spot spray advisory. *Proc. Am. Res. and Ed. Soc.* 21:24.
- Nutter, F. W., Jr., and Kuhn, C. W. 1989. Epidemiological importance of six solanaceous weed hosts in the tobacco etch virus/bell pepper pathosystem. *Phytopathology* 79:375.
- Nutter, F. W., Jr., Kuhn, C. W., and All, J. N. 1989. Models to estimate yield losses in bell pepper caused by tobacco etch virus epidemics. *Phytopathology* 79:1213.
- Shokes, F. M., Gorbett, D. W., and Nutter, F. W., Jr. 1989. Assessing late leaf spot disease of peanut with a multispectral radiometer. *Phytopathology* 79:1179.
- Nutter, F. W., Jr., and Labrinos, J. T. 1988. Comparative effects of a protectant vs a sterol inhibiting fungicide on disease components of late leaf spot of peanut. *Proc. Am. Peanut Res. and Ed Soc.* 20:33.
- Nutter, F. W., Jr., and Cunfer, B. M. 1988. Quantification of barley yield losses caused by *Rhynchosporium secalis* using visual versus remote sensing assessment methods. *Phytopathology* 78:1530.
- Nutter, F. W., Jr. 1988. Tobacco etch virus epidemics in natural vegetation. *Abstr. of Papers, 5th International Congress of Plant Pathology, Kyoto, Japan.* p 286.
- Nutter, F. W., Jr. 1988. Use of a weather-based model for late leaf spot: integration with fungicides and resistant varieties. *Proc. Am. Peanut Res. and Ed. Soc.* 20:58.
- Alderman, S. C., Nutter, F. W., Jr., and Labrinos, J. L. 1987. Gradients of disease incidence, severity, and defoliation in peanut caused by *Cercosporidium personatum*. *Phytopathology* 77:1699.
- Alderman, S. C., and Nutter, F. W., Jr. 1987. Sporulation of *Cercospora arachidicola* - a major component of early leaf spot forecasting. *Proc. Am. Peanut Res. and Ed. Soc.* 19:25.
- Kuhn, C. W., Padgett, G. B., and Nutter, F. W., Jr. 1987. Resistance in pepper to tobacco etch virus. *Phytopathology* 77:1722.
- Labrinos, J., Nutter, F. W., Jr., and Alderman, S. C. 1987. Analysis of late leaf spot (*Cercosporidium personatum*) disease components to explain the rate reducing effects of a protectant and a sterol inhibiting fungicide. *Phytopathology* 77:642.
- Nutter, F. W., Jr. 1987. Detection of plant disease gradients using a hand-held, multispectral radiometer. *Phytopathology* 77:643.
- Nutter, F. W., Jr. 1987. Generating Different Disease Epidemics. *Proceedings of a Workshop on Crop Loss Assessment to Improve Pest Management in Rice and Rice-*



based Farming Systems in South and Southeast Asia. October 11-17, 1987, Los Banos, Philippines.

Nutter, F. W., Jr. and Alderman, S. C. 1987. Incidence, severity, and defoliation relationships between central and branch stems of Florunner peanut infected with late leaf spot. Proc. Am. Peanut Res. and Ed. Soc. 19:24.

Nutter, F. W., Jr., and Cunfer, B. M. 1987. Modeling barley yield loss from scald and *Septoria nodorum* blotch using visual versus remote sensing assessment method Barley Newsletter 31:125.

Nutter, F. W., Jr., and Cunfer, B. M. 1987. Relationship between visual disease severity, percent reflectance and yield in the barley-*Rhynchosporium secalis* pathosystem. Proc. of the Eastern Wheat Workers and Southern Small Grains Workers Conference, April 21-24, 1987. Griffin, GA.

Nutter, F. W., Jr. 1987. Remote Sensing and Image Analysis. Proceedings of a Workshop on Crop Loss Assessment to Improve Pest Management in Rice and Rice-based Farming Systems in South and Southeast Asia. October 11-17, 1987, Los Banos, Philippines.

Nutter, F. W., Jr. 1987. Use of late leaf spot disease gradients to evaluate disease assessment schemes for accuracy, precision, resolution and speed. Phytopathology 77:1700.

Padgett, B. G., Nutter, F. W., Jr., and Kuhn, C. W. 1987. Effect of disease resistance on tobacco etch virus epidemics in bell pepper. Phytopathology 77:643. **APS Southern Division Best Oral Graduate Student Paper Award.**

Nutter, F. W. 1986. Inducing epidemics: theory and practice. Phytopathology 76:1088.

Nutter, F. W., Jr. 1986. Monitoring pathogen stress with a hand-held, multispectral radiometer. Proc. of the Am. Peanut Res. and Ed. Soc. 18:66.

Nutter, F. W., Jr. 1986. Use of sublethal doses of fungicide to obtain a range of late leaf spot epidemics for pod loss studies. Proc. of the Am. Peanut Res. and Ed. Soc. 18:52.

Littrell, R. H., Nutter, F. W., Jr. and Shokes, F. M. 1985. A model for treating peanut with fungicide sprays for maximizing pod yields. Phytopathology 75:1370.

Nutter, F. W., Jr., and Littrell, R. H. 1985. Predicting yield responses of peanuts to various disease severity levels of late leaf spot (*Cercosporidium personatum*) by measuring reflectance of sunlight from peanut canopies. Proc. of the Am. Peanut Res. and Ed. Soc. 17:47.

- Nutter, F. W., Jr., Gottwald, T. R. and Bertrand, P. F. 1985. Relationship between pecan scab disease progression on leaves versus nuts in three pecan cultivars. *Phytopathology* 75:1369.
- Nutter, F. W., Jr., Littrell, R. H. and Pederson, V. D. 1985. Use of a low-cost, multispectral radiometer to estimate yield loss in peanuts caused by late leaf spot (*Cercosporidium personatum*). *Phytopathology* 75:502.
- Nutter, F. W., Jr. and Pederson, V. D. 1984. Barley seedling disease reaction not a good predictor of adult plant reaction to spot blotch (*Helminthosporium sativum*). *Phytopathology* 74:1270-1271.
- Nutter, F. W., Jr. and Pederson, V. D. 1984. Yield loss modeling of malting quality as affected by spot blotch. Twelfth American Barley Researchers Conference. January 22-26, 1984, Williamsburg, VA.
- Nutter, F. W., Jr., and Pederson, V. D. 1984. Yield loss modeling: tolerance to pathogens. *Phytopathology* 74:872-873.
- Pederson, V. D. and Nutter, F. W., Jr. 1984. A simplified method to estimate yield losses from infrared color photographs. *Phytopathology* 74:1271.
- Nutter, F. W., Jr., and Pederson, V. D. 1983. Yield-loss determination in the barley stripe mosaic virus and spot blotch on Dickson barley. *Phytopathology* 72:961.
- Nutter, F. W., Jr. and Pederson, V. D. 1983. Yield loss modeling: tolerance vs resistance in the spot blotch-barley system. International Workshop on The Current Status of Botanical Epidemiology. June 21-24, 1983. North Carolina State University, Raleigh, NC.
- Nutter, F. W., Jr., and Pederson, V. D. 1982. Effect of leaf wetness duration and host nutrition on relative disease efficiency and lesion size of net blotch on barley. *Phytopathology* 72:1138.
- Nutter, F. W., Pederson, V. D., and Timian, R. G. 1982. Interaction of barley stripe mosaic virus and spot blotch on Dickson barley. *Phytopathology* 72:961.
- Nutter, F. W., Jr., and Pederson, V. D. 1981. Components of rate limiting resistance in 6-row spring barley to net blotch (*Pyrenophora teres*) using a seed germination paper technique. *Phytopathology* 71:1117.
- Nutter, F. W. Jr. and Cole, H., Jr. 1981. Conidia periodicity and dispersal of *Drechslera poae*. *Phytopathology* 71:246.
- Nutter, F. W., Jr., Cole, H., Jr. and Schein, R. D. 1981. Methods of disease indexing on a mowed crop to estimate apparent infection rates. *Phytopathology* 71:563.

Nutter, F. W., Jr., Schein, R. D., and Cole, H., Jr. 1981. A relationship between incidence and severity of Helminthosporium leaf spot (*Drechslera poae*) on two Kentucky bluegrass varieties. *Phytopathology* 71:563.

Nutter, F. W., Jr., and Cole, H., Jr. 1980. Preliminary results concerning the feasibility of developing a forecasting program for chemical control of Pythium blight on turf. *Phytopathology* 70:467.

Sanders, P. L., Nutter, F. W., Jr., and Cole, H., Jr. 1980. Control of Pythium blight of turfgrass with SN66752. *Phytopathology* 71:246.

Nutter, F. W., Jr., and MacHardy, W. E. 1979. Control of potato early blight when following a potato late blight forecasting spray schedule. *Phytopathology* 69:1040.

Nutter, F. W., Jr., and MacHardy, W. E. 1978. A procedure for selection and modification of a potato late blight forecasting system. *Phytopathology News* 12:238.

---

#### **INVITED PRESENTATIONS (RESEARCH):**

##### ***International (83 total):***

- \*2012 Invited Speaker, International *Plum Pox Virus* Symposium, 24-27 June, Niagara Falls, Ontario, Canada. Presentation title: ***“An Epidemiological Comparison of the US and Canadian Plum Pox Virus Eradication Programs”***.
- 2012 Presenter, 45<sup>th</sup> Congresso Brasileiro de Fitopatologia, 19-23 August, Manaus AM, Brazil. Presentation title: ***“Moko Disease of Banana: Use of GPS and GIS Tools to Map Disease Risk”***.
- \*2010 Participant, *Plum Pox Virus* Program Update and International Research Symposium, 5 – 6 January, Shepherdstown, West Virginia Presentation title: ***“Update on the Analyses of Plum Pox Virus Survey Data at Different Spatial Scales Using GIS.”***
- 2010 **Visiting Scientist**, Institute for National Research in the Amazon, 14-23 March, Manaus, Brazil. Project: ***Moko Disease of Banana in the Amazonas State and the Iowa Soybean Disease Survey.***
- 2010 Invited Speaker, 3rd Conference on Precision Crop Protection, 19-21 September, Bonn, Germany. Title: ***“Developing Integrated GPS, GIS, and Remote Sensing Technologies to locate the Epicenters of Disease Foci.”***
- \*2009 Invited Symposium Speaker, for a symposium titled: ***“GIS in Agriculture: Invasive Species”*** held during the 6<sup>th</sup> International IPM Symposium, 24-26 March, Portland, Oregon. Symposium presentation title: ***“Integrating GPS, GIS, and Remote Sensing to Manage Plant Diseases and Pests.”***

- 2009 **Invited Speaker**, 10<sup>th</sup> International Plant Disease Epidemiology Workshop, 7-12 June, Cornell University, Geneva, NY. Title: **“Integrating GPS, GIS, and Remote Sensing Technologies for Improved Crop Biosecurity.”**
- \*2007 Invited Participant to collaborate on a project concerning Moko disease of banana, 29 June to 13 July, Institute for Research in the Amazon, Manaus, Brazil. Project: **“Using GIS to Map Disease Risk”**.
- \*2007 Invited Keynote Speaker, 2<sup>nd</sup> Conference on Precision Crop Protection, 10-12 October, Bonn Germany. Title: **“Integrating Remote Sensing, GPS, and GIS Technologies to Manage Plant Diseases and Pests”**.
- \*2007 Invited Keynote Speaker and Session Co-Chair for the session on “Biosecurity and Modeling”, 10<sup>th</sup> International Plant Virus Epidemiology Symposium **“Controlling Epidemics of Emerging and Established Plant Virus Diseases – The Way Forward”**, 15-19 October, ICRISAT, Patancheru 502 324, Hyderabad, India. Keynote Address Title: **“Use of GPS, GIS, and Geostatistics to Develop Pre-Plant Virus Disease Prediction Models”**.
- \*2006 Invited Speaker, 5<sup>th</sup> International Workshop on Grapevine Downy and Powdery Mildew, 18-23 June, S. Michele all Adige, Trentino, Italy. Title: **Linear Versus Logarithmic Disease Assessment Scales: The Repeal of the Weber-Fechner Law in Phytopathometry”**.
- \*2006 Invited Scientist to collaborate with the Rural University of Pernambuco, Recife, PE, Brazil on: **“Disease assessment theory and research”**, 29 December – January 11, 2007.
- \*2005 Invited Symposium Speaker, IX International Plant Virus Epidemiology Symposium, 4-7 April, International Potato Center, Lima, Peru. Title: **“Applying Epidemiology in Risk Assessment and Risk Mitigation in Response to Plant Virus Biosecurity Threats”**.
- \*2005 Invited Symposium Speaker, IX International Plant Virus Epidemiology Symposium, 4-7 April, International Potato Center, Lima, Peru. Title: **“Post-Introduction Mapping of Plant Virus Spread using GIS Technologies”**.
- \*2005 Invited Symposium Speaker, IX International Plant Virus Epidemiology Symposium, 4-7 April, International Potato Center, Lima, Peru. Title: **“Temporal and Spatial Spread of Soybean Mosaic Virus (SMV) Transformed with the Coat Protein Gene of SMV”**.
- \*2005 Invited Keynote Speaker, 9<sup>th</sup> International Workshop on Plant Disease Epidemiology: Facing Challenges of the 21<sup>st</sup> Century, 11-15 April, INRA, IRD, Landereau, Brittany, France. Title: **“Disease Assessment Concepts and the Role of Psychophysics in Phytopathometry”**.

- \*2004 Invited Keynote Speaker, International Quality Grains Conference, 19-22 July, Indianapolis, Indiana. Title: “*Crop Biosecurity and Safety of Grain-Based Foods and Feeds*”.
- \*2004 Invited Symposium Speaker, VII World Soybean Research Conference, February 29 to March 5, 2004, Foz do Iguassu, PR, Brazil. Title: “*Countering the Threat of Agricultural Bioterrorism in the Americas*”.
- \*2003 Invited Workshop Presenter/Teacher for “*Seminario Analisis Espacial Y Molecular Enfermedades (Spatial and Molecular Analysis of Diseases)*”, Corporacion Colombia de Investigacion Agropecuaria (CORPOICA), 24-26 November, Bogota, Colombia. Three Sessions Taught: (i) Assessing the Accuracy and Precision of Disease Assessments, (ii) Use of Geographic Information Systems in Plant Pathology Research, and (iii) Developing Sampling Protocols for Disease Assessment: A Hierarchy of Decisions.
- \*2003 Invited Teacher Workshop on “*Molecular and Spatial Analyses of Plant Diseases*”, 24 to 26 November, CORPOICA (Corporacion Colombiana de Investigacion Agropecuaria (The Colombian National Agricultural Research Institution), Bogota, Columbia.
- \*2003 Invited Scientist/Speaker/Advisory Panel concerning “Technical Issues Related to Sampling and Detection of Adventitious Transgenic DNA Sequences”, 5-7 September, International Maize and Wheat Improvement Center, (CIMMYT), Mexico City, Mexico. Title: “*Sampling and Detection Protocols for Use in the Field*”.
- 2003 Organized and taught a 2-day workshop titled: “*The Roy E. Gaunt Memorial Workshop on Disease and Crop Loss Assessment*”, 1-2 February 2003, Lincoln University, Canterbury, New Zealand (35 paid participants for this Pre-8<sup>th</sup> International Congress of Plant Pathology Workshop).
- \*2002 Invited Symposium Speaker, 3<sup>rd</sup> International Bacterial Wilt Symposium, 4-8 February, White River, South Africa. Title: “*Use of GPS and GIS to Map the Prevalence of Moko Disease of Banana in the Amazonas Region of Brazil*”.
- \*2002 Invited Speaker/Discussion Leader, Pyrethrum Board and the University of Tasmania, Australia, 25 November, Burnie, Tasmania. Title: “*Use of GPS and GIS Technologies and Geostatistics to Characterize Plant Disease Epidemics*”.
- \*2001 Invited Symposium Speaker, 8<sup>th</sup> International Workshop on Plant Disease Epidemiology, Ouro Preto, Brazil, 6-11 May, 2001. Title: “*New Tools for Epidemiology Applied to Disease Management*”.
- \*2000 Invited Symposium Speaker, Second International Conference on Geospatial Information in Agriculture and Forestry, Lake Buena Vista, Florida, 10-12 January, 2000. Title: “*Assessing Crop Health in Time and Space by Measuring Spectral Reflectance of Solar Radiation from Crop Canopies*”.

