

Mary Eileen (Lee) Burrows

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Professional Experience and Education:

- 2011-present: Associate Professor, Extension Plant Pathology Specialist, MSU.
- 2006-2011: Assistant professor, Department of Plant Science and Plant Pathology, Montana State University, Bozeman, MT. 72% extension, 18% research, 10% service.
- 2003-2006: Postdoctoral research associate, USDA-ARS, Cornell University with Dr. Stewart Gray. The role of aphid genetics in the transmission of luteoviruses by *Schizaphus graminum*.
- 1997-2003: PhD, Plant Pathology Department, University of Wisconsin-Madison with Dr. Craig Grau. 'Studies on the etiology and epidemiology of aster yellows phytoplasma and Soybean mosaic virus in Wisconsin.'
- 1997: B.A. in Biology, Minnesota State University-Moorhead, Moorhead, MN.

Awards:

- 2015 Epsilon Sigma Phi Alpha Chapter State Visionary Leadership Award for the MSU Extension Program Planning Working Group and Activity Insight Implementation Team
- 2015 American Society of Agronomy Materials Award; 'Francis the Farmer' video
- 2014 Researcher Excellence Award, Northern Pulse Growers Association
- 2012 Association of Public and Land-Grant Universities Western Region Award for Excellence in Extension
- 2012 MSU Provosts' Award for Excellence in Outreach

Refereed Publications

Miller, Z., E. Lehnhoff, F. Menalled, and M. Burrows. 2015. Effects of nitrogen and CO₂ fertilization on the epidemiology of *Wheat streak mosaic virus*. Plant Disease (in press, First Look).

Harveson, R., M. Burrows, J. Pasche, S. Markell, F. Dugan, W. Chen. 2015. Bacterial blight of peas. Plant Health Progress. (in prep)

McKenzie, S., H. Parkinson, J. Mangold, M. Burrows, S. Ahmed, F. Menalled. 2015. Agricultural professionals' needs, perceptions, and decision-making differs among stakeholders. PLoS ONE. (accepted)

Burrows, M., C. Thomas, N. McRoberts, R. Bostock, L. Coop, J. Stack. 2015. Coordination of Diagnostic Efforts in the Great Plains: Wheat Virus Survey and Modelling of Disease Onset. Plant Dis. (in press, Feature Article).

Lehnhoff, E., Miller, Z., D. Ito, F. Menalled, and M. Burrows. 2015. Wheat and barley susceptibility and tolerance to multiple isolates of *Wheat streak mosaic virus*. Plant Disease. 99: 1383-1389.

Loneragan, E., J. Pasche, L. Skoglund, M. Burrows. 2015. Sensitivity of Ascochyta species infecting pea, lentil, and chickpea to boscalid, fluxapyroxad, and prothioconazole. Plant Disease 99: 1254-1260.

Miller, Z., F. Menalled, M. Moffet, D. Ito, M. Burrows. 2014. Impacts of crop variety and time of inoculation on the susceptibility and tolerance of winter wheat to *Wheat streak mosaic virus*. Plant Dis. 98: 1060-1065.

Burrows, M., L. Neuman, L. Skoglund. 2014. Evaluation of seed treatment fungicides for management of Ascochyta blight in lentil, 2012. Plant Disease Management Reports. 8:ST005.

Moffet, M., M. Burrows, P. Bruckner, J. Berg. 2013. Evaluation of fungicides for control of stem rust in Montana, 2012. Plant Disease Management Reports. 7:CF035.

Orloff, N., Z. Miller, F. Menalled, M. Burrows, and J. Mangold. 2012. Joint impacts of biological and environmental stressors on *Bromus tectorum* growth. Weed Research. 53: 192-200.

Ito, D., Z. Miller, F. Menalled, M. Moffet, M. Burrows. 2012. Relative susceptibility among alternative hosts prevalent in the Great Plains to *Wheat streak mosaic virus*. Plant Dis. 96: 1185-1192.

Miller, Z., F. Menalled and M. Burrows. 2012. Winter annual grassy weeds increase over-winter mortality in fall-sown wheat. Weed Research. 53: 102-109

Moffet, M., M. Burrows, P. Bruckner, J. Berg. 2012. Evaluation of fungicides for control of stem rust in Montana, 2011. Plant Disease Management Reports. 6:CF012.

