

Vita

Donald G. Bullock

Professor of Biometry and Crop Production

Department of Crop Sciences

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Education:

1978, B.S., Bio-Agricultural Sciences, Arizona State University

1981, M.S., Agronomy and Plant Genetics, University of Arizona

1985, Ph.D., Agronomy, Purdue University

Employment:

1985-1988, Assistant Professor, University of Georgia

1988-1994, Assistant Professor, University of Illinois

1994-2000, Associate Professor, University of Illinois

2000-present, Professor, University of Illinois. 70% Teaching and 30% Research.

Teaching Responsibilities:

Current:

CPSC 241 - Introductory Statistics

CPSC 540 - Applied Statistical Methods II - Advanced Experimental Design

CPSC 541 - Regression Analysis

Past:

CPSC 318 - Crop Growth and Production

CPSC 337 - Ecology of Cropping Systems

Administrative Responsibilities:

Graduate Program Director, Dept. of Crop Sciences, 2003-2007

Editorial Responsibilities:

Member, Editorial Board, *National Corn Handbook*, 1985-1988

Associate Editor, *Agronomy Journal*, 1995 - 2001

Associate Editor, *Crop Science*, 1997 - 2003

Member, Editorial Board, *Advances in Precision Agriculture*, 1996 - 2002

Technical Editor, *Crop Management*, 2001 - 2003

Technical Editor *Crop Science*, 2003 - present

Member of Editorial Board for the 4th, 5th, and 6th *European Precision Agriculture Meetings*, 2003, 2005 and 2007.

Editor - *Agronomy Journal*, 2008 - present

Graduate Students:

Major or Co-Major Advisor: 19 M.S. and 8 PhD

Awards and Honors:

Fellow of the American Society of Agronomy

Fellow of the Crop Sciences Society of America

Fellow of the North American Colleges and Teachers of Agriculture

University of Illinois Academy for Teaching Excellence

Selected 22 times, by students, to the Incomplete List of Excellent Instructors at University of Illinois at Urbana Champaign.

Winner of the 1996 and 1999 Outstanding Crop Science Undergraduate Teaching Award.

Ag Research Senior Research Fellowship Award, New Zealand Agricultural Research Institute, 2000

Research Interests:

Use of statistics and other quantitative tools for the analysis of agricultural production problems with an emphasis on precision agriculture technologies.

Publications:**Books Edited**

1. Small Grains Resource Handbook. 1989. Johnson, J. W., D. G. Bullock, B. M. Cunfer, and R. D. Lee (eds). University of Georgia. College of Agriculture. COA-1. 70 pp.

Chapters in Books

1. Raymer, P. L., D. G. Bullock, and D. L. Thomas. 1990. Potential of winter rapeseed cultivars for oil seed production in the Southeastern United States. pp. 223-225. *In* J. E. Simon and J. Janik (ed.). *Advances in New Crops*. Timber/Dioscorides Press, Portland, OR.
2. Bullock, D. G. and K. J. Moore. 1992. Protein and fat determination of corn grain. pp. 181-197. *In* H. F. Linskens and J. F. Jackson (ed.) *Modern Methods of Plant Analysis, New Series Vol. 14. Seed Analysis*. Springer-Verlag Press, Berlin, Germany.

3. Gotway, C.A., D.G. Bullock, F.J. Pierce, W.W. Stroup, G.W. Hergert, and K.M. Eskridge. 1997. Experimental design and statistical evaluation techniques for site specific management. pp 301-336. *In* F.J. Pierce, P.R. Robert, J. Sadler, and S. Searcy (ed.) *The State of Site Specific Management for Agriculture*. ASA, CSSA, and SSSA, Madison, WI.
4. Salamon, Sonya, Richard L. Farnsworth, and Donald G. Bullock. 1997. Family, Community and Adoption of Sustainable Farming Systems. pp. 85-102. *In* Gerard E. DeSouza and Tesfa G. Gebremedhin (ed.) *Sustainability in Agricultural and Rural Development*. Gerard E. DeSouza and Tesfa G. Gebremedhin (ed). Ashgate Publishing. London.