- \*2000 Invited Symposium Speaker, Second International Conference on Geospatial Information in Agriculture and Forestry, Lake Buena Vista, Florida, 10-12 January, 2000. Title: "***Using Geospatially-Referenced Disease and Weather Data to Improve Site-Specific Forecasts for Stewart's Disease of Corn in the U.S. Corn Belt***".
- \*2000 Invited to conduct a Workshop at the Universidade Federal Rural de Pernambuco, Programa de Pos-Graduacao en Fitossanidade, Recife, Brazil, 21 January 2000. Title: "***Modeling Disease Losses***".
- \*2000 Invited Seminar and meeting with the Pyrethrum Board, Tasmanian Institute of Agricultural Research, North-West Centre, University of Tasmania, Burnie, Australia, March 15, 2000. Title: "***Use of Geographic Information Systems and Geostatistics in Plant Pathology***".
- \*2000 Invited Seminar Speaker, Tasmanian Institute of Agricultural Research, University of Tasmania, Hobart, Australia, March 17, 2000. Title: "***Quantifying Biotic Stress and Yield Loss Using Geographic Information Systems and Remote Sensing***".
- \*2000 Invited Teacher, Workshops on "***Quantification of Plant Diseases and Yield Losses***", July 26-27, 2000, Institute for Natural Resources in the Tropics (INPA) and the Fundacao Universidade do Amazonas, Manaus, Brazil.
- \*2000 Invited Seminar Speaker, Institute for Natural Resources in the Tropics (INPA), July 25, Manaus, Brazil. Title: "***Quantifying and Modeling Plant Stress Using Visual, Remote Sensing, and Geographic Information Systems***".
- \*1999 Presented a seminar and progress report regarding "***The temporal and Spatial Spread of Two Phytoplasma Strains in Papaya***" September 1999, Faculty of Science, Northern Territory University, Darwin, Australia.
- \*1999 Invited Oral Presentation, 12<sup>th</sup> Biennial Conference of the Australasian Plant Pathology Society, 27-30 September, Canberra, Australia. Title: "***Epidemiology of Two Phytoplasma Strains Associated with Yellow Crinkle in Papaya***".
- \*1999 Invited Symposium Speaker, Joint Meeting of the American Phytopathological Society and the Canadian Phytopathological Society, 12-16 August, Montreal, Canada. Title "***Uncertainty in Regional and Site-Specific Assessments for Stewart's Disease of Corn: A GIS Approach***".
- \*1999 Invited Speaker, Joint Meeting of the American Phytopathological Society and the Canadian Phytopathological Society, 12-16 August, Montreal, Canada. Title "***Up and Coming New Technologies as Tools for Implementation***".
- \*1999 Invited Symposium Speaker, XXXII Congresso Brasileiro de Fitopatologia, August 1-6, 1999, Curitiba, PR, Brazil. Title "***Disease Theory and Practice: What You Think You See is What You Get***".

- \*1999 Invited Teacher, Workshop on "*Quantification of Plant Diseases and Losses*". XXXII Congresso Brasileiro de Fitopatologia, August 1-6, Curitiba, PR, Brazil.
- \*1999 Invited Teacher, 3-day workshop conducted for graduate students titled "*Quantification of Plant Diseases and Yield Losses*". Universidade Federal Rural de Pernambuco, Departamento Agronomia, Area de Fitossanidade, July 22-29, 1999, Recife, Brazil (38 students).
- \*1999 Invited Speaker, VII International Plant Virus Epidemiology Symposium, on Plant Virus Epidemiology: Current Status and Future Prospects, 11-16 April, Almeria, Spain. Title: "*Epidemiology of Two Phytoplasma Strains Associated with Yellow Crinkle in Papaya*". Two posters also presented.
- \*1998 Invited for an **Information Technology Workshop**, 7<sup>th</sup> International Congress of Plant Protection, 13 August, Scottish Agricultural University, Edinburgh, Scotland.
- \*1998 Invited Seminar. Zeneca Agrichemicals, Jealott's Hill Research Station, 6 August, Bracknell, Berkshire, England. Title: "*Disease Assessment Training: Theory and Practice*".
- \*1998 Presented a paper titled "*A Computer Training Program to Improve Disease Severity Assessments in Grapevines*". Third International Workshop on Grapevine Downy and Powdery Mildew, March 1998, South Australian Research and Development Institute, Loxton, South Australia. SARDI Research Report Series 22:21.
- \*1998 Presented a seminar and progress report regarding "*The Temporal and Spatial Spread of Two Phytoplasma Strains in Papaya*", March, 1998, Faculty of Science, Northern Territory University, Darwin, Australia.
- \*1996 Invited Seminar Speaker, Plant Science Research Center, South Australia Research and Development Institute (SARDI), Waite Campus, February 7, Adelaide, South Australia. Title: "*Quantifying Pathosystem Components in Plant Virus Pathosystems.*"
- \*1996 Invited Seminar Speaker, Australasian Plant Pathology Society, Victorian Branch, La Trobe University, February 12, Melbourne, Australia. Title: "*Disease Assessment Theory and Practice: What You See Is What You Get.*"
- \*1996 Invited Discussion/Seminar Speaker, Institute for Horticulture Development, February 13, Melbourne, Australia. Title: "*Modeling the Spatial and Temporal Spread of Plant Viruses with EPIMODEL.*"
- \*1996 Invited Seminar Speaker, Plant Science Research Center, South Australian Research and Development Center (SARDI), Waite Campus, February 20, Adelaide, South Australia. Title: "*Disease As Assessment Theory and Practice: What You See Is What You Get.*"

- \*1996 Invited Seminar Speaker, Plant Science Research Center, South Australian Research and Development Center (SARDI), Waite Campus, March 5, Adelaide, South Australia. Title: *“Use of Multispectral Radiometer to Assess the Spatial and Temporal Spread of Plant Pathogens.”*
- \*1996 Invited Seminar Speaker, Department of Crop Protection, University of Adelaide, Waite Campus, March 11, Adelaide, South Australia. Title: *“Principles of Plant Virus Epidemiology.”*
- \*1996 Invited Seminar Speaker, University of Western Australia, Center for Legumes in Mediterranean Agriculture, and the Department of Agriculture Western Australia, Perth, Australia, March 13. Title: *“Modeling Plant Virus Epidemics in Field Crops.”*
- \*1996 Invited Seminar Speaker, Plant Science Research Center, South Australian Research and Development Center (SARDI), Waite Campus, March 19, Adelaide, South Australia. Title: *“Epidemiology of Cucumber Mosaic Virus in Lupins and other Research Projects at SARDI.”*
- \*1996 Invited discussion leader, Faculty of Science, Northern Territory University, Darwin, Northern Territory, Australia, June 12. Topic: Epidemiology of Phytoplasmas in Papaya.
- \*1996 Invited Seminar Speaker, Plant Protection Unit, Department of Primary Industries, Brisbane, Queensland, Australia, June 17. Title: *“Disease Assessment Theory and Practice.”*
- \*1996 Invited presentation, 23-26 June, Ottawa, Ontario, Canada. Title: *“Use of Strain specific monoclonal antibodies to quantify within field temporal and spatial spread of soybean mosaic virus in soybean”*. 8th symposium on Environmental Releases of Biotechnological Products: Risk Assessment Methods and Research Progress.
- \*1996 Invited Teacher/Resource person for and International Training Course on Plant Virus Epidemiology sponsored by the International Institute of Tropical Agriculture, November 11-22, Ibadan, Nigeria. Course components taught: *“Data Collection and Handling to Model the Temporal Spread of Plant Virus Epidemics”* and *“Quantifying Crop Loss/Economic Damage Caused by Plant Viruses.”*
- \*1995 Invited presentation, Epidemiological Aspects of Plant Virus Control, 6th International Plant Virus Epidemiology symposium, 23-28 April, Jerusalem, Israel. Presentation title: *An Analysis of the Epidemiological Effects of Different Colors of Plastic Mulch on the Temporal and Spatial Spread of a Plant Virus”*.
- \*1995 Invited panelist on *“Integrated Approaches to Reduce Virus Epidemics”*. 6th International Plant Virus Epidemiology Symposium, 23-28 April, Jerusalem, Israel.
- \*1995 Invited Presentation, Trilateral Conference (U.S.A./Australia/New Zealand) for Forage/Pasture Crop Diseases, 10-14 April, Mississippi State, MS. Presentation title:



***Recent Developments in Methods for Assessing Disease Losses in Forage/Pasture Crops.***

- \*1995 Invited Speaker, Australasian Plant Pathology Society Epidemiology Workshop, 24-26 August, Lincoln University, New Zealand. Topic: "***Disease Assessment and Yield Loss: Issues Related to Measurement of Severity,***" and "***Use of Strain Specific Monoclonal Antibodies to Monitor the Spatial and Temporal Spread of Mosaic Virus in Soybeans***".
- \*1995 Invited Speaker and workshop participant, Workshop on the "***Impact of Global Change on Arthropod Pests, Weeds, and Diseases***", 9-12 October, Brisbane, Australia.
- \*1995 Invited Seminar, Cooperative Research Center for Tropical Plant Pathology, 13 October, Brisbane, Australia. Title: "***The use of Epidemiological Principles for Risk Assessment in the USA***".
- \*1995 Invited Seminar, Loxton Research Center, Loxton, South Australia, 27 November. Title: "***Disease Assessment Theory and Practice.***"
- \*1995 Invited seminar, University of Adelaide Plant Virus Discussion Group, Waite Campus, Adelaide South Australia, 7 December. Title: "***Gene Deployment Strategies in Plant Virus Pathosystems***".
- \*1995 Invited Seminar, South Australian Research and Development Institute, PRC Auditorium, Waite Campus, Adelaide South Australia, 15 December. Title: "***Quantification of Epidemiological Components in a Plant Virus Pathosystem***".
- \*1994 Keynote Speaker, 32nd Congress of the South African Society for Plant Pathology, January 23-26, Grain Crops Institute, Potchefstroom, South Africa. Keynote presentation titled: "***Control of Diseases Based on Epidemiological Models***".
- \*1994 Invited Speaker, Department of Microbiology and Plant Pathology, University of Natal, January 29, 1994, Pietermaritzburg, Republic of South Africa. Presentation Title: "***Epidemiology Today***".
- \*1994 Invited Speaker, The Oil and Summer Grain Institutes, February 2-5, 1994, Potchefstroom, Republic of South Africa. Presentation Title: "***Improving the Accuracy and Precision of Visual Disease Assessments***".
- \*1994 Invited Participant, Resource person for the "Global Change and Rice Symposium, March 14-18, 1994, International Rice Research Institute, Los Banos, Philippines.
- \*1994 Invited Participant and Task Leader (3.2.1) for the "***Global change and Terrestrial Ecosystems***" Workshop, March 19-22, International Rice Research Institute, Los Banos, Philippines.

- \*1994 Invited Participant and Speaker, 7th International Workshop on Plant Disease Epidemiology, April 10-15, Papendal, The Netherlands. Presentation (2) titles: "***Quantifying the Accuracy and Precision of Disease Assessments***" and "***Use of Strain-specific Monoclonal Antibodies to Model Within-Field Spread of Soybean Mosaic Virus in Time and Space***".
  
- \*1994 Invited Speaker, Workshop on "***Phytopathometry and New Techniques for Field Plot Experiments***", April 22, 1994, Laboratory for Phytopathometry, Department of Plant and Forest Protection, Swedish University for Agricultural Sciences, Uppsala, Sweden. Workshop Titles: 1) ***Improving the Accuracy and Precision of Disease Assessments*** and 2) ***Demonstration of Computer-aided Programs for Disease Assessments***.
  
- \*1994 Invited Participant, resource person, and Task 3.2.1 leader for the First Global Change and Terrestrial Ecosystems Science Conference, May 2, 3-27, 1994, Wood Hole, MA.
  
- \*1994 Invited speaker, Department of Microbiology and Plant Pathology, University of Natal, January 29, 1994, Pietermaritzburg, Republic of South Africa, presentation title: "***Graduate Education in Plant Pathology at Iowa State University and the USA.***"
  
- \*1993 Invited Symposium Speaker, 6th International Congress of Plant Pathology, July 28 - August 6, Montreal, Canada. Presentation title: "***Improving the Accuracy and Precision of Disease Assessments: Selection of Methods and Use of Computer-Aided Training***".
  
- \*1993 Invited Speaker for Information Technology Workshop, 6th International Congress of Plant Pathology, July 28 - August 6, Montreal Canada. Presented information to workshop participants concerning "***Computer-Aided Training Programs for Disease Assessment***".
  
- \*1993 Co-Moderator and Discussion Leader, Discussion Session on "***Virus and Viroid Epidemiology***", 6th International Congress of Plant Pathology, July 28 - August 6, Montreal, Canada.
  
- \*1993 Invited Panel Discussion Member for session on "Phytopathometry and Loss Assessment", 6th International Congress of Plant Pathology, July 28 - August 6, Montreal, Canada.
  
- \*1992 Invited Symposium Speaker, 5th International Plant Virus Epidemiology Symposium on Viruses, Vectors, and the Environment, 27-31 July, Valenzano Italy. Presentation title: "***Development of Modeling Techniques to Estimate Losses Caused by Tobacco Etch Virus in Bell Pepper***".
  
- \*1992 Invited Symposium Speaker, Conference on Biotechnologies for Tropical Plant Protection, August 12-13, Malaysian Plant Protection Society, Kuala Lumpur,

- Malaysia. Presentation title: "*Risk Assessment and Management for the Use of Bioengineered Products in Plant Protection*".
- \*1991 Invited Symposium Speaker, International Symposium on Systems Approaches for Agricultural Development, December 1-8, Bangkok, Thailand. Presentation title: "*Quantification of Agroecosystem Components in Complex Pathosystems*".
  - \*1990 Third International Conference on Plant Protection in the Tropics, Kuala Lumpur, Malaysia. March 20-24. (Invited paper presented "*Rate-reducing resistance in Plant Virus Pathosystems*").
  - 1990 Sixth International Workshop on Plant Disease Epidemiology. Giessen, Germany. (Two invited papers presented).
  - 1989 International Symposium/Workshop on "Breeding for Resistance to Viruses and Their Vectors". Montpellier, France. (Paper presented and participated in two discussion sessions.) September 3-8.
  - \*1988 U.S./Mexico Workshop on Vegetable Virus Diseases, Culiacan, Mexico. Invited paper: "*Virus Epidemiology of Vegetables*".
  - \*1988 Fifth International Congress of Plant Pathology, Kyoto, Japan (Invited symposium participant to give a presentation on "*Plant Disease Epidemics in Natural Ecosystems*").
  - \*1987 Workshop on Crop Loss Assessment to Improve Pest Management, International Rice Research Institute (IRRI) Los Banos, Philippines. Invited speaker and discussion leader for sessions on: "*Generating Different Epidemics for Crop Loss Research*" and "*Remote Sensing Analysis*".
  - 1986 Invited Speaker, Fifth International Workshop on Botanical Epidemiology, Jerusalem, Israel. Paper titled: "*Monitoring Pathogen Stress With a Hand-held Multispectral Radiometer*".
- National (100 total):**
- \*2013 Invited Symposium Speaker, Annual Meeting of the American Phytopathological Society, 12 August, Austin, TX. Symposium title: **Innovations in Microbial Forensics and Plant Biosecurity**. Presentation title: "*Forensic Epidemiology: New Sensor-Based Plant Pathogen Detection: Where to Look for Evidence in a 300-Acre Crop*".
  - \*2012 Invited Seminar Speaker, University of Florida, North Florida Research and Extension Center, 23-25 January, Quincy, Florida. Presentation title: "*Use of Satellite Remote Sensing and GIS to Detect and Accurately Identify Plant Pathogens in Crops*".