- Leisso, R., B. Jacobsen and M. Burrows. 2011. Pathogenicity of *Fusarium* spp. to chickpea seed and seedlings (*Cicer arietinum* L.). Can. J. Plant Pathology. 33: 400-409.
- Harveson, R.M., S. Markell, R. Goswami, C.A. Urrea, M.E. Burrows, F. Dugan, W. Chen, and L. Skoglund. 2011. Ascochyta blight of chickpea. Plant Health Progress. Online. doi:10.1094/PHP-2011-0103-01-DG.
- Skoglund, L., R. Harveson, W. Chen, F. Dugan, H. Schwartz, S. Markell, L. Porter, M. Burrows, R. Goswami. 2010. Ascochyta blight of peas. Online. Plant Health Progress. doi:10.1094/PHP-2011-0330-01-RS.
- Burrows, M., M. Moffet, P. Bruckner, J. Berg, M. Johnston. Evaluation of fungicides for control of stem rust in Montana, 2010. Plant Disease Management Reports 4: CF037.
- Burrows, M., S. Palmer, L. Mi-Mi, S. Bogdanowicz, S. Gray, M. Caillaud. 2010. Microsatellite DNA markers for the greenbug, *Schizaphis graminum*. Molecular Ecology Resources. Submitted.
- Burrows, M., Franc, G., Rush, C., Blunt, T., Ito, D., Kinzer, K., Olson, J., O'Mara, J., Price, J., Tande, C., Ziems, A., Stack, J. 2009. Occurrence of viruses in wheat in the Great Plains region, 2008. Online. Plant Health Progress. doi:10.1094/PHP-2009-0706-01-RS. This manuscript was also an APSnet feature article, September. www.apsnet.org.
- Jacobsen, B., M. Burrows, and K. Ong. 2008. Extension plant pathology: bringing our science to the public. APSnet feature article, December. www.apsnet.org
- Leisso, R., P. Miller, and M. Burrows. June, 2008. Integrated management of chickpea pre-emergence damping off. Can. J. Plant Pathol. 31: 38-46.
- M. Burrows, A. Dyer, R. Johnston, W. Grey. 2008. Evaluation of fungicide application timing for control of stripe rust on winter wheat in Montana, 2007. Plant Disease Management Reports. 2:CF028.
- M.E. Burrows. 2008. Using local farmer's markets to promote Extension programming. Journal of Extension. 46:IAW1.
- X. Yang, T. Thannhauser, M.E. Burrows, D. Cox-Foster, F. Gildow, and S. Gray. 2008. Coupling genetics and proteomics to identify aphid proteins associated with vector-specific transmission of Polerovirus (Luteoviridae). Journal of Virology (feature article). 82:291-299.
- M.E. Burrows, M.C. Caillaud, D.M. Smith, and S.M. Gray. 2007. The transmission of *Barley yellow dwarf luteovirus*-SGV and *Cereal yellow dwarf luteovirus*-RPV is genetically controlled in the aphid *Schizaphis graminum*. Heredity 98: 106-113
- S.M. Gray, M.C. Caillaud, M.E. Burrows, and D.M. Smith. 2007. Transmission of viruses that cause barley yellow dwarf is controlled by different loci in the aphid, *Schizaphis graminum*. Journal of Insect Science 7:25.
- M.E. Burrows, M.C. Caillaud, D.M. Smith, E.C. Benson, F.E. Gildow, and S.M. Gray. 2006. The genetic regulation of polerovirus and luteovirus transmission in the aphid *Schizaphis graminum*. Phytopathology 96: 828-837.
- M.E. Lee Burrows, C.M. Boerboom, J.M. Gaska, and C.R. Grau. 2005. The relationship between *Aphis glycines* and *Soybean mosaic virus* incidence in different pest management systems. Plant Dis. 89: 926-934.
- M.E. Lee, C.R. Grau, L.A. Lukaesko, I.-M. Lee. 2002. Identification of aster yellows phytoplasmas in soybean in Wisconsin based on RFLP analysis of PCR-amplified products (16S rDNAs). Can. J. Plant Pathol. 24:125-130.
- C.R. Grau, I.-M. Lee, M.E. Lee, M.F. Heimann and L.A. Lukaesko. 1999. Status of Phytoplasma in North American Soybean. Soybean Disease Compendium. APS Press: St. Paul, MN.
- R.D. Peters, M.E. Lee, C.R. Grau, S.J. Driscoll, R.M. Winberg, N.C. Kurtzweil, L.A. Lukaesko, I.-M. Lee. 1999. First report of aster yellows phytoplasma in alfalfa. Plant Disease 83:488.
- Chastain, C.J., M.E. Lee, M.A. Moorman, P. Shameekumar, R. Chollet. 1997. Site-directed mutagenesis of maize recombinant C4-pyruvate, orthophosphate dikinase at the phosphorylatable target threonine residue. FEBS Letters 413:169-173.

Book Chapters:

- McMullen, M., **M. Burrows**, J. Marshall. 2015. Barley Diseases. *in*: Field Crop Diseases in the U.S. C. Hollier, ed. APS Press, St. Paul.(in press)

Abstracts and Brief Communications:

Grimberg, I., C. Pol, K. Ehlert, F. Menalled, and M. Burrows. 2015. Plant Virus Biology for Advancing STEM Teaching. American Phytopathological Society Meeting, Pasadena, CA, August 1-6. Poster.

Pol, C. M. Burrows, and Z. Miller. 2015. Control of the wheat curl mite, vector to *Wheat streak mosaic virus*, with pesticide applications on spring wheat, Pasadena, CA, August 1-6. Oral presentation. (in press)

Ranabhat, N.B., M.E. Burrows, Z.J. Miller, E. A Lehnhoff, and F.D. Menalled. 2015. Impact of cover crop termination methods on diseases of wheat and lentil. American Phytopathological Society Meeting, Pasadena, CA, August 1-6. Oral presentation. (in press)

Agindotan, B. and M. Burrows. 2015. Pulse crop diseases management: The role of a new regional pulse crop diagnostic laboratory in Montana. 8th International IPM Symposium. Salt Lake City, UT. March 23-26. Poster.