Peer-Reviewed Manuscripts

1. Bullock, D. G., R. L. Nielsen, and W. E. Nyquist. 1988. A growth analysis comparison of corn grown in conventional and equidistant plant spacing. *Crop Sci.* 28:254-258.
2. Bullock, D. G. and L. L. Goodroad. 1989. The effect of sulfur rate, application method, and source on corn yield and mineral content. *Comm Soil Sci Plant Anal.* 20:1209-1217.
3. Bullock, D. G. and P. L. Raymer. 1989. Growth, grain yield, and tissue mineral concentration of corn treated with ethephon. *Agron J.* 81:480-483.
4. Bullock, D. G., P. L. Raymer, and S. Savage. 1989. Variation of protein and fat concentration among commercial corn hybrids grown in the Southeastern United States. *J. Prod Agric.* 2:157-161.
5. Bullock, D. G. 1990. Grain yield, seed weight, seed N concentration, and nodule activity of soybean as influenced by defoliation and N fertilizer. *J. Plant Nutr.* 13:887-902.
6. Bullock, D. G., M. Dugarte-Fernandez, J. L. Fowler, and K. J. Moore. 1991. Growth analysis of a sorghum X sudangrass hybrid under different irrigation amounts. *Biotronics* 20:9-17.
7. Bullock, D. G., G. J. Gascho, and D. R. Sumner. 1990. Grain yield, stalk rot, and mineral concentration of fertigated corn as influenced by N, P, and K rate. *J. Plant Nutr.* 13:915-937.
8. Bullock, D. G. and A. L. Rayburn. 1991. Genome size variation in southwestern US Indian maize populations may be a function of effective growing season. *Maydica* 36:247-250.

9. Bullock, D. G. and J. E. Sawyer. 1991. Nitrogen, potassium, sulfur, and boron fertilization of canola. *J. Prod Agric.* 4:550-555.
10. Bullock, D. G. 1992. Crop Rotation. *Critical Reviews in Plant Sci.* 11:309-326.
11. Biradar, D. P., A. Lane Rayburn, and D. G. Bullock. 1993. Endopolyploidy in diploid and tetraploid maize (*Zea mays* L.). *Ann. Bot.* 71:417-421.
12. Bullock, D. G., F. W. Simmons, I. M. Chung, and G. I. Johnson. 1993. A growth analysis comparison of corn grown with starter N-P fertilizer. *Crop Sci.* 33:112-117.
13. Rayburn, A. Lane, D. P. Biradar, D. G. Bullock, and L. M. McMurphy. 1993. Nuclear DNA content in F1 hybrids of maize. *Heredity* 70:294-300.
14. Yusuf, R. I. and D. G. Bullock. 1993. Effect of several production factors on two varieties of rapeseed in the central US. *J. Plant Nutr.* 16:1279-1288.
15. Biradar, D. P., D. G. Bullock, and A. L. Rayburn. 1994. Nuclear DNA amount, growth, and yield parameters in maize. *Theor. Appl. Genetics.* 88:557-560.
16. Bollero, G. A. and D. G. Bullock. 1994. Cover crop systems for the central Corn Belt. *J. Prod. Agric.* 7:55-58.
17. Bullock, D. G. and D. S. Bullock. 1994. Quadratic and quadratic-plus-plateau models for predicting optimal nitrogen rate of corn: a comparison. *Agron. J.* 86:191-195.
18. Bullock, D. S. and D. G. Bullock. 1994. Calculation of optimal N fertilizer rates. *Agron. J.* 86:921-923.
19. Karlen, D. L., G. A. Varvel, D. G. Bullock, and R. M. Cruse. 1994. Crop rotations for the 21st century. *Advances in Agronomy.* 53:1-45
20. Kitur, B. K., K. R. Olson, S. A. Ebelhar, and D. G. Bullock. 1994. Tillage effects on growth and yields of corn on Grantsburg soil. *J. Soil Water Cons.* 49:266-274.
21. Pracht, J. E., C. D. Nickell, J. E. Harper, and D. G. Bullock. 1994. Agronomic evaluation of non-nodulating and hypernodulating mutants of soybean. *Crop Sci.* 34:738-740.
22. Riechers, D.E., L.M. Wax, R.A. Liebl, and D.G. Bullock. 1995. Surfactant effects on glyphosate efficacy. 1995. *Weed Technology.* 9:281-285.