- \*2012 Invited Participant 2012 Human Pathogens on Plants Workshop, APS Public Policy Board, 13-15 February, Hyattsville, Maryland.
- \*2012 Invited Speaker, NASA, 24 April, Greenbelt, Maryland. Presentation/Discussion title: ***“Integrating GPS, GIS, and Remote Sensing Technologies for Crop Biosecurity”***.
- \*2012 National Advisor, National Plant Disease Recovery System (NPDRS), 28-30 June, Dallas-Ft. Worth. Topic: ***“Refining The Generic Model for the Selection of Pathogens for the National Plant Disease Recovery System”***.
- \*2012 National Advisor, National Plant Disease Recovery System, 4-8 August, APS Annual Meeting, Providence, Rhode Island. Topic: ***“Pilot Study for the Pathogen Matching Concept for Incomplete Information on Threatening Plant Pathogens”***.
- \*2012 Invited Seminar Speaker and National Advisor to the US Department of Homeland Security, 1 October, Washington DC. Advisor topic: ***“Agricultural Risk Modeling Requirements Development”***. Seminar title: ***“Use of Satellite Remote Sensing and GIS to Detect and Accurately Identify Plant Pathogens in Crops”***.
- \*2012 Invited Speaker, NCERA-213 Committee on ***“Movement of Microbiota in the Atmosphere”***, 3-5 October, Ft. Lauderdale, Florida. Presentation title: ***“Pathogen-Specific Temporal and Spatial Criteria to Identify Plant Pathogens Using Satellite Imagery”***.
- \*2012 Invited Seminar Speaker, Monsanto Corporation, 24 October, St. Louis, Missouri. Presentation title: ***“Integrating GPS, GIS, and Remote Sensing Technologies: Transitioning from Crop Biosecurity to Precision Agriculture-Based Management”***.
- \*2011 Invited speaker and participant, USDA-APS National Plant Disease Response System Workshop, 6-8 March, Dallas, Texas. Presentation title: ***“The Penn State Method for Pathogen Matching”***.
- \*2011 Speaker and Committee Member, NCERA 213 (Migration and Dispersal of Agriculturally-Important Biota), 5-6 October, Dallas, Texas. Presentation title: ***“What Is It, Where Is It, Where Is It Going?”***
- \*2011 Invited Participant for a meeting of Principle Investigators for the NRI Organic Research and Extension Initiative (OREI) Project ***“Sustainable Systems for Cucurbit Crops on Organic Farming”***, 30 November, Indianapolis, Indiana.
- \*2011 Invited Participant for a meeting of Proposal Team Principle Investigators to prepare a grant to submit to the NIFA Organic Research and Extension Initiative (OREI), 1 December, Indianapolis, Indiana.
- 2010 Invited Seminar Speaker, 19-21 October, Department of Plant Pathology and Crop Physiology, Louisiana State University. Title: ***What’s Up Looking Down at Soybean Rust Epidemics Using Satellite Imagery.***

- \*2009 Invited Speaker and Participant, Meeting of the USDA North Central NCERA-148 Committee on “**Migration and Dispersal of Agriculturally-Important Biota**”, 20-22 October, Virginia Polytechnical Institute, Blacksburg, Virginia. Presentation title: “*Development of a Rotorod-Helium Balloon Platform to Quantify the “Strength of the Source” of Spore Escape from a Diseased Wheat Canopy.*”
- \*2009 Invited collaborator to develop a planning grant to the USDA-NRP Specialty Crops Grants Program, 8-10 February, University of Arizona, Tucson, Arizona. Title of Project: “*Identification, GIS Mapping, and Bio-Climate Projections of Weedy Hosts of Plant Virus-Vector Complexes: Informed Management of Plant Virus Diseases in Irrigated Desert Vegetable Crops.*” Dr. Judith K. Brown, Project Director.
- \*2009 Invited Seminar Speaker, Department of Plant Pathology, Physiology, and Weed Science, 5-7 April, Virginia Polytechnic Institute and State University, Blacksburg, Virginia. Seminar title: “*Use of GPS, GIS, and Remote Sensing Technologies to Model the Temporal and Spatial Dynamics of Plant Pathogens.*” Also presented “*Temporal and Spatial Spread of Bean Pod Mottle Virus at the Field and County Scales in Iowa*” during an invited visit to Sue Tolin’s laboratory (Plant Virology).
- \*2009 Invited Participant- Microbial Forensics Interest Group, American Phytopathological Society, 1 August, Portland, Oregon.
- \*2009 Co-Organizer and Symposium Speaker for a symposium titled “*Forensics Plant Pathology: Science in the Courtroom*”, presented at the Annual Meeting of the American Phytopathological Society, 1-5 August, Portland, Oregon. Title of Presentation: *Role of Imagery, Spatial Pattern Analyses, and Sampling in Plant Pathology Forensics.*”
- \*2009 Invited Participant and Speaker, Migration and Dispersal of Biota Important to Agriculture Forestry and Biosecurity, USDA NCERA – 148 Meeting, 16-17 October, Raleigh, NC.
- \*2009 Invited Speaker, USDA-North Central Region Soybean Viruses Symposium (National) sponsored by NCERA-200, 30-31 October, Iowa State University, Ames, Iowa. Title: “*Temporal and Spatial Spread of Bean Pod Mottle Virus at the Field and County Scales in Iowa*”.
- \*2009 Symposium Speaker, Annual Meeting of the American Phytopathological Society North Central Division, 21-23 June, Ames, IA. Title: “**Meeting the Challenges of U.S. Crop Biosecurity: Pre- and Post-Threat Introduction**”.
- \*2009 Invited Speaker/Participant, Migration and Dispersal of Biota Important to Agriculture, Forestry and Biosecurity, USDA NCERA-148 Meeting, 16-17 October, Raleigh, NC.
- 2009 Seminar Speaker, Virginia Polytechnic Institute, Blacksburg, VA, April. Title: “*Remote Collection of Fungal Spores (and Other Hazardous Agents) Using Small Payload*”

*Balloons”.*

- \*2008 Invited Speaker/Participant, Biosurveillance Workshop: Product Line Review, 29-30 January, Department of Defense, Telemedicine and Advanced Technology Research Center (TATRC/MRMC), Longbeach, CA. Title: **“Development of an Indications and Warning System for Threatening Plant Pathogens: A Remote Sensing, GPS, and GIS Approach”.**
- \*2008 Invited Speaker, American Society of Microbiology Biodefense and Emerging Diseases Symposium, 24-26 February, Baltimore, MD. Title: **“Shape and Rate of Focal Expansion to Differentiate Plant Pathogens: An Integrated Remote Sensing, GPS, and GIS Approach for Crop Biosecurity”.**
- \*2008 Invited Speaker, Symposium on the “Impact of Plant Virus Epidemiology: Past, Present, and Future, Centennial Meeting of the American Phytopathological Society, 26-30 July, Minneapolis, MN. Title: **“Modeling Yield Loss Based on Time of Virus Detection: A Geostatistical, Quadrat – Based Approach”.**
- \*2008 Moderator and Organizer, 8<sup>th</sup> I.E. Melhus Graduate Student Symposium: Forty-Five Years After Van Der Plank, New Visions for the Future of Plant Disease Epidemiology, Centennial Meeting of the American Phytopathological Society, 26-30, Minneapolis, MN. Title: **“Introduction to the 8<sup>th</sup> I.E. Melhus Graduate Student Symposium.”**
- \*2008 Invited Participant, Migration and Dispersal of Biota Important to Agriculture, Forestry and Biosecurity, 16-17 October, Raleigh, NC.
- \*2008 Invited Participant, USDA National Plant Disease Recovery System – American Phytopathological Society Workshop, 26-28 October, San Antonio, TX. Participants charged with developing “Recovery Plans for the Introduction of Plant Pathogens that Threaten U.S. Agriculture.
- \*2008 Invited Speaker, USDA-North Central Region Soybean Viruses Symposium (National) sponsored by NCERA-200, 30-31 October, Iowa State University, Ames, Iowa. Title: **“Temporal and Spatial Spread of Bean Pod Mottle Virus at the Field and County Scales in Iowa.”**
- \*2007 Invited Scientific Advisor, 2007 Workshop on “Plant Pathology Forensics: Filling the Gaps,” 11-13 January, Oklahoma City, OK.
- \*2007 Invited Speaker, First Annual Meeting of the National Plant Diagnostic Network (NPDN), 28-31 January, Orlando, FL. Title: **“Use of the National NPDN Database for Early Warnings and Indications Based Upon Temporal and Spatial Patterns”.**
- \*2007 Invited Speaker and Moderator for a symposium titled **“Addressing Today’s Critical Issues in Disease/Pathogen Assessment”**, held during the Annual Meeting of the American Phytopathological Society, 28 July-2 August, San Diego, CA. Presentation

- titles: (1) **Introduction: “Addressing Today’s Critical Issues in Pathogen Disease Assessment”, and (2) “To Honor Horsfall-Barrett and Repeal Their Scale”.**
- \*2007 Organizer and Moderator for symposium titled “**Model Validation: what Comes Under the Umbrella of Validation Concepts for Pathogen/Disease Detection and Forecasting Models?**” held during the American Phytopathological Society, 28 July – August 2, San Diego, CA. Titles: **Model Validation: What Comes Under the Umbrella of Validation Concepts for Pathogen/Disease Detection and Forecasting Models?”.**
  - \*2007 Presented an oral report as part of the National Research Initiative 2007 Plant Biosecurity Project Directors Meeting, held 30 July during the Annual Meeting of the American Phytopathological Society, San Diego, CA. Presentation title: **“Safeguarding American Agriculture from New and Emerging Disease and Pests: A GPS, GIS, and Web-Based System”.**
  - 2007 Invited Presentation to report on the outputs from a research project funded by the Telemedicine and Advanced Technology Research Center, US Army Medical Research and Materials Command, 28 August, Fort Detrick, MD. Title: **“Indications and Warnings System for Threatening Plant Pathogens: A Remote Sensing, GPS, and GIS Approach”.**
  - \*2007 Invited Participant and Speaker, Western IPM Weather Working Group, 24-26 September, Portland, OR. Title: **“Remote Sensing and Image Analysis of Threatening Plant Pathogens”.**
  - \*2007 Invited Participant, National Plant Diagnostic Network (NPDN), Information Technology, Epidemiology and Diagnosticians Meeting, USDA-CSREES, 28-30 November, St. Louis, MO. **Meeting Goals: Determine and prioritize key issues concerning information technology, epidemiological data needs, and requirements for a national database.**
  - \*2007 Invited Speaker, National Soybean Rust Symposium, American Phytopathological Society, 12-14 December, Louisville, KY. Title: **“Movement of Rust as Determined by Remote Sensing”.**
  - \*2006 Invited Participant, **Infectious Disease Modeling Conference**, 2-4 March, Science and Technology Partnership, the MITRE Corporation, McLean, Virginia.
  - \*2006 Invited Participant for an “Expert Panel on the **“Development of Standards for Biodefense: Necessary Assurance to Protect National Security”**”, 5-6 April, Hay Adams Hotel, organized by the USDA Office of the Science Advisor for Food Defense, the Department of Defense and the American Type Culture Collection, Manassas, Virginia.
  - \*2006 Invited Scientific Advisor, the American Phytopathological Society/United States Department of Agriculture Meeting on the **“National Plant Disease Recovery System”**, 13-14 April, Memphis, Tennessee.

- \*2006 Invited Symposium Speaker, for symposium on “Long Term Patterns of Spread and Infestation for Forest Pathogens, held at the Annual Meeting of the American Phytopathological Society, 29 July – 2 August, Quebec City, Canada. Title: ***“Application of GIS and Geostatistics in Natural Systems”***.”
  
- \*2006 Grant Project Review Presentation for the National Research Initiative – USDA Cooperative States Research, Education, and Extension Service, Grants Program in Plant Biosecurity, Annual Meeting of the American Phytopathological Society, 31 July. Title: ***“Safeguarding American Agriculture from New and Emerging Diseases and Pests: A GIS, Web-Based Disease Monitoring, Forecasting, and Information Delivery System”***.”
  
- \*2006 Seminar Speaker, Department of Plant Pathology, Seminar Series, Fall Semester 2006, 29 August, Iowa State University, Ames, Iowa. Title: ***“Linear Versus Log Scales, and the Psychophysics Theory Behind Their Use”***.”
  
- \*2006 Invited Seminar Speaker, USDA Agricultural Research Service, Foreign Disease-Weed Science Research Unit, and the Department of Defense US Army Medical Research and Material Command, Telemedicine and Advanced Technology Research Center, 1-4 October, Ft. Detrick, Maryland. Title: ***“Use of High Resolution Satellite Imagery for the Early Detection and Identification of Threatening Plant Pathogens”***.”
  
- \*2006 Invited Speaker/Participant, National Plant Diagnostic Network (NPDN) Information Technology – Diagnostics Meeting, 16-17 October, Excelsior Springs, Missouri. Title: ***“How can we Collect NPDN Data to Interface Different Databases with Mapping Tools to Deliver Real-Time Disease Risk Information”***.”
  
- \*2006 Invited Presentation to the NCERA – 148 Committee on Migration and Dispersal of Biota, 22-24 October, The Pennsylvania State University and Zedex, Inc., State College, Pennsylvania. Title: ***“Use of IKONOS Satellite Imagery to Detect and Quantify Disease Gradients Caused by Asian Soybean Rust”***.”
  
- 2006 Participant, 2006 Integrated Programs Grantsmanship Workshop, USDA-CSREES and the University of Missouri Extension, 8-9 November, Kansas City, MO.
  
- \*2006 Invited Seminar Speaker and Organizational Meeting for a research project on the Eradication and Quarantine Programs for Plum Pox: the US versus Canada’s Containment and Recovery Programs, 22-23 December, USDA Economic Research Service, Washington DC. Title: ***“Use of GPS, GIS, and Remote Sensing Technologies to Model the Temporal and Spatial Dynamics of Plant Disease Epidemics”***.”
  
- \*2005 Invited Scientists, APHIS Soybean Rust Working Group – Invasion Response Plan, 4 February, Indianapolis, IN. ***Charged with the responsibility of developing a National Response Plan for Asian Soybean Rust.***



- \*2005 Invited Seminar Speaker, Annual Meeting of the American Phytopathological Society Symposium on “Risk Prediction and Regulatory Plant Pathology at the Macroscale:”, 31 July- 5 August, Austin, Texas. Title: “***Application of Specialized Models for Macroscale Risk Prediction***”.
- \*2005 Invited Seminar Speaker, Annual Meeting of the American Phytopathological Society Symposium on “Stakeholder Views of Plant Disease Loss and Risk Assessment”, 5 August, Austin, Texas. Title: “***Where Damage Functions Meet Price Functions: Finding the Bottom Line in Disease Management Decisions***”.
- \*2004 Invited Speaker, Gordon Research Conference on Chemical and Biological Terrorism Defense, 18-24 January 2004, Santa Barbara, CA. Title: “***Safeguarding American Agriculture: The Role of Plant Disease Epidemiology in Post-Introduction Agricultural Bioterrorism Events***”.
- \*2004 Invited Scientist, ***Threat Assessment Phytopathology/Mycology Workshop*** Group Meeting, 6-7 February 2004, New Orleans, LA. Sponsored by the National Biodefense Analysis and Countermeasures Center (NBACC), Department of Homeland Security.
- \*2004 Invited Participant, Integrated Research Team: “***The Role of Indications and Warning for Prediction and Surveillance of Catastrophic Biological Events***”, 28-30 June, Telemedicine and Advanced Technology Research Center (TATRC), US Army Medical Research, and Material Command, Ft. Detrick.
- \*2004 Invited Symposium speaker, Annual Meeting of the American Phytopathological Society, 21 July- 4 August, Anaheim, California. Title: “***Post-Introduction Mapping of New and Emerging Agricultural Pathogen in Real-Time Using GPS and GIS Technologies.***”
- \*2004 Invited Scientist, ARS National Strategic Planning Session on “***Integrated Soybean Rust Research***”, 1-2 December, Baltimore, MD.
- \*2003 Invited Workshop Presenter, US Environmental Protection Agency Mid-Atlantic Region Preparedness and Prevention Conference, 16-18 November, Norfolk, Virginia. Workshop title: “***Countering the Threat of Agricultural Bioterrorism***”.
- \*2003 Invited Scientist, “***Biological Threat Assessment*** Workshop”, 11-13 November, 2003, Hilton Head, South Carolina Sponsored by National Biodefense and Countermeasures Center (NBACC), Department of Homeland Security.
- \*2003 Invited Scientist/Conference Speaker concerning “Mathematical Modeling of the Spread of Agricultural Bioterrorism Agents”, 16-17 September 2003. McLean, VA Sponsored by the Science and Technical Intelligence Committee, the Armed Forces Medical Intelligence Center, and MITRE Corp. Title: “***The Use of Remote Sensing and GIS to Model Plant Disease Epidemics and to Quantify Disease Impacts on Crop Yield and Quality***”.

- \*2003 Invited Symposium Speaker, Annual Meeting of the American Phytopathological Society, on “Application of Ecological, Molecular, and Epidemiological Models for Risk Assessment of Biotechnology Products”, 9-13 August, Charlotte, NC. Title: **“Temporal and Spatial Models to Assess the Benefits of Transgenic Resistance to Soybean Mosaic Virus”**.
- \*2001 Invited Symposium speaker, Annual Meeting of the American Phytopathological Society, 25-29 August, Salt Lake City, UT. Title: **"Use of GIS and Remote Sensing to Detect the Plant Stress Caused by Soybean Cyst Nematode"**.
- 2001 Organizer and Presider, APS 2<sup>nd</sup> I. E. Melhus Graduate Student Symposium **"New Frontiers in Plant Disease Losses and Disease Management"**, Annual Meeting of the American Phytopathological Society, 25-29 August, Salt Lake City, UT.
- \*2000 Invited Symposium speaker, Annual Meeting of the American Phytopathological Society, 12-16 August, New Orleans, LA. Title: **"Durability of Transgenic Disease Resistance"**.
- \*2000 Invited Colloquium Speaker, Annual Meeting of the American Phytopathological Society, 12-16 August, New Orleans, LA. Title: **" Remote Sensing in Plant Disease Management: Assessing Crop Health in Time and Space by Measuring Spectral Reflectance from Plant Canopies"**.
- 1999 Symposium Organizer and Speaker for a symposium titled **“Epidemiological Concepts in Human, Veterinary, and Botanical Epidemiology”**; Annual Meeting of the American Phytopathological Society, 9-13 August, Rochester, NY. Title: **“Introduction: the Y’s and R’s of it all”**. Symposium Series was edited by F. Nutter and published in *Ecosystem Health*.
- \*1996 Invited Symposium Speaker, sponsored by the Exobiology and Space Phytopathology, Epidemiology, and Plant Health Committees of the. Annual Meeting of the American Phytopathological Society (APS), July 31, Indianapolis, IN. Symposium title: **“Use of Remote Sensing to Detect Stress in Agroecosystems.”** Title of presentation: **“Assessing Crop Health in Time and Space by Measuring Spectral Reflectance of Solar Radiation from Plant Canopies.”**
- \*1995 Presentation to NCR-25 (Corn Diseases) titled **"Computer Assisted Disease Assessment Training for Corn"**, 21 February, Bettendorf, IA.
- \*1995 Invited Speaker, Fluorosensing Information Exchange Workshop sponsored by the Department of Energy and EPCOT. Presentation title: **"Use of Multispectral Data to Detect and Quantify Biological Stress in Plant Populations"**.
- 1995 Organizer and Speaker for a colloquium sponsored by the Plant Disease Losses Committee at the Annual Meeting of the American Phytopathological Society, 12-16 August, Pittsburgh, PA titled: **"Facing the Issues Concerning Plant Disease Losses"**.