Rhanabhat, N., M. Burrows, F. Menalled, Z. Miller. 2014. Wheat curl mite and *Wheat streak mosaic virus* dynamics on green bridge hosts in Montana. American Phytopathological Society Meeting, Minneapolis, MN, August 9-13. Poster 319-P.

Pol, C., M. Burrows, Z. Miller. 2014. Control of the wheat curl mite, vector to *Wheat streak mosaic virus*, with pesticide applications on spring wheat. American Phytopathological Society Meeting, Minneapolis, MN, August 9-13. Poster 196-P.

Ranabhat, N., M. Burrows, F. Menalled, and Z. Miller. 2014. Risk period of *Wheat streak mosaic virus* movement from green bridge hosts in Montana. APS Pacific Division Meeting, Bozeman, MT, July 8-11.

Pol, C., M. Burrows, and Z. Miller. 2014. Chemical control of the wheat curl mite, vector to *Wheat streak mosaic virus*, on spring and winter wheat. APS Pacific Division Meeting, Bozeman, MT, July 8-11.

Miller, Z., F. Menalled, M. Burrows, N. Ranabhat, D. Delaney-Falcon. 2014. Estimating Impacts of Grassy Weed Species on Risk of Cereal Viruses. WSSA-CWSS Joint Meeting, Vancouver, Canada, Feb 3-6. Abstract 224.

Burrows, M., Z. Miller, F. Menalled. 2013. Estimating susceptibility to *Wheat streak mosaic virus* infection in non-crop grasses. American Phytopathological Society Meeting, Austin, TX. August 10-14. Poster 493-P

Miller, Z., M. Burrows, F. Menalled. 2013. Effects of nitrogen fertilization on risks and impacts of *wheat streak mosaic disease*. American Phytopathological Society Meeting, Austin, TX. August 10-14.

Ranabhat, N., D. Delaney-Falcon, F. Menalled, M. Burrows and Z. Miller. 2013. Effects of inoculation method on host plant susceptibility to WSMV infection. NCB-ESA. Rapid City, SD. June 16-19. Poster DR-41.

Pol, C., Z. Miller and M. Burrows. 2013. Chemical and biological control of the wheat curl mite (*Aceria tosichella*). NCB-ESA. Rapid City, SD. June 16-19. Poster DR-42.

Miller, Z., F. Menalled, M. Burrows. 2012. Downy brome (*Bromus tectorum*) increases disease induced over-winter mortality in wheat (*Triticum aestivum*). Can. J. Plant Sci. 92: 603.

Thomas, C., A. Coggeshall, R. Bostock, M. Burrows, E. Luke, M. Hill, T. Cresswell, P. Poe, S. Clark, L. Coop, P. Jepson, F. Nutter, S. Dabade, and M. Draper. 2012. NPDN expands epidemiological analysis of the national repository. Pacific Division APS meeting. June 27-29, Sacramento, CA. Poster.

Douce, G.K., J. LaForest, C. Barger, H. Schwartz, M. Burrows. 2012. Bugwood Center (www.bugwood.org) web resources to support IPM implementation. International IPM Symposium, March 27-29, Memphis, TN.

Skoglund, L., S. Dobesh, and M. Burrows. 2011. The Great Plains Diagnostic Network seminar series. National Plant Diagnostic Network meeting, Berkeley, CA. Nov. 7-9, 2011. Poster.

Ito, D., M. Burrows, C. Chen. 2011. Effects of tillage and crop rotation on soil-borne pathogen populations. Western Society of Crop Science, Laramie, WY. June 20-22, 2011. Poster.

Thomas, C., A. Coggeshall, R. Bostock, M. Burrows, E. Luke, M. Hill, T. Cresswell, P. Poe, S. Clark, L. Coop, P. Jepson, F. Nutter, S. Dabade, and M. Draper. 2011. NPDN Expands epidemiology analysis of national repository. National Plant Diagnostic Network meeting, Berkeley, CA. Nov. 7-9, 2011. Poster.

Miller, Z., F. Menalled, M. Burrows. 2011. Downy brome (*Bromus tectorum*) increases winter wheat (*Triticum aestivum*) over-winter mortality due to snow mold. Weed science society of America, Portland, OR. Feb 7-11, 2011. Poster.

LaForest, J., G. K. Douce, H. Schwartz, M. Burrows. 2011. Packaging and delivering IPM through collaboration across state and regional boundaries: the Bugwood Center experience. Entomological Society of America. Reno, NV. November 16, 2011. Presentation.

Menalled, F., Z. Miller, M. Burrows and N. Orloff. 2010. Direct and interactive effects of plant stressors on winter wheat yields and crop-weed competition. Weed Science Society of America, Denver, CO. February 7-11. Poster.

Burrows, M. and J. Stack. 2009. Great Plains Diagnostic Network Regional wheat virus survey: Collaboration, communication, research and extension outcomes. NPND National Meeting, Miami, FL. December 6-10. Poster.

Skoglund, L. and Burrows, M. 2009. Innovative ways to educate ourselves and our clientele: examples from Montana. NPND National Meeting, Miami, FL. December 6-10. Poster.