23. Wilhelm, E., D.P. Biradar, D.G. Bullock, and A. Lane Rayburn. 1995. Endopolyploidization of mesocotyls in Nebraska maize populations selected for cold tolerance. *Crop Sci.* 35:958-961.
24. Bollero, German A., Donald G. Bullock, and Steven E. Holinger. 1996. Soil temperature and planting date effects on corn yield, leaf area, and plant development. *Agron. J.* 88:385-390.
25. Salamon, S., R. Farnsworth, D. Bullock, R. Yusuf. 1997. Social barriers to adoption of sustainable farming systems. *J. Soil Water Conservation. J. Soil and Water Cons.* 52(2) 265-271.
26. Al-Juboory, K.J, David J. Williams, Robert M. Skirvin and Donald G. Bullock. 1998. Influence of photoperiod, photosynthetic photon flux, and temperature on growth of canary island ivy. *Hort. Sci.* 33(2):237-239.
27. Ameha, M., R.M. Skirvin, G. Mitiku, D. Bullock, P. Hofmann. 1998. In vitro tendril and flower development in cucumber (*Cucumis sativus*) may be regulated by gibberellins. *Journal of Horticultural Science and Biotechnology.* 73(2) : 159-163.
28. Anderson, L.L. and D.G. Bullock. 1998. Variable rate fertilizer application for corn and soybean. *J. Plant Nutr.* 21(7): 1335-1361.
29. Bullock, D. G. and D.S. Anderson. 1998. Evaluation of the Minolta Spad-502 chlorophyll meter for nitrogen management in corn. *J. Plant Nutr.* 21(4):741-755.
30. Bullock, D.G., D.S. Bullock, E.D. Nafziger, T.A. Peterson, P. Carter, T. Doerge, and S. Paszkiewicz. 1998. Does variable rate seeding of corn pay? *Agron. J.* 90:830-836
31. Bullock, D.G., S. Khan, and A. Rayburn. 1998. Early soybean [*Glycine max* (L.) Merr.] growth is affected by row spacing. *Crop Science.* 38:1011-1016.
32. Rayburn, A.L., Biradar, D. P., D. G. Bullock, R. L. Nelson, C. Gourmet, and J.B. Wetzel. 1998. Nuclear DNA content diversity in Chinese soybean introductions. *Ann. Bot.* 44:321-325.
33. Esgar, R.W. and D.G. Bullock. 1999. Thinning border rows differentially affects hybrids in corn yield trials. *Crop Sci.* 39:1358-1361.
34. Kravchenko, A., C. Boast, and D.G. Bullock. 1999. Multifractal analysis of soil spatial variability. *Agron. J.* 91:1033-1041.

35. Kravchenko, A. and D.G. Bullock. 1999. A comparative study of interpolation methods for mapping soil properties. *Agron. J.* 91:393-400.
36. Needelman, B.A., M.M. Wander, G.A. Boller, C.W. Boast, G.K. Sims, and D.G. Bullock. 1999. Interaction between tillage practices and soil texture: biologically-active soil organic matter in Illinois. *Soil Sci. Soc. Amer. J.* 63:1326-1334.
37. Yusuf, R.I. and D. Bullock. 1999. Growth analysis of soybean under no-tillage and conventional tillage systems. *Agron. J.* 91:928-933
38. Bullock, D.S. and D.G. Bullock. 2000. Economic optimality of input application rates in precision farming. *Prec. Agric.* 2:71-101.
39. GopalaPillai, S., L. Tian, and D. Bullock. 2000. Yield mapping with digital aerial color infrared (CIR) images. *SAE Transactions: Journal of Commercial Vehicles* 108(2): 303-316.
40. Kravchenko, A. and D.G. Bullock. 2000. Correlation of corn and soybean grain yield with topography and soil properties. *Agron. J.* 92:75-83.
41. Kravchenko, A.N., D.G. Bullock and C.W. Boast. 2000. Analyzing relationships between crop yield and terrain slope using theory of joint multifractal measures. *Agron. J.* 92:1279-1290.
42. Paz, Joel, William Batchelor and Don Bullock. 2001. On-farm Procedure to Identify Water Stressed Areas in Soybean Fields Using a Crop Growth Model. *Transactions of the ASAE.*
43. George F. Czapar, F. William Simmons and Don G. Bullock. 2002. Delayed control of a hairy vetch (*Vicia villosa* Roth) cover crop in irrigated corn production. *Crop Protection* 21(6):507-510.
44. Kravchenko, A.N., G. A. Bollero, R. A. Omonode, and D. G. Bullock. 2002. Quantitative mapping of soil drainage classes using topographical data and soil electrical conductivity. *Soil Science Society of America.* 66:235-243.
45. Kravchenko, A.N. and D.G. Bullock. 2002. Spatial variability of soybean quality data as a function of field topography: I. Spatial data analysis. *Crop Sci.* 42:804-815.
46. Kravchenko, A.N. and D.G. Bullock. 2002. Spatial variability of soybean quality data as a function of field topography: II. A proposed technique for calculating the size of the area for differential soybean harvest *Crop Sci.* 42:816-821.