- 1994 Organized a Meeting of members of an International Steering Committee on "***Global Estimates of Crop Losses***", 25-26 February, Charleston, SC.
- \*1994 Organizer and Chair for a Discussion Session sponsored by the Epidemiology Committee of the Annual Meeting of the American Phytopathological Society, 6-10 August, Albuquerque, NM titled: "***Impact of Epidemiology on Production Agriculture: Successes, Roadblocks, and Future Opportunities***".
- \*1994 Invited Seminar Speaker, North Carolina State University, Department of Plant Pathology, November 12-16, Raleigh, NC. Seminar title: "***Converging Horizons of Plant Disease Epidemiology and Molecular Biology?***".
- \*1994 Invited Seminar Speaker, University of Kentucky, Department of Plant Pathology, November 26-29, Lexington, KY. Seminar title: "***Resistance-Based Disease Management Strategies***".
- \*1993 Invited speaker, Workshop on "***Innovative Teaching Tools in Plant Pathology***", sponsored by the Teaching Committee, American Phytopathological Society, November 6-10, Nashville, TN.
- \*1993 Invited Workshop Participant on "***Innovative Teaching Tools in Plant Pathology***", Annual Meeting of the American Phytopathological Society, November 6-10, Nashville, TN. Demonstrated "***Alfalfa.Pro - A Computerized Disease Assessment Training Program***" and "***EPIMODEL***" - a computer program to teach principles of population growth modeling.
- \*1992 Invited Participant, Board on Agriculture, National Academy of Sciences "***Crop Loss Workshop***", 27-28 October, Washington D.C.
- 1991 Gordon Conference: Pest Resistance in the Agricultural Sciences, January 27-February 1, Oxnard, CA. Presented "***Agricultural Biotechnology Transfer: Bridging Molecular and Population Disease Control Strategies***".
- 1991 Committee on Corn and Sorghum Diseases (NCR-25), February 14-15, Baltimore, MD. Title: "***Gray Leaf Spot Epidemiology***".
- \*1991 Seminar Speaker, Dept. of Plant Pathology, North Dakota State University, Fargo, ND. Title: "***Quantification of Epidemiological Components in Plant Virus Pathosystems***".
- \*1991 Cornell-BTI Workshop titled "***Biological Control: Making it Work***", April 4-5, Ithaca, NY. Advisor for and participant on technology aspects.
- \*1991 Invited Symposium Speaker for "Symposium of Peanut Health Management, Annual Meeting of the American Peanut Research and Education Society, San Antonio, TX. Title: "***Management of Foliar Fungal Pathogens***".

- 1991 Organizer and Chair, USDA-CSRS Steering Committee on "***Development of a Global Crop Loss Database***". August 16-17, St. Louis, MO.
- \*1991 Invited Speaker, Teach-In Session on "***Field and Plot Level Methods of Disease Severity Measurement***". Annual Meeting of the American Phytopathological Society, August 18-22, St. Louis, MO. Presentation title: "***Spectral Reflectance Radiometry in Diseased Crops***".
- \*1991 Invited Speaker, Discussion session on "Crop Losses as a Measure of Agricultural Sustainability". Annual Meeting of the American Phytopathological Society, August 18-22, St. Louis, MO. Presentation title: "***Measuring Sustainability at the Pathosystem Level***".
- \*1990 Invited Participant. Workshop on "***Modeling Pest-Crop Interactions***". University of Hawaii, Honolulu, HI. January 5-12. (Two papers presented).
- 1990 Annual Meeting of the Phytopathological Society, Grand Rapids, MI. Invited lecturer for a teach-in on "***Computer Programs Used in Teaching Plant Disease Epidemiology***". Also demonstrated "***Disease.Pro - A computerized disease assessment training program***". Two abstracts (1 oral, 1 poster) also presented.
- \*1989 Seminar Speaker, University of California - ***Riverside, Department of Plant Pathology, Riverside, CA. May 14-16, 1989. Title: "Disease Components that Contribute to Rate-Reducing Resistance in Virus Pathosystems"***.
- \*1989 Annual Meeting of the American Phytopathological Society, August 20-24., Richmond, VA. (Invited participant in discussion session concerning "***Remote Sensing: Ground-Based Systems***").
- \*1989 Invited Guest Lecturer. Department of Plant Pathology, Oklahoma State University, Stillwater, OK. October 16-19. Presented several lectures to graduate students enrolled in Plant Disease Epidemiology.
- \*1988 Potomac Division of the American Phytopathological Society, Frederick, MD. Invited speaker and discussion leader. Title: "***Machine-aided Detection of Plant Diseases***".
- 1988 Symposium Organizer and Speaker for a Symposium titled: "***Assessing the Potential Impact of Planned Releases of Bioengineered Organisms Using Modeling and Non-Modeling Approaches***", Annual Meeting of the American Phytopathological Society, 13-17 November, San Diego, CA. Symposium papers were edited by F.W. Nutter and published in *Phytopathology*.
- \*1988 Annual Meeting of the American Peanut and Education Society, Tulsa, OK. Invited Symposium participant. Title: "***Forecasting Late Leaf spot of Peanut***".

- \*1987 Seminar Speaker, North Carolina State University, Department of Plant Pathology, Raleigh, NC. January 5-7, 1987. Title: "***Remote Sensing and Crop Loss Assessment***".
- \*1987 Seminar Speaker, Department of Plant Pathology, University of Arizona, Tucson, AZ. January 29-30, 1987. Title: "***Epidemiology of Tobacco Etch Virus in Bell Pepper***".
- 1987 Organized a Workshop Titled "***Workshop on Multispectral Radiometry***", March 22-24, Univ. of Georgia, Athens, GA.
- \*1986 E. I. DuPont de Nemours and Company (Inc.), Newark Delaware. Seminar titled "***Use of Radiometry to Assess Biological Stress in Plants***".
- \*1985 Annual Meeting of the American Phytopathological Society, Reno, Nevada. Invited Discussion Session Speaker. Title: "***Univariate versus Multivariate Approaches to Crop Loss Assessment***".

***Regional (45 total):***

- \*2013 Invited Seminar Speaker, Departmental Plant Pathology and Microbiology, 1 October, Iowa State University, Ames, IA. Seminar Title: "***Plant Pathology Forensics: Where to Look for Evidence in a 300-Acre Field Using Remote Sensing and GPS Technologies***".
- \*2012 Invited Participant, Iowa InfraGard Member's Alliance Annual Meeting, 23 October, Des Moines, Iowa.
- 2011 Speaker, Potomac Division, American Phytopathological Society, 9-11 March, Rehoboth Beach, Delaware. Presentation title: "***Within-Field Temporal and Spatial Dynamics in the Soybean Mosaic Virus-Aphid and the Bean Pod Mottle Virus-Bean Leaf Beetle Pathosystems***".
- \*2011 Invited Seminar Speaker, Michigan State University, 11-13 December, East Lansing, Michigan. Presentation title: "***What's Up Looking Down at Plant Disease Epidemics Using GIS and Satellite Imagery***".
- 2010 Participant, Crops Team and Projects Meeting, 30 November, Iowa State University, Ames, IA. Presentation titled "***Bean Pod Mottle Virus Results from 2010 and Research plans for 2011.***"
- 2009 Presented a Brown Bag Seminar for the Department of Plant Pathology, 17 April 2009. Title: "***Biotic and Abiotic Factors Associated with Bean pod mottle virus in Iowa.***"
- 2009 Participant, BIGMAP Symposium, Food and Fuel Crops: Issues, Policies, and Regulation, 21-22 April, Gateway Hotel and Conference Center, Ames, IA.

- 2009 Symposium Speaker, Annual Meeting of the North Central Division, American Phytopathological Society, 21-23 June, Iowa State University, Ames, IA. Title: ***“Meeting the Challenges of U.S. Crop Biosecurity: Pre- and Post Threat Introduction.”***
- \*2009 Invited Participant, Meeting of the Midwest Weather Working Group, 7 October, Indianapolis, Indiana. Group is charged with building collaborative research groups to address common problems and challenges in obtaining and using weather data to predict disease/pest risk.
- 2009 Participant and Presenter, Corn and Soybean Initiative Discussion Roundtable on ***“Soybean Research”***, 5 September, Ames, IA. Three posters were presented.
- 2008 Presented a Brown-Bag Seminar for the Department of Plant Pathology, 19 January 2008. Title: ***“Spatial Dependence of Bean Mottle Virus at the County and Field Scales”***, Ames, IA.
- 2008 Seminar Speaker, Department of Plant Pathology Seminar Series, Spring Semester, 2008, 4 March, Iowa State University, Ames, IA. Title: ***“What’s Up When Looking Down at Soybean Rust Epidemics in Other Countries Using High Resolution Satellite Imagery”***.
- 2008 Invited participant on ***“Strategic Advances in Soybean Research”***, Iowa Soybean Association and the ISU College of Agriculture and Life Sciences, 19 August, Gateway Hotel and Conference Center, Ames, IA.
- 2008 Iowa Soybean Association Poster Session, 2 September, Gateway Hotel and Conference Center, Ames, IA. Two posters presented:  
**(i) Quantifying Yield Losses by Plant Viruses: A Geostatistical, Quadrat-Based Approach.**  
**(ii) Quantifying the Temporal and Spatial Spread of Bean Pod Mottle Virus in Iowa Soybeans.**
- 2008 Corn and Soybean Initiative Discussion Roundtable on Soybean Research, College of Agriculture and Life Sciences, 5 September, Memorial Union, Ames, IA. Three posters presented:  
**(i) Development of an Early Warning System for Crop Biosecurity.**  
**(ii) Quantifying Yield Losses by Plant Viruses.**  
**(iii) Geospatial and Temporal Spread of Gray Leaf Spot in Iowa, 1981-1997.**
- 2008 College of Agriculture and Life Sciences Visiting Professor Program, Science of Special Education, Walnut Creek High School Campus, West Des Moines, Iowa. Topic: ***“Crop Biosecurity and Food Safety Research.”***
- \*2007 Poster presentations (2) Iowa Soybean Association Supply Committee, 12 February, Iowa State University, Ames, IA. Titles: (1) ***“Risk of Bean Pod Mottle Virus of Soybean in Iowa in 2005 and 2006 Based Upon Spatial Distribution”*** and (2)

- “Temporal and Spatial Patterns of Bean Pod Mottle Virus at the County and Field Scales in Iowa”.***
- \*2007 Seminar Speaker, Iowa Geographic Information Council, GIS Seminar Series, Spring Semester 2007, 5 March, Part of the ISU CRP 452/552 Geographic Data Management and Planning and Analysis Course, GIS Lab, College of Design, Iowa State University, Ames, IA. Title: ***“Detecting and Quantifying the Temporal and Spatial Dynamics of Asian Soybean Rust Epidemics Using GPS, GIS, and Remote Sensing Technologies”.***
  - \*2007 Participant, Second Annual Institute for Food Safety and Security Symposium on ***“Food Safety and Public Health: Production, Distribution, and Policy”.*** Two posters were presented.
  - \*2007 Presented two posters at the 8<sup>th</sup> Biennial Iowa Geographic Information Council (IGIC) GIS Conference, held 23-25 April, Sioux City, IA. (1) ***Development of Early Warning Systems to Improve U.S. Crop Biosecurity*** (Received Graduate First Place Award in Poster Competition – authors K. Ahmad, N. van Rij, J.P. Basart, and F.W. Nutter, Jr.), and (2) ***Risk of Bean Pod Mottle Virus of Soybean in Iowa in 2005 and 2006 Based Upon Spatial Distribution*** (authors E. Byamukama, A. Robertson, and F.W. Nutter, Jr.).
  - \*2007 Participant and poster Presenter, Remote Sensing Workshop, held 5 June, University of Minnesota, Minneapolis, MN. Poster title: ***“Using IKONOS Satellite Images to Model the Temporal and Spatial Dynamics of Asian Soybean Rust”***
  - \*2007 Poster presentations, Iowa State University Corn and Soybean Initiative Partner Research Roundtable Discussion, held 10 August, Iowa State University, Ames, IA. Titles: (1) ***Quantifying the Aggressiveness of Bacterial Isolates of Pantoea stewartii in Corn Plants*** (authors Li Liu, C. Block, and F.W. Nutter, Jr.), and (2) ***Risk of Bean Pod Mottle Virus of Soybean in Iowa Based Upon Spatial Distribution*** (authors E. Byamukama, A. Robertson, and F.W. Nutter, Jr.).
  - \*2007 Group Leader for the Midwestern Regional Space Grant Consortium Meeting held 6-7 September, Purdue University, Lafayette, IN. Output: ***Developed a White Paper Upon Which a Region-Wide Remote Sensing Project/Program/Proposal was Based.***
  - \*2006 Seminar/Workshop Training for Enumerators collecting soybean samples for the National Agricultural Statistics Service (NASS) that is part of the Iowa Soybean Disease Survey, 14 November, Ankeny, IA.
  - \*2006 Seminar/Research Presentation to scientists at Pioneer Hi-Bred International, Inc. on 15 December, Johnston, Iowa. Title: ***“Integration of Remote Sensing, GPS, and GIS Technologies for Monitoring Plant Disease Epidemics”.***
  - \*2005 Training workshop for the Directors and Enumerators Participating in the 2005 National Agricultural Statistics Service (NASS) Soybean Disease Survey, 8 July, Urbandale, IA.

- 2005 Participant, Lidar Workshop, Mid-America GIS Consortium (MAGIC) and the US Geological Survey, 17-18 August, Sioux Falls, SD.
- \*2005 Presentation to the National Agricultural Statistics Service (NASS), 17 November, Urbandale, Iowa. Title: *“Results for the 2005 Iowa Soybean Disease Survey”*.
- \*2004 Invited Symposium Speaker, the 9<sup>th</sup> Biennial MidAmerica GIS Symposium, 18-22, April 2004, Kansas City, MO. Title: *“The Use of GIS in Plant Biosecurity”*.
- \*2004 Invited Seminar Speaker, Kansas State University, Manhattan, KS. 13 May. Title: *“Assessing the Risk of Moko Disease of Banana in the Amazonas State of Brazil: A GIS Approach”*.
- \*2003 Invited Speaker, Iowa Seed Association 101<sup>st</sup> Annual Consortium, 28-29 October 2003, Ames, IA. Title: *“Countering Agricultural Bioterrorism: Prevention, Detection, and Response”*.
- \*2003 Invited Speaker, Iowa Geographic Information Systems 2003 Conference, June 30-July 2, Ames, IA. Title: *“Risk of Moko Disease of Banana in Periodically Flooded Versus Non-Flooded Plantations”*.
- 2000 Speaker, 10<sup>th</sup> Iowa Space Grant Conference, 1 December, Iowa Valley Community College, Marshalltown, IA. Title: *“Use of Remote Sensing and GIS Technologies to Diagnose and Quantify Plant Stress in Soybean”*.
- 1999 Invited Speaker, Ninth Annual Space Grant Conference, 5 November. University of Northern Iowa, Cedar Falls, IA. Title: *“Use of Remote Sensing to Quantify the Impact of Plant Disease Epidemics on Plant Biomass and Productivity”*.
- \*1997 Invited Seminar Speaker, Department of Plant Pathology, Iowa State University, Ames, Iowa, September 2. Title: *Epidemiological Analysis of the CMV-Lupin Pathosystem in Australia*.
- \*1996 Invited seminar Speaker, Department of Plant Pathology, Iowa State University, Ames, IA, September 24. Title: *“Assessing Crop Health in Time and Space by Measuring Spectral Reflectance.”*
- 1996 Midwest Soybean Conference Research Tour, Computer Demonstration concerning *“The Spread of Soybean Mosaic Virus in Soybeans”*, Iowa State University, August 11, 1996, Ames, IA.
- \*1995 Invited speaker, Ciba Geigy Corn Disease Clinic, June 8. Presentation to corn growers titled *“Computerized Corn Disease Assessment Training Program”*.
- \*1994 Invited lecture, 1994 Iowa State University Plant Science Lecture Series "New Approaches to Plant Pest Resistance". January 13-14, Ames, IA. Presentation Title:



***Gene Deployment Strategies for Virus Resistance in Plants: Assessing Biological Risks vs. Benefits.***

- 1993 Co-discussion leader, 9th Tomato Disease Workshop, December 1-3, Indianapolis, IN. Discussion title "***Disease Forecasting Models/Programs for Tomatoes***".
- \*1988 Georgia Association of Plant Pathologists, Statesboro, GA. Invited speaker. "***Integration and Optimization of Late Leaf spot Disease Control Tactics: Disease Resistance, Fungicides, and Forecasting***".
- \*1987 Tri-State Meeting on Peanut Pest Management, Sponsored by Ermenta, Corp., Tallahassee, FL. Invited speaker on: "***Yield Losses Caused by Cercosporidium personatum***".
- \*1986 Fifth Tri-State Peanut Leaf spot Symposium, SDS Biotech, Eufaula, AL. Invited presentation "***Epidemiology of Late Leaf spot***".
- \*1986 American Peanut Research and Education Society Annual Meeting, Virginia Beach, VA. Invited participant in a discussion session titled: "***Foliar Disease Assessment Methods***".
- \*1985 Georgia Association of Plant Pathologists, Savannah, GA. Invited Speaker on "***Remote Sensing Versus Visual Assessment Methods for Estimating Crop Losses***".