Ito, D., Moffet, M. D., and Burrows, M. E. 2009. Quantitative analysis of susceptibility to Wheat streak mosaic virus among alternate hosts and winter wheat varieties in the Great Plains. *Phytopathology* 99: S57-S57.

Price, J., Blunt, T., Burrows, M., Franc, G., Ito, D., Kinzer, K., Olson, J., O'Mara, J., Rush, C., Stack, J., Tande, C., and Ziems, A. 2009. Great Plains wheat virus survey 2008. *Phytopathology* 99: S105-S105.

Leisso, R.S., Burrows, M.E. 2007. Field evaluation of biological control and fungicide seed treatments for pre-emergence damping off of chickpeas. *Pisum Genetics* 39: 28-31.

Burrows, M. and W. Lanier. 2007. Where the rubber meets the road: timely information delivery to farmers with and without the internet. *Phytopathology*. 97:S15.

Zidack, N., W. Lanier and M. Burrows. 2007. Utilization of web-conferencing and web-based microscopy to deliver a regional mycotoxin workshop for the Great Plains Diagnostic Network. National Plant Diagnostic Network meeting, Orlando, FL 28-31 January, 2007.

Extension and Educational Publications, 2006 – present:

M. Burrows. 35+ fact sheets on High Plains IPM guide (www.bugwood.org/HPIPM)

M. Burrows *et al.* One hundred and ninety nine AgAlerts. (www.mtagalert.org) (as of 5/12/15) with approximately 69,306 downloads.

Grimberg, F. Menalled, M. Burrows. Plant Viruses: Biology, Ecology, and Management. Educational module for K-12, APS Education Center (in prep).

'Francis the farmer' animation <https://vimeo.com/124056111> Received the 2015 American Society of Agronomy Materials Award

Enzyme linked immunosorbant assay video <https://vimeo.com/117442610> (password: plantvirus)

M. Burrows, S. Markell. 2016 Pulse Crop Pest Calendar 'Stack the Deck in Your Favor' (in prep, printed by Northern Pulse Growers Association)

M. Burrows, E. Lehnhoff, W. Grey, Z. Miller. 2015. Cereal viruses of importance in Montana. MSU Extension Publications MontGuide MT200911AG.

M. Burrows, F. Menalled, and D. Weaver. 2013. 2014 Wheat Pest Calendar 'The good, the bad, and the ugly'. (printed by Montana Wheat and Barley Committee).

McVay, K., M. Burrows, F. Menalled, C. Jones, K. Wanner, R. O'Neill. 2013. Montana Cool-Season Pulse Production Guide. MSU Extension Publications. EB0210.

M. Burrows, D. Ito, and W. Grey. 2012. Cereal viruses of importance in Montana. MSU Extension Publications MontGuide MT200911AG.

A. Dyer, M. Burrows, B. Johnston, and C. Tharp. 2012. Small grain seed treatment guide. MSU Extension Publications MontGuide MT199608AG.

M. Burrows, A. Dyer, and W. Grey. 2012. Fusarium head blight (scab) of wheat and barley. MSU Extension Publications MontGuide MT200806AG.

M. Burrows. 2012. Diseases of cool season legumes (pulse crops: dry pea, lentil, and chickpea). MSU Extension Publications. EB0207.

M. Burrows, B. Jenks, E. Davis, J. Knodel, M. Wunsch, S. Markell. 2012. 2013 Pulse Pests Calendar. (printed by Northern Pulse Growers association)

M. Burrows, B. Jenks, E. Davis, J. Knodel, M. Wunsch, S. Markell. 2011. 2012 Pulse Pests Calendar. (printed by Northern Pulse Growers association)

M. Burrows, A. Dyer, and W. Grey. 2010. Small grain root and crown diseases. MSU Extension Publications MontGuide MT2010007AG.

M. Burrows, F. Menalled, and D. Weaver. 2010. Common wheat pests in Montana, 2011 Calendar.

- K. McVay, M. Burrows, F. Menalled, and K. Wanner. 2010. Montana wheat production guide. MSU Extension Publications. EB0197.
- M. Burrows, F. Menalled, and D. Weaver. 2009. Common wheat pests in Montana, 2010 Calendar.
- M. Burrows, J. Olmstead, and W. Grey. 2009. Fungal, bacterial, and physiological leaf diseases of cereal crops (wheat, durum, barley). MSU Extension Publications MontGuide MT200913AG.
- W. Johnson, R. Johnston, W. Grey, M. Burrows and A. Dyer. 2008. Root lesion nematodes in wheat. MSU Extension Publications MontGuide MT200801AG.
- M. Burrows, A. Dyer, and W. Grey. 2012. Fusarium head blight (scab) of wheat and barley. MSU Extension Publications MontGuide MT200806AG.
- N. Zidack, C. Moore-Gough, and M. Burrows. 2008. Important Apple Diseases in Montana and Recommended Varieties for Resistance. MSU Extension Publications MontGuide MT200812AG.
- K. McVay, M. Burrows, C. Jones, K. Wanner, and F. Menalled. 2008. Montana barley production guide. MSU Extension Publications EB0186.

Invited Seminars:

1. Diagnostics in the information age. 2016. National Plant Diagnostic Network 4th Annual meeting. Washington, DC.
2. Wheat streak mosaic virus: 2014. Research, Extension, and Education. Plant Pathology Society of Alberta. Canmore, AB, Canada.
3. Wheat streak mosaic virus: Research, Extension, and Education. 2014. Pacific Division American Phytopathological Society meeting. Bozeman, MT.
4. Innovation in research and extension in Wheat IPM. 2013. Northcentral Region Entomological Society of America meeting. Rapid City, SD.
5. Managing community diseases. 2011. Southern Alberta Conservation Society meeting. Lethbridge, AB, Canada.
6. Leveraging our resources: GPDN wheat virus survey outcomes and impacts. 2011. National Plant Diagnostic Network meeting. Berkeley, CA.
7. Great Plains wheat virus survey. 2010. NCEAR-184 Cereal Disease Workers meeting. Rapid City, SD.
8. Great Plains wheat virus survey: the impact of viruses in our cropping systems. 2008. NCEAR-184 Cereal Disease Workers meeting, Davis, CA.
9. Damping off of chickpea seed: efficacy of biological and fungicide seed treatments. 2008. Northern Pulse Growers Association meeting. Minot, ND.
10. The genetic control of luteovirus transmission by the aphid *Schizaphis graminum*. 2007. USDA-ARS Northern Plains Agricultural Research Lab, Sidney, MT.
11. Managing diseases in irrigated wheat and barley and the IR-4 Project and its impact on Montana. 2007. Sugar beet symposium, Billings, MT.
12. The genetic control of luteovirus transmission by the aphid *Schizaphis graminum*. 2007. Citrus Research and Education Center, Lake Alfred, FL.
13. The genetic control of luteovirus transmission by the aphid *Schizaphis graminum*. 2006. Montana State University Entomology Seminar, Bozeman, MT.

Other Professional Activities:

University and State Service

- LEAD 21 leadership and professional development training, 2014-2015
- State Liason Representative, IR-4 Project, 2006 - present
- Leadership MSU, 2010-2011
- MSU Faculty Senate, 2012-2018
- MSU College of Agriculture Promotion and Tenure Committee, 2012-2014
- Advisory board, ASMSU Day Care, 2012-2014
- MSU Molecular Biosciences Program, 2007-present
- Member of Montana Agricultural Experiment Station variety release committees, 2006-present
- *Search committees:* Plant-Microbe Interactions Faculty, MSU, 2007; Screening committee Choteau and Liberty Co. Extension agent positions, 2010; Cascade, Choteau, and Hill Co.

2012; Extension Forage Specialist, ARS, 2013; COA VP, Dean and Director, 2013-2014; Chair, Row Crop Extension Plant Pathologist, PSPP, 2015

- *MSU Extension ad-hoc committees*: 2011: Tenure, Fee-for-service; 2012: Program Planning Working Group
- Associate Director, Northern Pulse Growers Association, 2012-2015
- *ex-officio* member of the Montana Agri-Business Association Board, 2012-present
- Good Agricultural Practices (GAP) Training Advisor, 2013-present
- Western Sustainable Agriculture Research and Education Advisory Board, Montana 2013-present

Professional Service

--Editorial

- Senior Editor, Plant Disease, 2013-2016
- Associate Editor, Plant Disease, Jan 2009 – 2012
- Associate Editor, Plant Health Progress, Jan 2010 – 2013
- Advisory board, Phytopathology News, 2013-2016

--Grant Panels

- Grant panel member: CSREES Biotechnology Risk Assessment and CSREES National Extension IPM Special Projects Program, 2007; Sclerotinia Initiative 2008 & 2009; NIFA Oomycete Pathosystems in Crop Plants to Minimize Disease, 2010; Saskatchewan Pulse Growers, 2015
- Ad-hoc reviewer, NRI Food Safety grant program 2007
- MSU President's Emerging Scholar Program, 2013-2014

--Meeting coordination

- Member of Organizing Committee for NPDN national meeting, March 2016
- Member of Public Relations Committee for NPDN national meeting, January 2010
- Member of Program Committee, NPDN national meeting, December 2011
- Hosted IR-4 Project State Liason Representative and Project Management Committee meetings in Bozeman, 2009 and 2010
- Hosted WERA-1017 meeting in Bozeman, 2014 and Salt Lake City, 2015
- Hosted GPDN meeting in Bozeman, 2015

--Committees and working groups

- Member of American Phytopathological Society's Extension Committee (2007-present)
- Member of stem rust working group (2008-present), barberry working group (2010 – present), NC-IPM pulse crop working group (2007-present); NPDN epidemiology committee (2012-present)
- Member of the Great Falls Pest Risk Area committee, 2011-present
- Member of WERA-97, Diseases of Cereals (2006 – present)
- Member of WERA-1017, Coordination of Integrated Pest Management Research and Extension/Educational Programs for the Western States and Pacific Basin Territories; vice Chair, chair, past chair 2013-2016
- Steering committee, Western Coordinated Project on Scab in Wheat and Barley (2013-present)

--Other

- National Seed Health System Technical Review Panel: Pea Diseases, 2012
- Delivery of plant virus identification workshop and RNA workshop to GPDN, 2008

Fellowships and Grants (PI on \$11.7 mil since 2006; \$4.1 mil directly to my program):