---

**INVITED TEACHING PRESENTATIONS AND GUEST LECTURES (\*):**

- \*2012 Guest Lecturer for Microbiology 110 (Orientation in Microbiology). Title: Biosecurity, Food Safety and Plant Disease Epidemiology.
- \*2011 Guest Lecturer for Microbiology 110 (Orientation in Microbiology). Title: Biosecurity, Food Safety and Plant Disease Epidemiology.
- \*2010 Guest Lecturer for Microbiology 110 (Orientation in Microbiology). Title: Biosecurity, Food Safety and Plant Disease Epidemiology.
- \*2008 College of Agriculture and Life Sciences Visiting Professor Program, Science of Special Education, Walnut Creek High School Campus, West Des Moines, IA. Topic: "***Crop Biosecurity and Food Safety Research.***"
- \*2007 Guest Lecturer for course in Community and Regional Planning (CRP 422/522), Iowa State University, Spring semester on the "***Use of GPS, GPS, and Remote Sensing Technologies for Crop Biosecurity.***"
- \*2006 Guest Lecturer for Microbiology 110 (Orientation in Microbiology). Title: Biosecurity, Food Safety and Plant Disease Epidemiology.

- \*2005 Guest Lecturer for Microbiology 110 (Orientation in Microbiology). Title: Biosecurity, Food Safety and Plant Disease Epidemiology.
- \*2001 ISU Visiting Professor Program, Guest lecture for four biology classes, February 2002, Spencer, Iowa. Lecture title: “*Temporal and Spatial Analyses of Plant disease Epidemics*”.
- 2000 Brown Bag Seminar Presentation, May 18, 2000. Department of Plant Pathology, Iowa State University. Topic: "The Weber-Fechner Law Revisited".
- 1998 Presented a workshop (two sessions) at the 1998 Integrated Crop Management Conference, 17-18 November, Ames, Iowa. Workshop titled: “Impact and Importance of Foliar Diseases of Alfalfa in Iowa”.
- \*1997 ISU Visiting Professor Program, Hosted students from Ankeny High School, February 3. Lecture and computer modeling demonstration.
- \*1996 ISU Visiting Professor Program, Guest lecturer, All Des Moines Area High School Central Campus, Des Moines, Iowa, November 25.
- \*1995 Brown Bag Seminar Presentation, March 1995, Department of Plant Pathology, Iowa State University. Topic: "*Use of Geographical Information Systems Applied to the Iowa Corn Disease Database*".
- \*1995 ISU Visiting Professor Program, Guest lecturer, North High School, Des Moines, Iowa, May 4.
- \*1994 ISU Visiting Professor Program, Guest lecturer, Valley High School, October 19, West Des Moines, IA.

**TEACHING SOFTWARE PROGRAMS MARKETED/DISTRIBUTED:**

**Nutter, F.W., Jr.**, Streit, A., and Eggenberger, S.K. 2011. Defoliation.Pro, for quantifying defoliation caused by insect pests.

**Nutter, F. W., Jr.**, Streit, A. J., and Eggenberger, S. K. 2010. **PRECISION.PRO**, software for quantifying intra-rater reliability and inter-rater repeatability.

**Nutter, F. W., Jr.**, and Streit, A. J. 2010. **SEVERITY.PRO**, a computerized disease assessment training program for assessing foliar diseases of crops. **Revised 2012.**

**Nutter, F.W., Jr.** and Streit, A. 2010. **GRAPE, PRO**, a computerized dircare assessment program for disrauses of grape.

**Nutter, F. W., Jr.** and Zhang Xin. 2002. **SEVERITY.PRO** - a generic computerized disease assessment training and standard area diagram program (JAVA version).

**Nutter, F. W., Jr.** and Litwiller, D. 1998. **SEVERITY.PRO** - a generic computerized disease assessment training and color standard area diagram program (Basic version).

**Nutter, F. W., Jr.** and Litwiller, D. 1993. **ALFALFA.PRO** - a computerized disease assessment training program for foliar diseases of alfalfa (marketed by Gempler's Inc., Mt. Horeb, Wisconsin). **Revised 2010.**

**Nutter, F. W., Jr.** and Litwiller, D. 1993. **CORN.PRO** - a computerized disease assessment training program for foliar diseases of corn (maize) (marketed by Gempler's Inc., Mt. Horeb, Wisconsin). **Revised 2010.**

**Nutter, F.W., Jr.** 1997. Disease severity assessment training. Pages 1-7 in: Exercises in Plant Disease Epidemiology, L.J. Francl and D.A. Neher, eds. APS Press, St. Paul, MN.

**Nutter, F.W., Jr.,** Parker, S.K., and Eggenberger, S.K. 1997. Fitting disease progress curves using EPIMODEL. Pages 24-28 in: "Exercises in Plant Disease Epidemiology, L.J. Francl and D.A. Neher, eds. APS Press, St. Paul, MN.

**Nutter, F. W., Jr.** and Worawitlikit, A. 1990. **EPIMODEL**: A computer program to teach principles of modeling pathogen population growth and analysis (Published and marketed by APS Press, St. Paul, Minnesota). **Revised 2012.**

**Nutter, F. W., Jr.** 1990. **BARLEY.PRO** - a computerized disease assessment training program for diseases of smaller grains (Marketed by Gempler's Inc., Mt. Horeb, Wisconsin). **Revised 2010.**

**Nutter, F. W., Jr.** and Worawitlikit, A. 1989. **DISEASE.PRO** - a computerized disease assessment training program to improve accuracy and precision of disease assessments (marketed by Gempler's Inc., Mt. Horeb, Wisconsin). **Revised 2012.**

---

#### **SPECIAL SESSIONS ORGANIZED (WORKSHOPS, COLLOQUIA, SYMPOSIA):**

- 2014 Currently Organizing the 14<sup>th</sup> I.E. Melhus Graduate Student Symposium title "*New Contributions to Plant Disease Epidemiology and Crop Health*".
- 2013 Organized and co-taught a workshop at the 2013 Annual Meeting of the American Phytopathological Society, 10 August titled "*Sampling Terms, Concepts, and Best Practices for Plant Pathologists*".
- 2011 Organized and moderated the 11<sup>th</sup> I. E. Melhus Graduate Symposium titled "*Today's students making a difference in plant disease epidemiology and disease management*". Annual meeting of the American Phytopathological Society, 9 August, Honolulu, Hawaii.
- 2009 Organized and moderated a symposium titled "*Potential Crop Biosecurity Risks That Threaten Agriculture in the North Central Region: Staying Ahead of the*

- Curve*". Annual Meeting of the APS North Central Division, 21-23 June, Ames, IA.
- 2009 Taught a Disease Assessment Training Workshop at the Annual Meeting of the APS North Central Division, 21-23 June, Ames, IA.
- 2008 Co-organized a symposium titled "***Impact of Plant Virus Epidemiology: Past, Present and Future***". Centennial Meeting of the American Phytopathological Society, 26-30 July, Minneapolis, MN.
- 2007 Organized the 8<sup>th</sup> ***I. E. Melhus Graduate Student Symposium: "Forty-Five Years After van der Plank: New Visions for the Future of Plant Disease Epidemiology"***, held 26-30 July, the APS Annual Meeting, American Phytopathological Society, Minneapolis, Minnesota. I was responsible for planning this symposium, including writing a proposal on behalf the APS Epidemiology Committee to obtain funding (\$2,000) from the APS Foundation to provide \$500 Awards to each of four graduate students. Graduate students were competitively selected by a distinguished panel of experts that I convened to serve as judges. Served as ad hoc editor to publish this symposium in *Plant Health Progress* in 2010 and also helped to publish two earlier I.E. Melhus Symposia (one in Phytopathology and one in Plant Health Progress).
- 2007 Organized and moderated a symposium titled "***Addressing Today's Critical Issues in Disease/Pathogen Assessment***", held during the Annual Meeting of the American Phytopathological Society, 28 July-2 August, San Diego, CA. Presentation titles: (1) ***Introduction: "Addressing Today's Critical Issues in Pathogen Disease Assessment"***, and (2) ***To Honor Horsfall-Barrett and Repeal Their Scale***".
- 2007 Organizer and Moderator for a symposium titled "***Model Validation: What Comes Under the Umbrella of Validation Concepts for Pathogen/Disease Detection and Forecasting Models?***" held during the American Phytopathological Society, 28 July – August 2, San Diego, CA. Titles: ***Model Validation: What Comes Under the Umbrella of Validation Concepts for Pathogen/Disease Detection and Forecasting Models?***".
- 2005 Organized the 5<sup>th</sup> ***I. E. Melhus Graduate Student Symposium: Today's Student Preparing to Meet Tomorrow's Challenges in Epidemiology and Disease Management*** that was held at the APS Annual Meeting in Austin, Texas. I was responsible for planning this symposium, including: A proposal to the APS Epidemiology Committee, obtaining funding (\$3,000) from the APS Foundation to provide \$600 Awards to each of six graduate students (out of 19 nominees) who were competitively chosen by a distinguished panel of experts I convened who served as judges. I also served as Editor to publish these six papers in *Plant Health Progress* (In Press).

- 2004 Organized a symposium for the 2004 Annual Meeting of the American Phytopathological Society, 31 July-4 August, Anaheim, CA. Symposium title: ***The Plant Pathologists Toolkit for Responding to Crop Biosecurity Threats.***
- 2003 Organized and co-taught, ***The Roy E. Gaunt Memorial Workshop on Disease and Crop Loss Assessment***, 1-2 February, Lincoln University, New Zealand (Pre-Congress Workshop for the 8<sup>th</sup> International Congress of Plant Pathology, Christchurch, NZ).
- 2003 Co-organizer, Symposium titled: ***“Application of Ecological, Molecular, and Epidemiological Models for Risk Assessment of Biotechnology Products”***. Annual Meeting of the American Phytopathological Society, 9-13 August, Charlotte, NC.
- 2001 Organizer and Presider, ***2<sup>nd</sup> Melhus Graduate Student Symposium***, Annual Meeting of the American Phytopathological Society, 25-29 August, Salt Lake City, Utah.
- 2000 Organizing Program Committee, Second International Conference on Geospatial Information in Agriculture and Forestry, 10-12 January 2000, Lake Buena Vista, FL.
- 2000 Co-organized the ***1<sup>st</sup> I.E. Melhus Graduate Student Competition Symposium*** for the APS Annual Meeting. The symposium was titled ***“Graduate Student Contributions to Plant Disease Epidemiology”***, Annual Meeting of the American Phytopathological Society, Montreal, Canada.
- \*1997 Organized and participated in a symposium titled ***“Epidemiological Concepts in Human, Veterinary, and Botanical Pathosystems”*** for the Annual Meeting of the American Phytopathological Society, August 10, Rochester, NY.
- \*1996 Co-organizer, Discussion Session Sponsored by the Plant Disease Losses Committee, American Phytopathological Society (APS) Annual Meeting, July 29, Indianapolis, Indiana. Discussion Topic: ***Assessing Disease at Different Scales - Toward Regional Disease Assessment.***
- 1996 Co-organizer, ***“Graduate Student Contributions to Plant Disease Epidemiology”***, Epidemiology Committee, American Phytopathological Society, Indianapolis, IN.
- \*1995 Organized a Colloquium sponsored by the Plant Disease Losses Committee, for the 1995 Annual Meeting of the American Phytopathological Society titled ***“Facing the Issues Concerning Plant Disease Losses: Is Quantitative Crop Loss Information Relevant to Today’s Science ?”***, August 16, Pittsburgh, PA.
- \*1995 Organized and co-taught the ***“Roy E. Gaunt Memorial Workshop on Disease and Crop Loss Assessment”***, 8<sup>th</sup> International Congress of Plant Pathology, 2-7 February, Christ Church, New Zealand.

- \*1994 Organized a meeting of members of an "International Steering Committee on Global Estimates of Crop Losses", 25-26 February, Charleston, SC.
  - \*1994 Organized and participated in a discussion session sponsored by the APS Epidemiological Committee titled "*Impact of Epidemiology on Production Agriculture: Success, Roadblocks, and Future Opportunities*". Annual Meeting of the American Phytopathological Society, August 6-10, Albuquerque, NM.
  - 1993 Co-Moderator and Discussion Leader, Discussion Session on "*Virus and Viroid Epidemiology*", 6th International Congress of Plant Pathology, July 28 - August 6, Montreal, Canada.
  - \*1993 Colloquium Co-organizer, "*Graduate Student Contributions to Plant Disease Epidemiology*", Epidemiology Committee, American Phytopathological Society, November 6-10, Nashville, TN.
  - \*1988 Organized and participated in a symposium titled "*Assessing the Socioeconomic, Ecological, and Scientific Effects of Agricultural Biotechnology*" for the Annual Meeting of the American Phytopathological Society, San Diego, CA. (I was also responsible for organizing the symposium as well as collecting and editing the six papers presented during the symposium for publication in *Phytopathology*).
  - \*1987 Organized a Workshop Titled "*Workshop on Multispectral Radiometry*", March 22-24, Univ. of Georgia, Athens, GA.
- 

#### **PHOTO CREDITS:**

APSnet "Images of the Week". Potato late blight images of sporangia, zoospores, germinating zoospores, and diseased leaves and tubers (introduction plus seven images). July 1999, 4 pages.

Cover Plant Disease Vol. 79 (Dec.), 1995 (Fire blight of Pear)

Cover Plant Disease Vol. 78 (July), 1994 (*Cercosporidium personatum*)

Cover Plant Disease Vol. 65 (Nov.), 1991 (*Phytophthora infestans*)

Epidemiology and Disease Management, 1990 (Text book), Wiley Interscience, page 120.

#### **OTHER CONTRIBUTIONS TO TEACHING PROGRAMS:**

Served as a mentor for the Iowa State University Science with Practice Program.

Served as a mentor for the Department of Energy - Iowa State University Science Undergraduate Laboratory (summer) Internship (SULI) program.

Served as a mentor for Women in Science and Engineering Program at Iowa State University (16 interns).

Served as a mentor in the ISU College of Agriculture George Washington Carver Minority Internship Program (11 interns).

Served as a mentor for the ISU Office of Global Agricultural Programs Summer Internship Program (2002, 2003).

Advise graduate students concerning statistics and planning investigations (1984 to present).

Served as a mentor for the ISU Iowa Space Grant Consortium Summer Undergraduate Research Scholarship Program (1995, 1998, 1999, 2000).

Participated in the ISU College of Agriculture Visiting Professor Program (1994-Present).

Participated in the ISU Sciences in Agriculture Day for visiting high school students, 1991-1999.

Served as a mentor for the ISU Howard Hughes Research Assistantships Program in the Biological Sciences Program (Summer 1994 and one in 2009).

Served as a mentor for students in the Iowa State University Freshman Honors Program (one in 1994, two in 1995, one in 1997, one in 2008).

Directed undergraduate students in the ISU Undergraduate Research Assistantship Program [1991, 1993, 1994, 1995, 1996, 1997, 1998, 1999 (2), 2000 (2), 2006 (2), 2007 (2), 2008 (1), 2009 (2), 2010 (2), 2011 (1), 2012 (1)].

Participated in the Minority Development in Agriculture Program by hosting undergraduate minority students for six weeks (1991 and 1992).

Developed a computer program (EPIVIRUS) to teach students how to quantify temporal and spatial aspects of plant virus epidemics.

---

#### **SERVICE TO APS AND OTHER ON PROFESSIONAL SOCIETY COMMITTEES:**

Member/Advisory, US Department of Homeland Security Agricultural Risk Modeling Committee, Washington DC (2011 to present).

Member, National Plant Disease Recovery System (NPDRS), USDA and APS Special Committee (2010 to present).

President, North Central Division of the American Phytopathological Society, 2008-2009.

North Central Division Councilor, American Phytopathological Society, 1999-2002.

Scientific Programs Board, Section Chair for Disease Management, American Phytopathological Society, 1999-2002.

Crop Loss and Risk Evaluation Committee, American Phytopathological Society 1991-Present; Chair 2006; Acting Chair 2003; Chair 2000; Chair 1995-1996; (Formerly APS Crop Loss Committee).

APS Plant Pathologists Forensics Interest Group; 2006 – present.

Epidemiology Committee Member, American Phytopathological Society (1997 to present, Chair 2004).

Emerging Diseases and Pathogens Committee, American Phytopathological Society (Member 2002-present).

USDA/APS Advisory Committee on Threatening Plant Diseases.

APS Biotechnology Risk Assessment Committee (Member 2002-2005).

Crop Bioterrorism Committee Member, American Phytopathological Society/USDA-APHIS Ad Hoc Committee (2002-2005).

Ad Hoc Committee Member, North Central Division, American Phytopathological Society on Developing Guidelines on How to Increase Attendance and Participation in Division Meetings (Developed the first APS Division Travel Awards Program).