- Burrows, M., N. Zidack and W. Lanier. 2006. Great Plains Diagnostic Network – Operational Proposal for Montana, 2006-2007. USDA-CSREES National Plant Diagnostic Network. \$40,000.
- Burrows, M. and P. Miller. 2007. Effectiveness of biocontrol seed treatments for the control of damping off of chickpea in Montana. IR-4 Project Biopesticide Research Grant, \$18,000.
- Jacobsen, B., N. Zidack and M. Burrows. 2007. Development and demonstration of integrated systems for control of soilborne, foliar and viral diseases of potato. Western Regional IPM Program. \$59,216.
- Burrows, M. 2007. Pilot project: Booth for Extension at the Bozeman Farmer's Market. MSU Extension. \$500.
- Burrows, M. 2007-9. Pilot project: Montana AgAlerts Fax. MSU Extension. \$1000

- Burrows, M. 2007. Addressing plant disease and communication needs in Montana. Montana Wheat and Barley Committee. \$20,000.
- Burrows, M., N. Zidack and W. Lanier. 2007. Great Plains Diagnostic Network – Operational Proposal for Montana, 2007-2008. USDA-CSREES National Plant Diagnostic Network. \$45,000.
- Burrows, M. 2008. Uniform fungicide trial for Fusarium head blight control in Montana spring wheat. US Wheat and Barley Scab Initiative. \$5864.
- Menalled, F., W. Lanier and M. Burrows. 2008-2010. Expansion of the online High Plains IPM guide to include agricultural, rangeland, and wildland weed recommendations. Western Region IPM Program. \$79,512.
- Burrows, M. 2008. Susceptibility of Great Plains wheat varieties and weeds to *Wheat streak mosaic virus*. Montana Wheat and Barley Committee, \$20,000.
- S. Markell, R. Goswami, M. Burrows, B. Schatz and K. McKay. 2008. Survey, identification, and management of root rot pathogens affecting field pea in North Dakota and Montana. Northern Pulse Growers Association. \$35,000.
- C. Chen, K. McKay and M. Burrows. 2008. Investigating the persistence and effectiveness of Rhizobial inoculants affected by previous pea rotation history and inoculant formula. \$18,010.
- Burrows, M. and F. Menalled. 2008-2011. Role of wheat germplasm and stress on virus transmission and crop-weed competitive interactions. USDA-CSREES Crops at Risk. \$280,139.
- Burrows, M., N. Zidack and K. Wanner. 2008. Great Plains Diagnostic Network – Operational Proposal for Montana, 2008-2009. USDA-CSREES Great Plains Diagnostic Network. \$45,000.
- Burrows, M., N. Zidack, F. Menalled, K. Wanner. 2008-2011. Implementing IPM certification for urban landscape professionals and enhancing awareness of IPM in the High Plains and Intermountain West. USDA-CSREES National Extension Integrated Pest Management Special Projects Program. \$84,000.
- Burrows, M. N. Tisserat, W. Cranshaw, R. Koski, R. Hammon. 2009-2011. Creation of online urban IPM resources for the High Plains and Intermountain region. Western Region IPM Center. \$58,355.
- Jacobsen, B., M. Burrows, K. Wanner, F. Menalled, J. Mangold. 2009. Montana Extension IPM Program. Extension Integrated Pest Management Coordination and Support Program. \$104,000.
- Burrows, M. 2009-2010. Susceptibility of Montana cereal crops to Wheat streak mosaic virus and stem rust fungicide trials. Montana Wheat and Barley Committee. \$20,000.
- Burrows, M. 2009-2010. Wheat pest calendar. Montana Wheat and Barley Committee. \$4,000.
- Burrows, M. 2009-2010. Great Plains Diagnostic Network – Operational Proposal for Montana 2008-2009. USDA-CSREES. \$44,500.
- Burrows, M. and S. Arnold. 2009-2011. Assessment of pesticide use and barriers to IPM implementation by landscape professionals in Montana. EPA-PESP. \$50,000
- Jacobsen, B. and M. Burrows. 2009. 2009 Montana Legume PIPE. Western Region IPM Center. \$11,055.
- Burrows, M. 2009. CAPS small grain survey. Montana Department of Agriculture. \$5,000.
- Goswami, R., L. Porter, M. Burrows. 2010-2012. Efficacy of fungicide seed treatments in controlling root rot of field peas and their effect on nodulation. Cool Season Food Legume. \$58,374.
- Menalled, F., Z. Miller, M. Burrows. 2010-2012. Transmission and impact of cereal viruses in winter wheat. MJ Murdock Charitable Trust. \$15,000.
- Jacobsen, B., K. Wanner, F. Menalled, J. Mangold, M. Burrows. 2010-2013. Montana's Extension IPM Coordination Project. Extension Integrated Pest Management. \$409,515.
- Burrows, M., D. Weaver, F. Menalled. 2010-2011. Wheat pest calendar, 2011. Montana Wheat and Barley Committee. \$4751.
- Burrows, M. 2010-2011. Susceptibility of Montana cereal crops to Wheat streak mosaic virus and Triticum mosaic virus, and on-farm early season fungicide trials. Montana Wheat and Barley Committee. \$20,771.
- Dyer, W., F. Menalled, M. Burrows, T. Sterling. 2010-2012. Physiological and ecological evaluation of metabolism-based herbicide resistance in *Avena fatua*. EPA-Strategic Agricultural Initiative. \$50,000
- McVay, K., M. Khan, M. Burrows, P. Jha. 2011-2013. Using pulse crops to intensify dryland cropping systems for southern Montana. Northern Pulse Growers Association. \$26,796.

- Burrows, M. and L. Skoglund. 2010-2011. Great Plains Diagnostic Network – Operational Proposal for Montana. National Plant Diagnostic Network. \$40,000.
- Burrows, M., L. Skoglund, J. Mangold. 2010-2012. Reducing pesticide use by expanding the educational mission of the Montana State University Urban IPM program. EPA-PESP. \$52,990.
- Jacobsen, B. and M. Burrows. 2010-2011. Legume PIPE Subcontract – Montana. \$10,725.
- Menalled, F., J. Mangold, R. Engle, Z. Miller, M. Burrows, P. Hatfield. 2011-2012. Integration of pathogens, sheep herbivory, and herbicides to manage cheatgrass. Montana Noxious Weed Trust Fund. \$29,195.
- Burrows, M. 2011-2012. Wheat virus variety trials and on-farm fungicide demonstration trials. Montana Wheat and Barley Committee. \$20,771.
- Menalled, F., P. Jha, M. Burrows. 2011-2012. Optimizing management practices to minimize weed and pathogen impact in wheat. Montana Wheat and Barley Committee. \$21,500.
- Burrows, M. and L. Skoglund. 2011-2012. Great Plains Diagnostic Network – Operational Proposal for Montana. USDA-NIFA, National Plant Diagnostic Network. \$55,000.
- Burrows, M. 2011. Plant disease survey and Plum pox virus testing. Montana Department of Agriculture. \$7250.
- Miller, P. and M. Burrows. 2012-2013. Solving spring survival for winter canola in Montana. Pacific Northwest Canola Research Program. \$7250.
- Wunsch, M., B. Schatz, Tjelde, M. Burrows. 2012-2013. Evaluation of fungicides for management of foliar blights of lentils. Northern Pulse Growers Association. \$4500 subcontract.
- Burrows, M. 2012-2013. Reprint of plant disease ID booklet. Montana Wheat and Barley Committee. \$4100.
- Burrows, M. 2012-2013. Foliar fungicide in dryland winter wheat. Montana Wheat and Barley Committee. \$25,439.
- Burrows, M. 2012-2013. Role of fungicide and winter wheat variety in low falling numbers. Montana Wheat and Barley Committee. \$2640.
- Hein, G., S. Wegulo, D. Namuth-Covert, D. Golick, D. Lyon, A. Zygielbuam, J. Bradshaw, S. Tatineni, R. French, R. Graybosch, M. Burrows, F. Menalled, Z. Miller, I. Grimberg, C. Rush, F. Workneh, J. Price, E. DeWolf, N. Tisserat, F. Epplin, K. Kelsey, M. McMullen. 2013-2017. A predictive model to increase adoption of IPM of a mite-virus disease complex in wheat. USDA-NIFA. \$3,375,000.
- Burrows, M. 2012-2013. Management of Ascochyta blight in lentil. MDA-Specialty Crops Block Grant. \$15,400.
- Menalled, F., R. Engel, K. O'Neill, Z. Miller, D. Weaver, P. Hatfield, J. Boles, M. Burrows, A. Bekkerman, P. Miller, L. Burkle. 2012-2016. Targeted grazing to reduce tillage in organic dryland systems: environmental, ecological, and economic assessment of reintegrating animal and crop production. USDA-OREI. \$1,499,815.
- Burrows, M., F. Menalled, Z. Miller, R. Peterson, A. Bekkerman, B. Jacobsen. 2012-2014. Integrated management of mite-transmitted cereal viruses. USDA-PMAP. \$213,658.
- Douce, G.K. and C. Barger. 2012-2013. Push IPM: Implementing Push Technology to keep IPM practitioners informed about High Consequence Pests. EIPM-CS Support Project. \$49,915. (As a cooperator, I will expend \$6,000 on this grant).
- M. Burrows and F. Menalled. 2013-2014. Improving the web presence of the MSU IPM Program. Subcontract from Tommy Bass. \$6,000.
- M. Burrows. 2013-2014. AgroEmergency Preparedness Education. Subcontract from Tommy Bass. \$3,853.
- M. Burrows. 2013-2014. Plant disease management and education in Montana. Montana Wheat and Barley Committee. \$39,614.
- M. Burrows, L. Skoglund, J. Pasche, M. Wunsch. 2014-2015. Evaluation of the Ascochyta/Mycosphaerella Pathogen Complex in Chickpeas, Peas and Lentils for Resistance to QoI and DMI Fungicides. \$20,000
- M. Burrows, L. Skoglund, J. Mangold. 2013-2014. Great Plains Diagnostic Network Montana Plan of Work. Subcontract from KSU. \$20,000
- B. Jacobsen, M. Burrows, F. Menalled, K. Wanner, J. Mangold. 2013-2014. Implementing an IPM program for Montana. USDA-EIPM. \$86,000.
- M. Burrows. 2013-2015. Schutter Diagnostic Laboratory. Montana Legislature added to MSU Extension base budget. \$250,000.
- M. Burrows. 2013. Plum Pox virus testing. MDA. \$3750.
- M. Burrows. 2014. Pulse Crop Diagnostic Laboratory. APHIS-10201 Farm Bill. \$150,000