Governance (Ad Hoc) Committee of the American Phytopathological Society charged with revising the governance structure of APS (2002).

APS Governance Questionnaire Ad Hoc Committee, (2002 – 2003).

Branding Committee, American Phytopathological Society charged with developing a logo for APS (2001).

APS Meeting Site Selection Committee, 2000-2001.

#### **GRANTS AND CONTRACTS RECEIVED (\$12,168,202 Total)**

<u>Date</u>	<u>Proposal Title</u>	<u>Submitted to</u>	<u>Amount</u>	<u>Prin./</u>	<u>Coop.</u>
2012	Use of Novel Precision Agriculture-based Technologies to Provide Cost-Effective Sustainable Solutions for the Management of Soil-borne	ISU HRI Pursuit Program	88,000	Project Leader	



Pathogens that Threaten US Agriculture				
2012	Shielding Cucurbit Crops for Resilient Agroecosystems	USDA-NIFA-SCRI Program	\$1,552,807	Co-PI with Mark Gleason and others
2011	Towards Integrated Management of <i>bean pod mottle virus</i> and the Prediction of its Insect Vectors	Iowa Soybean Association	\$202,438	Project Leader
2011	Sustainable Systems for Cucurbit Crops on Organic Farms	USDA Organic Agriculture Research and Extension Program	\$1,047,024	Co-Principle Investigator with Mark Gleason
2011	Developing U.S. Capability to Detect and Accurately Identify Threatening Plant Pathogens: A Remote Sensing, GPS, GIS Approach	United States Department of Homeland Security	\$1,126,563	Project Leader
2011	Comparison of the U.S. Versus Canadian Eradication Programs for Plum Pox of Stone fruit: a GIS Approach	USDA Economic Research Service	\$77,500	Project Leader
2011	North Central Region Weather Working Group	North Central Region Integrated Pest Management Center	\$30,000	Co-Project Leader with Mark Gleason
2010	Towards Integrated Management of <i>Bean pod mottle virus</i> and the Prediction of the Winter Survival of its Insect Vectors, Bean Leaf Beetle and Japanese Beetle	Iowa Soybean Association	\$101,219 (Year 2)	Project Leader
2010	Safeguarding American Agriculture from New and Emerging Diseases and Pests	NRI-USDA Plant Biosecurity	900,000	Project Leader
2009	Sustainable Systems for Cucurbit Crops on Organic Farms	CSREES-USDA	\$1,047,024	Co-Prin. with Gleason, Lewis, Jesse, Batzer, and Correia
2009	Towards Integrated Management of <i>Bean pod mottle virus</i> and the Prediction of the Winter Survival	Iowa Soybean Association	\$101,219 (Year 1)	Project Leader

	of its Insect Vectors, Bean Leaf Beetle and Japanese Beetle			
2009	Quantifying the Effect of Mixed Virus Infection on <i>Bean Pod Mottle Virus</i> Movement and Severity	Iowa State University Honors Program for Undergraduate Research	\$250	Prin.
2009	North Central Region Weather Working Group	North Central Region Integrated Pest Management Center	\$30,000	Co-Project Leader
2008	North Central Region Weather Working Group	North Central Region Integrated Pest Management Center	\$30,000	Co-Project Leader
2008	Financial Committee to obtain financial support from private industry donors to support the 2009 Annual Meeting of the American Phytopathological Society North Central Division Meeting	Various Private Industry Corporations	\$29,000	Coordinator
2008	Developing U.S. Capability to Detect and Accurately Identify Threatening Plant Pathogens: A Remote Sensing, GPS, GIS Approach	United States Department of Homeland Security	\$1,126,563	Project Leader
2008	Quantifying the Impact of Time of <i>Bean Pod Mottle Virus</i> Infection on Soybean Yield and Quality, and Identification of Seasonal and Farm-Level Risk Factors to Improve Soybean Yields.	Iowa Soybean Association	\$42,202	Project Leader
2008	Development of a North Central IPM Weather Group	North Central Region IPM Program	\$30,000	Co-Prin. with Mark Gleason
2008	Stewart's Disease of Seed Corn – Deliberate vs. Natural Introductions	ISU Institute for Food Safety and Security	\$10,380	Project Leader
2007	Strategies for Management of Anthracnose Fruit Rot of Strawberry	USDA/CREES	\$95,646	Co-Prin. with Mark Gleason

2007	Travel Grant to be keynote speaker at the 10th Plant Virus Epidemiology Symposium, 15-19 October, ICRISAT, Hyberabad, India.	ISU Foreign Travel Grant, Faculty Senate Committee on Recognition and Development.	\$713.25	Project Leader
2007	Student Assistantship Program for Khalil Ahmad to present a poster at the ESRI GIS Annual Meeting, Denver, Colorado	ESRI	\$1,000	Project Leader
2007	Quantifying the Density of Pathogen Spores Escaping Diseased Plant Canopies Using Remotely-Automated Rotorod Spore Traps Mounted on a Helium Balloon Platform.	ISU Institute for Food Safety and Security, Supplemental Equipment Grant	\$8,580	Project Leader
2007	Epidemiology of the Bacterial Wilt/Cucumber Beetle Pathosystem	North Central Region IPM Special Grants	\$119,000	Co-Prin. with Mark Gleason
2007	Comparison of the U.S. Versus Canadian Eradication Programs for Plum Pox of Stone Fruit: a GIS Approach	USDA Economic Research Service	\$77,500	Project Leader
2007	Quantifying the Temporal and Spatial Spread of Bean Pod Mottle Virus and to Identify Site Risk Factors to Improve BPMV Management and Soybean Yield	Iowa Soybean Association	\$90,000	Project Leader
2007	Bean Pod Mottle Virus Introductions to Quantify Temporal and Spatial Patterns	ISU Institute for Food Safety and Security	\$6,599	Project Leader
2006	Teaching Fellowship to Support training a South African scientist concerning the epidemiology of Asian soybean rust	USDA Cochran Fellowship	\$7,027	Project Leader
2006	Frank L. Howard Undergraduate Research Award to Jana Stedman	APS Foundation	\$1,000	Co-Prin. with Alison Robertson
2006	Epidemiology of Bean Pod	Syngenta Crop	\$4,000	Project Leader

	Mottle Virus in Soybean	Protection		
2005	Safeguarding American Agriculture from New and Emerging Diseases and Pests	NRI-USDA Plant Biosecurity	\$900,000	Project Leader
2005	Development of an Indications and Warning System for Threatening Plant Pathogens: A Remote Sensing, GPS, and GIS Approach.	Department of Defense, US Department of the Army Medication Research Center (TATRC)	\$100,000	Project Leader
2005	Travel Support for Dr. Niederhauser, Plant Pathology Faculty Retreat	Pioneer Hi-Bred International	\$1,000	Project Leader
2005	New Strategies for Management of Anthracnose Fruit Rot of Strawberry.	UDSA/CREES	\$95,646	Co-Prin.
2005	Survey of Soybean Diseases in Iowa	Iowa Soybean Association	\$123,839	Co-Prin.
2005	Survey of Soybean Diseases and Insects in Iowa.	Department of Agriculture and Land Stewardship (IDALS)	\$10,000	Co-Prin.
2005	A PCR-based assay for detection of Colletotrichum accutatum on strawberry.	USDA-North Central Integrated Pest Management Program	\$95,000	Co-Prin.
2005	A PCR-based assay for detection of Colletotrichum accutatum.	North American Strawberry Growers	\$5,000	Co-Prin.
2004	Mini Seminar Series on Crop and Food Biosafety	Plant Sciences Institute, ISU College of Agriculture	\$1,600	Project Leader
2004	Epidemiology of Stewart's Disease	Syngenta	\$1,000	Project Leader
2003	Forecasting Stewart's Disease	Syngenta	\$3,000	Project Leader
2002	Forecasting Stewart's Disease	Syngenta and Gustafson	\$6,500	Project Leader

2002	Predicting Stewart's Disease of Corn Using GIS	Pioneer Hi-Bred, Monsanto, and Syngenta	\$24,000	Project Leader
2002	Screening Biological Control Agents Against Anthracnose Fruit Rot	North American Strawberry Growers Association	\$4,470	Co-Prin
2001	Forecasting Stewart's Disease	Syngenta and Gustafson	\$4,000	Project Leader
2001	Integrated Management of the Corn Flea Beetle - Stewart's Disease of Corn Pathosystem: A GIS and Web-based Approach	NC-IPM, CSREES, USDA	\$100,000	Project Leader
2001	Predicting Stewart's Disease of Corn Using GIS	Pioneer Hi-Bred, GARST Seeds, Monsanto, and Syngenta	\$27,000	Project Leader
2000	Forecasting Stewart's Disease	Novartis and Gustafson	\$5,000	Project Leader
2000	Integrating Biologically Rational Strategies for Control of Anthracnose Fruit Rot	Leopold Center For Sust. Agric.	\$51,000	Co-Prin
2000	Use of Remote Sensing and GIS to Detect and Quantify Disease Stress in Soybean	NASA/Iowa Space Grant Consortium	\$30,000	Project Leader
2000	Use of Remote Sensing Data to Diagnose Soybean Yield-Limiting Factors.	North Central Soybean Research Program	\$50,000	Co-Prin.
2000	Reducing Pesticide Use on Apples	EPA	\$40,000	Co-Prin
2000	Implementing New Tactics for Apple IPM in the FQPA Era	USDA Crops at Risk Program	\$306,000	Co-Prin
1999	Development of Effective Pythium Blight Control Strategies in the Presence Of Metalaxyl Resistance	Iowa Turfgrass Inst. Iowa Prof. Lawn Care, AgrEvo, and Novartis	\$40,000	Co-Prin

1999	Forecasting Stewart's Disease	Novartis, Gustafson, and GARST	\$3,500	Project Leader
1999	Improving the Accuracy of Predicting Stewart's Disease of Corn in the U. S. Corn Belt: A Geographic Information Systems Approach	DeKalb Genetics, Novartis Plant Protection Pioneer Hi-bred, International and the ISU Center for Advanced Technology Development	\$37,500	Project Leader
1999	Reducing Pesticide Use and Accelerating IPM Implementation	USDA, NC-IPM, and EPA	\$105,000	Co-Prin
1999	Use of Remote Sensing to Quantify the Impact of Plant Disease Epidemics on Plant Biomass and Productivity	NASA/Iowa Space Grant Consortium	\$24,500	Project Leader
1999	Using Site-Specific Weather Data Simulation	USDA IPM	\$65,826	Co-Prin. (Gleason PI)
1998	Characterizing Resistance of Transgenic Soybeans to Soybean Mosaic Virus	Pioneer Hi-Bred and CATD	\$16,000	Co-Prin
1998	Development of Transgenic Plant Resistance That Reduces the Rate of Plant Virus Epidemics: A New Approach	USDA North Central Regional Biotechnology Grants Program	\$138,800	Prin (Hill Co-Prin)
1998	Effect of Alfalfa Leaf Lignin Content on Diseases and Pests	AgriPro and CATD	\$2,588	Project Leader
1998	Improving the Accuracy of Predicting Stewart's Disease of Corn in the U. S. Corn Belt: A Geographic Information Systems Approach	DeKalb Genetics, Novartis Plant Protection Pioneer Hi-bred, International and the ISU Center for Advanced Technology Development	\$37,100	Project Leader
1998	Use of Remote Sensing to Quantify the Impact of Plant Disease Epidemics on Plant	NASA/Iowa Space Grant Consortium	\$30,000	Project Leader

Biomass and Productivity

1998	Using Site-Specific Weather Data Simulation	USDA IPM	\$24,000	Co-Prin (Gleason Prin)
1997	Characterization of Coat Protein-Mediated Resistance	Pioneer Hi-Bred/CATD	\$18,000	Co-Prin (Hill)
1997	Epidemiology and Risk/Benefits of Biocontrol in Alfalfa	Am. Aggregates, Inc.	\$1,750	Project Leader
1997	Predicting Soybean Cyst Nematode Egg Hatch	Iowa Soybean Promotion Board	\$54,888 (128,898 /3 yrs)	Prin. (Tylka, Batchelor, Co-PI's)
1997	Radiometric Assessment: A Better Way	Iowa Turfgrass Institute	\$2,092	Co-Prin (Gleason)
1997	Reflectance Measurements to Quantify the Impact of Foliar Epidemics	NASA Iowa Space Consortium	\$10,000	Project Leader
1997	Risk Assessment of Alfalfa Lines Selected for Increased Digestibility to Diseases and Pests	Freshman Honors Program	\$200	Project Leader
1997	Using Site-Specific Using Site-Specific Weather Data	USDA North Central IPM	\$24,000	Co-Prin (Gleason others)
1996	Epidemiology and Risk/Benefits of EcoMin in Corn and Soybeans	Am. Aggregates, Inc.	\$12,500	Project Leader
1996	Risk/Benefit Analysis of Biological Control in Alfalfa	Eden BioSciences	\$2,500	Project Leader
1996	Visiting Senior Fellow Epidemiology and Disease Management of Plant Viruses in Grain/Pasture Legumes	Grains Res. and Develop. Corp. (Australia)	\$12,000	Project Leader
1995	Benefits Assessment for Fungicide Usage in Alfalfa (Multistate: IA, OH, VT, WI)	USDA North Central Pest. Impact Assess. Program (total project was \$256,000)	(Leader of four state project for \$259,000 for 3 yrs.)	Prin. (Munkvold Co-PI in Iowa)
1995	Components of Aggressiveness	Freshman Mentor	\$180	Project Leader

		Grant-ISU		
1995	Development of a Multipurpose Disease Assessment Training Software Program	E.I. DuPont	\$9,994	Project Leader
1995	Disease Assessment Training Programs	Ciba Crop Protection	\$2,500	Project Leader
1995	Disease Assessment Training Programs	Ag. Chem. Ind.	\$3,500	Project Leader
1995	Disease Forecasting Research	Neogen Corp	\$1,500	Project Leader
1995	Epidemiology and Management of Alfalfa Diseases	Leopold for Sustainable Center Agriculture	\$50,000 (13,000 for P.I.P)	Project Leader
1995	Predicting Soybean Cyst Nematode Egg Hatch	Iowa Soybean Promotion Board	\$36,576 (\$128,898 for 3 yrs)	Project Leader (Tylka, Batchelor, Co-PI's)
1995	Summer Undergraduate Research Scholarship	Iowa Space Grant Consortium	\$2,100	Project Leader
1995	Training Programs to Improve Accuracy and Precision of Disease Estimates	Freshman Mentor Grant-ISU	\$155	Project Leader
1994	Alfalfa-Lignin Project	ABI Alfalfa	\$500	Project Leader
1994	Disease Forecasting Research	Neogen Corp.	\$1,500	Project Leader
1994	Freshman Honors Program	Iowa State Univ.	\$175	Project Leader
1994	Improving Tomato Seed Testing for Bacterial Canker	Heinz	\$50,000	Co-Prin
1994	Res. Assist. in Biol. Res. Sci.	ISU RABS Prog.	\$300	Project Leader
1994	Soybean Mosaic Virus	Pioneer - CATD	\$60,000	Project Leader
1994	Travel Award for Graduate Student	North American Alfalfa Improvement Committee	\$350	Project Leader
1993	Disease Forecasting Research	Neogen Corp.	\$1,500	Project Leader
1993	Epidemiology Research	Miles, Inc.	\$500	Project Leader



1992	Benefits Assessment of Chlorothalonil in Seed Corn Production	UDSA, NCR, PIAP	\$46,050	Co-Prin. Nutter Martinson
1992	Development of a Global Crop Loss Database	USDA-CSRS Special Grant	\$10,000	Project Leader
1992	Disease Forecasting Research	Neogen Corp.	\$1,500	Project Leader
1992	GIS Corn Disease Database	ICI-GARST	\$1,000	Project Leader
1992	IPM Network Partnership	ES-USDA	\$17,500	Co-Prin. (Gleason)
1992	Inclusion of Digitized Images in Instructional Delivery Systems	USDA Higher Educ. Challenge Grant	\$71,431 (Vet.Sci.)	1 of 10 Co-Prin.
1992	Models to Estimate the Duration of Wetness Periods	ISU-Carver Trust Grants	\$13,808	Co-Prin. (Gleason)
1992	Quantification of Rate Reducing Resistance to SMV in soybeans	Iowa Soybean Promotion Board	\$28,436	Project Leader
1992	TOM-CAST Disease Forecasting Program	Fremont Pickle and Tomato Growers Assoc.	\$1,589	Co-Prin. (Gleason)
1992	Travel Grant: Fifth Intern. Symposium on Plant Virus Epidemiology	ISU Foreign Travel Grants Program	\$695	Project Leader
1991	Epidemiology and Management of Alfalfa Diseases	Leopold Center for Sustainable Agriculture	\$200,000	Co-Prin.
1991	Epidemiology and Management of Gray Leaf spot of Corn	Pioneer Hi-Bred International	\$60,000	Project Leader
1991	Minority Development in Agriculture Prog.	USDA-CSRS, I.S.U.	\$1,000	Project Leader
1991	Quantification of Rate- Reducing Resistance to SMV in Soybean	Iowa Soybean Promotion Board	\$24,713	Project Leader
1991	Travel Grant: Systems Approaches for Agricultural Development, Bangkok, Thailand	ISU Foreign Travel Grant Program	\$1,187	Award