- M. Burrows and J. Pasche. 2014-2015. Fungicide resistance monitoring for Ascochyta blight in Montana and other pulse-growing states. Northern Pulse Growers Association. \$3500.
- M. Burrows. Fungicide use in wheat and on-farm participatory research in Montana. Montana Wheat and Barley Committee. \$35,988
- I. Grimberg, M. Burrows, F. Menalled. 2014-2015. Pathways to college. MSU's Native American Recruitment & Retention Initiative. \$17,000
- M. Burrows. 2014-2015. Great Plains Diagnostic Network Montana Plan of Work. Subcontract from KSU. \$27,000.
- M. Burrows. 2014-2017. Detection of fungicide resistant Ascochyta blight. Specialty Crop Block Grant Program, Montana. \$99,710.
- M. Burrows, T. Day, L. Kerzicnik, J. Mangold, F. Menalled, C. Tharp, K. Wanner. 2014-2017. Montana State University's Extension Implementation Plan for Integrated Pest Management. USDA-CPPMC. \$420,000.
- M. Burrows, J. Jones. 2015-2016. USDA-Food Security Challenge Area. Fourth NPDN National Meeting. \$49,935.
- M. Burrows. 2014. Pulse Crop Diagnostic Laboratory microscopes for pathogen identification. MSU College of Agriculture. \$15,000.
- M. Burrows. 2015-2016. Pulse Crop Diagnostic Laboratory. APHIS-10007 Farm Bill. \$150,000.
- F. Menalled, M. Burrows, J. Mangold. 2015-2016. 2014 Implementation of SARE Professional Development Program Plan for Montana. Western Sustainable Agriculture, Research and Education Professional Development Grant. \$19,800.
- M. Burrows, J. Torrion, P. Lawrence, F. Menalled. 2015-2016. On-farm research and disease education in Montana. Montana Wheat and Barley Committee. \$36,167.
- B. Agindotan, M. Burrows. 2015-2016. Survey of Montana state for pathogens of economic importance in field peas. Montana Department of Agriculture Specialty Crop Block Grant. \$117,343.
- F. Menalled, R. Engel, T. Gedeon, P. Miller, P. Hatfield, E. Lehnhoff, M. Burrows, A. Bekkerman, Z. Miller, E. Glunk. 2016-2018. Assessing the resiliency of integrated crop-livestock organic systems in water-limited environments under current and predicted climate. USDA-NIFA Organic Agriculture Research and Extension Initiative. \$499,990.
- M. Burrows. 2015-2016. Great Plains Diagnostic Network Montana Plan of Work. Subcontract from KSU. \$29,000.
- B. Jacobsen, D. Boss, M. Giroux, P. Miller, D. Weaver, B. Maxwell, G. Haynes, C. Izurieta, J. Shaw, C. Chen, J. Peters, M. Burrows, A. Bekkerman, J. Sheppard, R. Payn, P. Jha, E. Glunk, C. Ellis, R. Ondoua, K. Desta. 2015-2017. Increasing Profitability by Improving Efficiency of Montana's Farm and Ranch Lands. Montana Research Initiative, Montana State Legislature. \$2,242,466.

Professional memberships:

- American Phytopathological Society, 1997-present
- Canadian Phytopathological Society 2011-present
- Gamma Sigma Delta Honor Society for Agriculture, 2001-present

Graduate students trained:

Name	Committee Role	Degree	Date of graduation	Current position
Rachel Leisso	Chair	MS, PSPP	2008	Plant Physiology Research Technician with USDA-ARS, Wenatchee, Washington
Dai Ito	Chair	MS, PSPP	2011	Sumitomo Chemical, Japan
Dr. Cecil Tharp	Chair	PhD, PSPP	2014	Extension Pesticide Education Safety Specialist, Montana State University
Carmen (Pol) Murphy	Chair	MS, PSPP	Expected 2015	Graduate student
Nar Rhanabhat	Co-Chair	PhD, LRES	Expected 2016	Graduate student
Ayodeji Owati	Chair	MS, PSPP	Expected	Graduate student

Uta Stuhr	Chair	MS, PSPP	2017 Expected	Graduate student
Eric Olson	Chair	MS, PSPP	2018 Expected	Graduate student
Stacey Terrill	Co-Chair	MS, HHD – not completed	ABD	Lakeland Feeds, Dillon, MT, field agronomist
Mary Brennan (Lollis) Bauer	Member	MS, PSPP	2010	unknown
Peter Zuck	Member	MS, PSPP	2010	Johnny Seeds, Executive Manager
Noelle Orloff	Member	MS, LRES	2013	Associate Extension Specialist, MSU
Elizabeth Eiring	Member	MS, LRES	Expected 2015	Montana Department of Agriculture
Elisa Boyd	Member	MS, PSPP	Expected 2016	Graduate student
Amanda Beck	Member	PhD, NDSU Plant Pathology	Expected 2018	Graduate student