1990	Development and Evaluation of a Forecasting Model for Late Leaf spot	National Peanut Council	\$3,000	Project Leader
1990	Development of a Global Crop Loss Data Base	USDA/CSRS Special Grants	\$15,000	Project Leader
1990	Epidemiology/Disease Components Research Equipment Grants	Iowa Agriculture Experiment Station	\$6,320	Project Leader
1990	Evaluation of a Temp.- Leaf Wetness Duration Model to Schedule Late Leaf spot Fungicide Applications	Georgia Peanut Commodity Commission	\$2,000	Project Leader
1990	Forecasting Late Leaf spot	Mobay Chem. Corp.	\$1,000	Project Leader
1990	Forecasting Late Leaf spot	Neogen Corp.	\$3,000	Project Leader
1990	Forecasting Plant Diseases	Univ. of Georgia Fermenta Plant Prot.	\$2,500	Project Leader
1990	Fungicides Used in Conjunction with Disease Forecasting to Control Late Leaf spot	Fermenta Plant Protection	\$4,500	Project Leader
1990	Mathematical Modeling of Plant Disease Epidemics	I.S.U. Undergrad. Res. Asst. Prog.	\$1,575	Project Leader
1990	Quantification of Epidemiological Components in the TEV/Pepper Pathosystem	Univ. of Georgia USDA/IPM	\$7,340	Project Leader
1989	Disease Pro: A Computer-aided Disease Assessment Training Program	Chemical Companies	\$8,000	Project Leader
1989	Development of Cost- Effective Leaf spot Control Programs for Resistant and Susceptible Genotypes	Georgia Peanut Commodity Commission	\$4,000	Project Leader
1989	Disease Forecasting to Control Late Leaf spot	Sandoz Corp.	\$750	Project Leader
1989	Epidemiological Components in the Bell Pepper/TEV	USDA Southern Regional IPM Grant	\$72,140	Project Leader

	Pathosystem that Contribute to Rate- Reducing Resistance	Program		
1989	Forecasting Late Leaf spot of Peanut	Neogen Corp.	\$5,600	Project Leader
1989	Travel Award to National IPM Symposium/Workshop Las Vegas, Nevada	Southern Regional IPM Grants Committee	\$400	Project Leader
1988	Development of Cost- Effective Leaf spot Control Programs	Georgia Peanut Commodity Commission	\$10,000	Project Leader
1988	Development of a model to forecast late leaf spot of peanut	Neogen Food Corp.	\$8,550	Project Leader
1988	Genesis Teaching Award	American Phytopathological Society Foundation	\$1,500	Award
1988	Graduate Research Support for Remote Sensing and Crop Loss Assessment Project	Saudi Arabian Educational Council	\$8,100	Project Leader
1988	Integrating fungicides with a disease forecasting system	Chemical Companies	\$6,750	Project Leader
1988	Travel Award to Attend the Fifth Inter. Congress of Plant Protection Kyoto, Japan	American Phyto - pathalogical Soc. (From NSF Award)	\$1,000	Project Leader
1987	Evaluation of GK-7	AgraTech Seed	\$1,000	Project Leader
1987	Forecasting Late Leaf spot	Fermenta Corp.	\$3,000	Project Leader
1987	Forecasting Late Leaf spot	Neogen Corp.	\$2,100	Project Leader
1987	Southern Region IPM Program	USDA	\$68,000	Project Leader
1987	Travel award to teach workshop on Crop Loss Assess. at International Rice Research Institute, Los Banos, Philippines	UGA Research Foundation	\$945	Award
1986	A microprocessor-based system to control leaf-spot pathogens on peanut	Neogen Corp. Lansing, MI	\$114,901	Project Leader

1986	Barley Germplasm Evaluation	USDA-ARS Contract Agreement	\$9,200	Project Leader
1986	Development of an Interactive Computer program to Train Students to Accurately Assess Damage from Agricultural Pests.	UGA Instructional Improvement Grant	\$1,000	Project Leader
1986	Travel Award to participate in the Fifth International Epidemiology Workshop Israel	UGA Research Foundation	\$884	Award
1986	Use of reflectance to predict peanut pod yield and quality	Georgia Peanut Commodity Commission	\$4,000	Project Leader
1985	A pilot study to model crop losses in peanuts using reflectance Data obtained with a handheld, multiband radiometer	UGA Research Foundation	\$8,023	Project Leader
1985	Dev. of a yield prediction model for peanuts	Georgia Peanut Commodity Commission	\$6,000	Project Leader
1985	Estimation of yield loss in pepper caused by tobacco etch virus	Campbell Soup Co.	\$5,000	Project Leader
1985	Peanut Foliar Diseases Commodity Comm.	Georgia Peanut Commodity Commission	\$10,000	Co- Prin.
1985	Radiometer Research	Chemical Companies	\$3,300	Project Leader
1985	TEV-Aphid Research	ICI Americus, Inc.	\$2,200	Project Leader

### Visiting Scientists Hosted:

**Dr. Rosalee Coelho Netto**, Institute for National Research in the Amazon, Brazil, began a one-year sabbatical leave in November 2007 working with my lab ½ time (GPS and GIS mapping tools, and plant disease epidemiology), and with Dr. Gleason's laboratory ½ time working on projects involving biological control.

**Dr. Jean-Noel Aubertot**, INRA, France, visited my laboratory for two weeks in August 2007 to collaborate on research projects concerning disease assessment theory and training programs. Dr. Aubertot taught a lab for PLP 543 on computer-aided training to assess stem diseases.

**Neil van Rij**, visiting scientist from Cedara, South Africa, visited my laboratory for two weeks to collaborate on an Asian soybean rust-satellite detection research project as part of a USDA Cochran Fellowship Award.

**Dr. Dan Jeffers**, February 2005 International Maize-Wheat Improvement Center (CIMMYT). Visited to present a seminar and to collaborate on a project to use GIS to map diseases affecting corn and wheat. Also directed graduate student at ISU training for CIMMYT Mexico projects.

**Dr. Pat Caldwell** (Spring 2005), Plant Pathologist, University of Pietermaritzburg, South Africa. To collaborate further on the epidemiology of Asian soybean rust.

**Eve du Preez** (Summer 2005), University of Pietermaritzburg, South Africa. To collaborate on the epidemiology of Asian soybean rust for her Ph.D. research.

**Dr. Jean-Noel Aubertot** (Summer 2005), INRA, INA, France. To collaborate on a disease assessment training program for Phoma Stemcanker on oilseed rape (canola), one abstract published and one manuscript accepted.

**Francois Strauss**, Oil and Protein Seed Center, Agricultural Research Council, Potchesfroom, South Africa, July 1997

**Dr. Julian Ward**, University of Natal, South Africa, (September 1996 and July 1993)

**Dr. Melville Thomas**, Visiting Professor. International Crop Research Institute for the Semi-Arid Tropics, Mali, West Africa, August 26 - September 16, 1991

**Dr. Roy E. Gaunt**, visiting professor from Lincoln University, Canterbury, New Zealand spent a 5-month sabbatical in my laboratory in 1986

#### **EXTERNAL EXAMINER FOR PH.D DISSERTATIONS:**

External Examiner for Ph.D. candidate, Deanship of Research, Sultan Qaboos University, Muscat, Sultanate of Oman (2012).

Outside Examiner, Ph.D. Dissertation for Ms. Elizabeth Pietrzykowski, University of Tasmania, Hobart, Tasmania, Australia (2007).

External Examiner for Ph.D. Dissertation, Department of Plant Pathology, University of Tasmania, Hobart, Tasmania, Australia (2000).

External examiner for Ph.D. Dissertation, Department of Plant Science, Lincoln University, Canterbury, New Zealand (1998).

External Examiner for Ph.D. Dissertation, School of Agriculture, La Trobe University, Melbourne, Australia (1997).

External examiner for Ph.D. Dissertation, Department of Plant Science, Lincoln University, Canterbury, New Zealand (1993).

**SPECIFIC COURSES TAUGHT:**

**Iowa State University:**

<u>Year/Quarter</u>	<u>Course</u>	<u>Title</u>	<u>Credit Hours</u>
2013	PLP 543	Ecology and Epidemiology of Plant Diseases	4
2011 F	PIP 543	Ecology and Epidemiology of Plant Diseases	4
2010 F	PIP 694	Colloquium: Back to the Future – Plant Diseases Never Die	2
2009 F	PIP 543	Epidemiology of Plant Diseases	4
2008 F, S	PIP 590	Special Topics in Plant Pathology	Variable
2008 F, S	PIP 699	Plant Pathology Research	Variable
2007 F	PIP 543	Epidemiology of Plant Diseases	4
2007 S	PIP 694	Plant Pathology Colloquium	2
2005 F	PIP 543	Epidemiology of Plant Diseases	4
2004 F	PIP 543	Epidemiology of Plant Diseases	4
2004 S	PIP 507	Epidemiology and Disease Management	2
2003 F	PIP 694	Crop Bioterrorism and Food Safety (Graduate Students)	2
2003 F	PIP 590	Crop Bioterrorism and Food Safety (Undergraduate Students)	1
2002 F	PIP 543	Epidemiology of Plant Diseases	4
2002 S	PI P 507	Epidemiology and Disease Management	2
2000 F	EEB 698	Genetically Modified Organisms (GMO's) Ecological and	2

		Evolutionary Perspectives	
2000 F	Pl P 543	Epidemiology of Plant Diseases	4
2000 S	Pl P 507	Epidemiology and Disease Management	2
1999-2000 F/S	Pl P 698	Plant Pathology Seminar	1
1999 S	Pl P 507	Epidemiology and Disease Management	2
1998-1999 F/S	Pl P 698	Plant Pathology Seminar	1
1998 F	Pl P 543	Epidemiology of Plant Diseases	4
1997 S	Pl P 507	Epidemiology and Disease Management	2
1997 F	Honors 321P	Climate Change and Terrestrial Ecosystems	2
1996 S	Pl P 507	Epidemiology and Disease Management	2
1996 F	Pl P 543	Epidemiology of Plant Diseases	4
1995 S	Pl P 507	Epidemiology and Disease Management	2
1994 S	Pl P 507	Epidemiology and Disease Management	2
1994 S	Pl P 698	Plant Pathology Seminar	1
1994 F	Pl P 543	Epidemiology of Plant Diseases	4
1992 S	Pl P 694	Colloquium (Disease Resistance)	2
1992 F	Pl P 543	Epidemiology of Plant Diseases	2
1990 F	Pl P 543	Epidemiology of Plant Diseases	2
1990 F	Pl P 590	Epidemiology of Plant Diseases Lab	2
<b>University of Georgia</b>			
1990 W	PAT 831, 831L	Plant Disease Epidemiology	5

1988 W	PAT 831, 831L	Plant Disease Epidemiology	5
1987 W	PAT 815	Graduate Seminar	1
1986 W	PAT 831, 831L	Plant Disease Epidemiology	5
1986 W	PAT 399, 700, 900	Crop Loss Modeling	1
1984 W	PAT 831, 831L	Plant Disease Epidemiology	

#### **GRADUATE STUDENT THESES DIRECTED:**

Gougherty, Andrew. MSc. Ecology and Evolutionary Biology, 2011. Comparison of US and Canadian *Plum Pox Virus* Eradication Programs.

Liu, Lu. MSc. Graduate Program in Sustainable Agriculture, 2010. Quantifying the aggressiveness, temporal, and spatial spread of *Pantoea stewartii* in sweet corn.

Xin, Lu. MSc. 2009, Plant Pathology. Epidemiology of *Soybean mosaic virus* of soybean.

Byamukama, Emmanuel. 2008. Ph.D. Plant Pathology. Epidemiology of *Bean Pod Mottle Virus*. 148 p.

Esker, Paul D. 2005. Co-Majors in Plant Pathology and Statistics. Epidemiology and management of Stewart's disease of corn in Iowa. Ph.D. Dissertation. Iowa State University, Ames, IA. 177 p.

Moreira, Antonio Jose. 2004. Ph.D. Plant Pathology. Detecting and quantifying soybean cyst nematode infestations using remote sensing and geographic information systems. Dissertation. Iowa State University, Ames, IA. 163 p.

Menelas, Blucher. 2003. Epidemiology and management of *Pantoea stewartii* in the Stewart's disease of corn/corn flea beetle pathosystem. M.S. Thesis. Iowa State University, Ames, IA. 92 p.

Leandro, Leonor. 2002. Ecology and epidemiology of *Colletotrichum acutatum* on symptomless strawberry leaves. Ph.D. Dissertation. Iowa State University, Ames, IA. 108 p.

Esker, Paul D. 2001. Improving the accuracy of predicting Stewart's Disease of Corn in the U.S. Corn Belt. M.S. Thesis. Iowa State University, Ames, IA. 92 p.

Steinlage, Todd. 2001. Quantification of the temporal and spatial spread of *soybean mosaic virus* in soybeans transformed with the coat protein gene of SMV. M.S. Thesis, Iowa State University, Ames, IA. 65 p.



- Guan, Jie. 2000. Assessing disease stress using both visual and remote sensing methods and modeling yield loss in alfalfa. Ph.D. Dissertation. Iowa State University, Ames, Iowa. 258 p.
- Peng, Guangbin. 2000. Factors affecting proliferation of Mefenoxam resistance in Populations of *Pythium aphanidermatum*. M.S. Thesis. Iowa State University, Ames, IA. 42 p.
- Percifield, Ryan. 2000. Effects of prescribed burning on the health and productivity of tallgrass prairies in Iowa. M.S. Thesis. Iowa State University, Ames, IA. 99 p.
- Wang, Xinyu. Completed MSc. in Spring 1998. Characterization of soybean mosaic virus coat protein-mediated resistance in transgenic soybeans.
- Jenco, Jeff. H. 1995. Characterization and quantification of *Cercospora zae-maydis* on *Zea mays*. M.S. Thesis. Iowa State University, Ames, Iowa. 69 p.
- Webb, Douglas H. 1995. Effect of environment and leaf lignin content on disease components of alfalfa rust. M.S. Thesis. Iowa State University, Ames, Iowa. 75 p.
- Parker, Sharon. 1994. (Co-Advisor with Dr. Mark Gleason). Effect of tomato disease forecasting on non-target disease organisms. M.S. Thesis. Iowa State University, Ames, Iowa. 60 p.
- Wegulo, Stephen. 1994. (Co-Advisor with C. A. Martinson). Benefits assessment of fungicide usage in seed corn production in Iowa. M.S. Thesis. Iowa State University, Ames, IA. 109 p.
- Iida, Hiroki. 1991. Epidemiological importance of six alternative weed hosts of tobacco etch virus. M.S. thesis. University of Georgia, Athens, GA. 48 p.
- Almihanna, A. A. 1990. Title: Comparison of green leaf area index, dry weight, disease intensity, and percent reflectance of sunlight as inputs for modeling yield losses in peanuts. M.S. Thesis. University of Georgia, Athens, GA. 102 p.
- Labrinos, J. L. 1988. Analysis of the rate reducing effects of a protectant versus a sterol-inhibiting fungicide on *Cercosporidium personatum*. M.S. Thesis. University of Georgia, Athens, GA. 122 p.
- Padgett, G. B. 1987. Effect of host resistance on quantification of tobacco etch virus epidemics in pepper. M.S. Thesis. University of Georgia, Athens, GA. 92 p.

**SERVICE ON ADVISORY, EXAMINING, AND READING COMMITTEES:**

Erica Salaau, PhD 2013, Plant Pathology and Microbiology Candidate, Plant Pathology Graduate Thesis, Bacterial wilt of cucumber: ecology, genetics, and management. Spring 2013.

Nate Bestor, MSc. Candidate, Plant Pathology Graduate Thesis Involves Costs/Benefits Analyses of Fungicide Usage in hybrid corn in Iowa.

Gretchen Mosher, PhD. Candidate in the Graduate Program in Sustainable Agriculture (Dissertation involves grain traceability and food safety).

Li, Xun. Completed Ph.D. in Spring 2007. Soybean rust in the United States: assess its potential epidemic ranges and frequency based on disease limiting factors, disease attributes, and comparative epidemiology. (Committee Member).

Bennet, Gregory. Ph.D. Graduate Program in Sustainable Agriculture (Committee Member).

Paul, Pierce. Completed Ph.D. in Spring 2000. Neural network modeling for the prediction of gray leaf spot (GLS) of corn. (Committee Member).

Peng, Guangbin. Co-Major Professor, completed MSc. in Spring 2000. Control of Pythium blight on turfgrass: Isolate characterization to delay fungicide resistance in *Pythium aphanidermatum*.

Lee, JooHo. Co-Major Professor, completed MSc. in Spring 1999. A new algorithm for multi-spectral calibration in remotely sensed color photography.

Canales, Jose. Completed Ph.D. in Spring 1993. Yield losses, chemical control, and epidemiology of fungal leaf blights on seed corn in Iowa.

Wong, Amy, T. S. Completed MSc. in Spring 1993. Soybean cyst nematode: The effects of herbicides and the importance of weed hosts in Iowa.

Kayimbi, Tubajika, M. Completed Ph.D. in Spring 1992. Epidemiological studies of foliar diseases in step intercropping rotation on Iowa (Committee Member).

Carlton, Mark, W. Completed MSc. in Summer 1992. Entry of *Clavibacter michiganensis* subsp. *michiganensis* into tomato plants through pruning wounds and hydathodes (Committee Member).

Rivera Canales, Jose Mauricio. Completed Ph.D. in Fall 1992. Epidemiology and control of leaf spot diseases in seed corn production (Committee Member).

Whelan, Helen G. Completed Ph.D. in Fall 1992. The effect of crop yield potential on disease: Yield-loss relationships. Department of Biochemistry and Microbiology, Lincoln University (Committee Member).

Oloranju, Phindile. Completed Ph.D. in Spring 1990. Candidate. Groundnut Rosette: disease reaction and inheritance of resistance of peanut genotypes to groundnut rosette virus and groundnut rosette assistor virus.

Smith, Samuel R. Completed Ph.D. in Spring 1990. Candidate, Department of Agronomy. Study of factors influencing persistence of Alfalfa under continuous grazing.

Tchala, Abala. Completed Ph.D. in Spring 1989. Candidate, Department of Agronomy. Study of factors influencing grain yield in Pearl Millet.

## **GUEST LECTURES**

<b><u>Year and Quarter</u></b>	<b><u>Course</u></b>	<b><u>Enrollment</u></b>	<b><u>Hours</u></b>
2012 F	Visiting Lecturer, Orientation in Microbiology, (Micro 110) Title: "Biosecurity, Food Safety and Plant Disease Epidemiology.	25+	1
2011 F	Visiting Lecturer, Orientation in Microbiology, (Micro 110) Title: "Biosecurity, Food Safety and Plant Disease Epidemiology.	25+	1
2010 F	Visiting Lecturer, Orientation in Microbiology, (Micro 110) Title: "Biosecurity, Food Safety and Plant Disease Epidemiology.	25+	1
2009 F	Visiting Lecturer, Orientation in Microbiology, (Micro 110) Title: "Biosecurity, Food Safety and Plant Disease Epidemiology.	25+	1
2008 F	Visiting Lecturer, Orientation in Microbiology, (Micro 110) Title: "Biosecurity, Food Safety and Plant Disease Epidemiology.	25+	1
2007 F	Visiting Lecturer, Orientation in Microbiology, (Micro 100) Title: "Biosecurity, Food Safety and Plant Disease Epidemiology.	30+	1
2006 F	Visiting Lecturer, Orientation in Microbiology, (Micro 100) Title: "Biosecurity, Food Safety and Plant Disease Epidemiology.	30+	1
2005 F	Visiting Lecturer, Orientation in Microbiology, (Micro 100) Title: "Biosecurity, Food Safety and Plant Disease Epidemiology.	30+	1
1997 S	Department Colloquium "Professional Communications", (Plant Pathology 694). Lecture - discussion on "Editing and reviewing manuscripts".	6	2
1994 F	Guest lecture for Clinical Plant Health (Plant	4	2

	Health and Prot. 391), Topic: Use of Remote Sensing and Disease Assessments to Improve Plant Health.		
1992 S	Guest lecturer in Controlled Plant Environments (Hort. 521). Topic: Controlled Environments for Plant Pathology Research.	7	2
1990 W	Department Seminar: "Epidemiological Components Contributing to Rate-Reducing Resistance in Plant Virus Pathosystems."	23	1
1990 W	Introductory Plant Pathology (PAT 353) Laboratory on computer-aided disease assessment training.	12	4
1989 S	Introductory Plant Pathology (PAT 353) Laboratory on computer-aided disease assessment training.	22	4
1989 W	Introductory Plant Pathology (PAT 353) Laboratory on computer-aided disease assessment training.	23	4
1987 W	Botany Seminar Series – Guest Seminar title: "Methods of Studying and Evaluating Fungicides."	40	1
1987 S	Guest Lecturer in Agronomy 334 Cereal Crops	15	5
1986	Guest Lecturer in Agronomy 369 Turf-grass Management	25	5
1985	Guest Lecturer in Agronomy 369 Turf-grass Management	25	5

**TEACHING GRANTS AND AWARDS (\$86,966 TOTAL):**

<u>Date</u>	<u>Proposal Title</u>	<u>Submitted To:</u>	<u>Award</u>	<u>Prin/Co-Prin</u>
1998	Summer Undergraduate Intern	Undergraduate Women in Science and Engineering Program	\$1,500	Prin
1997	Development Grant	University Honors System	\$500	Prin
1997	Risk Assessment Freshman-	Iowa State University	\$200	Prin.

Honors Program				
1995	Summer Undergraduate Research Scholar.	Iowa Space Grant Consortium	\$2,100	Prin.
1995	Components of Aggressiveness	Freshman Mentor Grant-ISU Honors	\$180	Prin.
1995	Training Programs to Improve Accuracy and Precision of Disease Estimates	Freshman Mentor Grant-ISU	\$155	Prin.
1994	Freshman Honors Mentor Program	Iowa State Univ.	\$175	Prin.
1994	Res. Assist. in Biol. Sci.	ISU RABS Prog.	\$300	Prin.
1994	Travel Award for Graduate Student	N. Am. Alfalfa Improve. Com	\$350	Prin.
1992	Inclusion of Digitized Images in Teaching	USDA Higher Educ. Challenge Grant	\$71,431	1 of 10 (Vet. Sci.)
1991	Microcomputer Teaching Facility	Project Vincent	\$6,000	Co-prin Co-Prin.
1990	Mathematical Modeling of Plant Disease Epidemics	I.S.U. Undergrad Res. Ass't. Prog.	\$1,575	Prin.
1988	Genesis Teaching Award	American Phytopathological Society Foundation	\$1,500	
1986	Development of an Interactive Computer program to Train Students to Accurately Assess Damage from Agricultural Pests.	UGA Instructional Improvement Grant	\$1,000	

***Associate Editor:***

Plant Disease (1988-1991)  
Phytopathology (1992-1994)

**Reviewer For:**

*African Plant Protection*

*American Society of Microbiology*

*Australian Journal of Plant Pathology*

*Canadian Journal of Plant Pathology*

*Canadian Journal of Plant Science*

*Computers and Electronics in Agriculture*

*Crop Protection*

*Crop Science*

*Ecosystem Health*

*Egyptian Journal of Plant Pathology*

*European Journal of Plant Pathology*

*Journal of the American Society for Horticultural Science*

*Journal of Applied Microbiology Reviews*

*Journal of Nematology*

*Journal of Plant Pathology*

*Journal of Sustainable Agriculture*

*Peanut Science*

*Plant Disease*

*Plant Pathology*

*Plant Health Progress*

*Phytoparasitica*

*Phytopathology*

*Remote Sensing of Environment*

**SERVICE ON GRANT REVIEW PANELS**

2009 Ad Hoc Review Panel, USDA-CSREES-NRI Plant Biosecurity Program, 16-17 September, Washington D.C.

2008 Grant Review Panel Chair, The National Academy of Sciences, National Academics Board on Agriculture and Natural Resources (BANR) Grants Panel for the Florida Department of Agriculture Citrus Greening Grants Program, 3-4 October, Keck Center of the National Academics, Washington D.C.

2008 National Research Council, National Academy of Sciences Proposal Review Panel Parent Committee (Super Panel) on Citrus Greening, Keck Center of the National Academics, 23-25, Washington, D.C. (Super panel to review proposals previously ranked from a pool of six review panels representing 120-plus proposals).

2008 Grant Review Panel, USDA-CSREES-NRI Plant Biosecurity Program, 16-17 September, Washington D.C.

*AIBS/NASA, Remote Sensing for Disease Control Panel Member (1994).  
University of California Grants Panel (2005, 2006).*

**AD HOC GRANT PROPOSALS REVIEWD:**

BARD (United States-Israel Binational Agricultural Research and Development Fund), 1990, 1991.

USDA.NRI Competitive Grants (Ad hoc) 1991, 1992, 1993, 1994, 1995, 1996.

Advancing Science Excellence in North Dakota (ASEND), NSF-funded program, North Dakota State University (1992).

USDA Small Business Innovation Research (SBIR) Program, (1995,1996).

International Foundation for Science (2001).

University of California IPM, GIS Grants Program (2004,2005)

**SERVICE AS OUTSIDE EXAMINER FOR PROMOTION AND TENURE; POST-TENURE REVIEW**

Kansas State University (2009)

North Dakota State University (1996)

Auburn University (1998)

University of Vermont (1999)

## **University, College, and Department Service:**

### **University:**

Unpiloted Aerial Vehicles Policy Ad Hoc Committee (2013-present)

University Research Planning and Policy Committee (2008 to present).

University Committee on Disabilities (2009 to 2012).

Faculty Senator, College of Agriculture At-Large Seat (1996-1999 and 1999  
2002, Department Representative 2002-Present)

Faculty Senator, Representative for the Department of Plant Pathology  
(2001-Present).

ISU Facilities and Educational Resources Committee, Faculty Senate Representative (2007-  
2010)

ISU Committee on Research Planning and Policy, Faculty Senate Representative (2008-2011)

National Lectures Committee (2005-Present)

Iowa Grain Quality Initiative Advisory Committee (2005-Present)

Mentor for the Department of Energy, Iowa State University Student Undergraduate  
Laboratory (Summer) Internship (SULI) (2008)

Mentor for the Iowa State University Program for Women in Science and Engineering (2008)

Moderator, High School Science Bowl, 2008, Volunteered for the 18<sup>th</sup> Annual Ames  
Laboratory/Iowa State University Regional High School Science Bowl, (26 January, Ames,  
Iowa)

University National Affairs Committee (2005-Present).

Faculty Senate Academic Affairs Council (1997-2002)

PACE (Premium for academic excellence) Awards Committee (1997-2001)

University Calendar Committee (1999-2003)

University Honorary Degrees Committee (2000-2002)

### **College:**

Ad the new Ad hoc committee on unmanned Aerial Vehic from the staff Activities Report



College of Agriculture and Life Sciences Senate Caucus (meets monthly with the Dean), 2000-2009.

Soybean Rust Response Team (Member).

Mentor for Freshman Honors Program (1994-1995, 1999, 2008)

College of Agriculture of Life Sciences Visiting Professor Program Participant (1994-Present)

Honors Committee (1992-1995)

College Software Advisory Committee (1984-1989)

Computer College Advisory Committee (1986-1990)

Recruitment Committee (1985-88, chairman 1988)

New Faculty Advisory Committee (1984)

**Interdepartmental:**

Ecology and Evolutionary Biology (Faculty member, 1998 - present)

Graduate Program in Sustainable Agriculture (2000 to present)

Interdepartmental Graduate Program in Microbiology (2003-Present).

Organizer of interdepartmental discussion group on ISU campus concerning the scientific, socioeconomic ecological, and ethical implications of agricultural biotechnologies under development for deployment in Iowa.

Alfalfa Brown Bag Seminar Discussion Group

Interdepartmental Computer Teaching Facility (1984-1988).

**Department:**

Department Graduate Admissions Committee (member 2005-2007 and Chair 2008-present)

Curriculum Committee, Interdepartmental Graduate Program in Microbiology (2012 to present)

Awards and Honors Committee (1991- 1998 and 2012-present)

Department 150<sup>th</sup> Anniversary Committee for the College (2007).

Phytopathology News/Publicity (1990-1993, and 1998-present) – Responsible for writing and submitting department news items to Phytopathology News and help with news releases.

Chair, North Central Division Local Arrangements Committee for the 2009 meeting

Gamma Sigma Delta Department Liaison (2000 – present)

Phytopathology News Correspondent (1984-1990 Univ. of Georgia)

Seminar Committee Chairperson (1993-1994, 1998-1999, and 1999-2000, co-chair 2003-2004)

Soybean Rust Preparedness Coordinator (2003 to 2004)

Evaluation subcommittee for Promotion and Tenure (1999)

Graduate Education Program Committee (1997)

North Central APS Division Newsletter Correspondent (1992-present)

Field Facilities Committee (1991-1999)

Greenhouse Committee (1991-1995)

Graduate Admissions and Recruitment Committee (1991-1993)

Funding and Facilities for Teaching, Long Range Planning Committee (1992)

Curriculum and Advising for Graduate Program, Long Range Program Committee, Chairman (1992)

Ad Hoc. Graduate Program Committee member (1991)

## **SERVICE TO OTHER PROFESSIONAL SOCIETIES**

Moderator for the Ames Lab High School State Science Bowl (2000 -2009)

Epidemiology and IT Committees, National Plant Disease Diagnostic Network (NPDN). Committee member, advisory issues and information technology recommendations, 2003-Present.

Crop Bioterrorism *ad hoc* Committee, American Phytopathological Society/APHIS Committee charged with addressing threat assessment issues (2002-2005).

USDA, Department of Homeland Security Threat Assessment Advisory Group, National Biodefense Analysis and Countermeasures Center, Department of Homeland Security (2003-present).

Epidemiology Committee, International Society for Plant Pathology (1998 to present).

Plant Virus Epidemiology Committee, International Society for Plant Pathology (1992 to 2002).

Organizer and Chair, USDA-CSRS Steering Committee on "Development of a Global Crop Loss Database" (1991 to 1994).

Finance Committee, American Peanut Research and Education Society (1989-1990).

Southern Regional Information Exchange Group No. 42, Methods to Assess Leaf spot Severity on Peanut, Secretary (1986-87), Vice Chairman (1987-88), Chairman (1988-89).

Judge, Oral and Poster Sessions, Second International Conference on Geospatial Information in Agriculture and Forestry, 10-12 January, 2000, Lake Buena Vista, FL.

Judge, Undergraduate Poster Session, Great Midwestern Remote Sensing Consortium, 6-7 September, 2007, Purdue University, Lafayette, IN.

#### **PROFESSIONAL DEVELOPMENT ACTIVITIES/COURSES/SEMINARS:**

2014 Writing Broader Impacts Statements for NSF Proposals, Brown Bag Sponsored by the ISU College of Agriculture and Life Sciences, 13 February, Ames, Iowa.

2011 NSF Regional Grants Conference, 21-22 March, Vanderbilt University, Nashville, Tennessee.

2008 Participant, USDA/CSREES/Utah State University Grants Workshop, 9-10 October, Salt Lake City, Utah.

2008 Participant, USDA/CSREES Grants Workshop, University of Minnesota College of Continuing Education, September, 2007.

2007 Discrimination and Harassment Training Workshop for Supervisors, 27 March, Iowa State University State University State University Office of Training and Development, Ames, IA.

2006 WebCT Gold Workshop for online course materials and exercises, 2 November, Iowa State University, Ames, Iowa.

2004 Participant, Workshop on Starting New Learning Communities, 25 October, ISU Center for Excellence in Learning and Teaching, Iowa State University, Ames, Iowa.

1999 13<sup>th</sup> Grantsmanship Workshop on NIH Grants, 30 March. ISU Agriculture Experiment Station, College of Agriculture, and Office of the Vice Provost for Research and Advanced Studies.

1998 Employee Relations - A Productive Workforce, 5 November. ISU Training and Development.

1998 ISU Communications - Some Dos and Don't, 16 November. ISU Training and Development.

1998 Making the Difference, Development Dimensions International, ISU Training and Development

1997 Stress Management - ISU Training and Development

1997 Personal Financial Planning (Feb. 5,12,19)- ISU Training and Development

1997 Learner-centered Education: Systems Approach Teaching and Learning Strategies; A Vision 2020 Workshop, March 20-21, Iowa State University.

1997 High Impact Communication Skills - ISU Training and Development

1997 Getting Through to People - ISU Training and Development

1997 Introduction to Supervision, April 30, May 7, and May 14, ISU Training and Development

1996 Teaching With Technology - Iowa Communications Network Services, The Brenton Center

1994 ARC/INFO training class, June 6-10, Geographic Information Systems Software Workshop, GIS Laboratory, Iowa State Univ.

1994 Worker Protection Standard, ISU College of Agriculture, Train the Trainer Session, March 9, 1994.

1994 Videoconference on "Understanding the Worker Protection Standard, September 13, Iowa State University.

1994 My Potential as a Leader - ISU Training and Development

1994 Total Quality Transformation - ISU Training and Development

1994 Gender Issues in the Workplace - ISU Training and Development

1993 Negotiating Skills - ISU Training and Development

1993 Worker Right to Know - ISU Training and Development

1993 Role of the Supervisor in Sexual Harassment Complaints - ISU Training and Development

1993 Image Management - ISU Training and Development

1993 Good Laboratory Practices, March 2-4, 1993, New Orleans, LA.

1993 Understanding the Worker Protection Standard for Agricultural Pesticides - ISU Training and Development

1993 Chemical Hygiene Plan - ISU Training and Development

1992 Interactive Lesson Development - ISU Training Workshop

1992 Ethics and Agricultural Biotechnology Institute, May 17-22, Iowa State University

1992 Negotiating Your Way to Success - ISU Training and Development

1992 Agricultural Communication in the Agricultural Curriculum Fall Workshop Series

1991 Copy editing I - ISU Training and Development

1991 Supervision I Fundamentals - ISU Training and Development

1991 Team Building - ISU Training and Development

1990 Conducting Meetings - ISU Training and Development

1984 Basic Programming

1984 Advanced Basic Programming