47. Kravchenko, A.N. and D.G. Bullock. 2002. Quantitative mapping of soil drainage classes using topographical data and soil electrical conductivity. *Crop Sci.* 66:235-243.
48. Sudduth, K.A., N.R. Kitchen, G.A. Bollero and D.G. Bullock. 2002. Comparison of electromagnetic induction and direct sensing of soil electrical conductivity. *Agron. J.* 95:472-482.
49. Daverede, I.C., A. Kravchenko, R.G. Hoefl, E.D. Nafziger, D.G. Bullock, J.J. Warren and L. Gonzini. 2003. Phosphorus runoff: Impact of tillage and soil phosphorus levels. *J. Environ. Qual.* 32:1436-1444.
50. Kravchenko, A.N. , K. Thelen, D.G. Bullock, and N. R. Miller. 2003. Relationship between crop grain yield, topography and soil ec studied with cross-correlograms. *Agron J.* 95:1132-1139.
51. Sudduth, K.A., N.R. Kitchen, G.A. Bollero and D.G. Bullock. 2003. Comparison of electromagnetic induction and direct sensing of soil electrical conductivity. *Agron. J.* 95:472-482.
52. Daverede, I.C., A. Kravchenko, R.G. Hoefl, E.D. Nafziger, D.G. Bullock, J.J. Warren and L. Gonzini. 2004. Phosphorus runoff from incorporated and surface applied liquid swine manure and phosphorus fertilizer. *J. Environ. Qual.* 33:1535-1544.
53. Officer, S.J., A. Kravchenko, G.A. Bollero, K.A. Sudduth, N.R. Kitchen, W.J. Wiebold. H.L. Palm, D.G. Bullock. 2004. Relationships between soil bulk electrical conductivity and the principal component analysis of topography and soil fertility values. *Plant and Soil.* 258 (1): 269-280.
54. Ruffo, Matías L., Donald G. Bullock, and Germán A. Bollero. 2004. Soybean yield as affected by biomass and nitrogen uptake of cereal rye in winter cover crop rotations. *Agron. J.* 2004 96: 800-805.
55. Yeater, Kathleen M., German A. Bollero, Donald G. Bullock, A. Lane Rayburn, and Sandra Rodriguez-Zas. 2004. Assessment of genetic variation in hairy vetch using canonical discriminant analysis. *Crop Sci.* 44: 185-189.
56. Yeater, K.M., G.A. Bollero, D.G. Bullock, and A.L. Rayburn. 2004. Flow cytometric analysis for ploidy level differentiation of 45 hairy vetch accessions. *Anal. Appl. Biol.* 145:123-127.

57. Martin, Nicolás F., Germán Bollero and Don Bullock. 2005. Associations between field characteristics and soybean plant performance using canonical correlation analysis. *Plant and Soil* 273:39-55.
58. Ruffo, Matías, Germán A. Bollero, Donald G. Bullock and Robert G. Hoefl. 2005. Spatial variability of the Illinois soil nitrogen test: implications for soil sampling. *Agron. J.* 97:1485-1492.
59. Sudduth, K.A., N.R. Kitchen, W. J. Wiebold, W.D. Batchelor, G.A. Bollero, D.G. Bullock, D.E. Clay, H.L. Palm, F.J. Pierce, R.T. Schuler and K.D. Thelen. 2005. Relating apparent electrical conductivity to soil properties across the north-central USA. *Computers and Electronics in Agriculture* 46:263-283.
60. Tarr, Alison B. Kenneth J. Moore, Donald G. Bullock, Philip M. Dixon, C. Lee Burras. 2005. Improving map accuracy of soil variables using soil electrical conductivity as a covariate. *Precision Agriculture* 6:255-270 .
61. Kravchenko, A. N. M G. P. Robertson, X. Hao, and D. G. Bullock. 2006. Management Practice Effects on Surface Total Carbon: Differences in Spatial Variability Patterns. *Agron. J.* 98: 1559-1568.
62. Nicolás Martín, Germán Bollero, Newell R. Kitchen, Alexandra N. Kravchenko, Ken Sudduth, William J. Wiebold, and Don Bullock. 2006. Two Classification Methods for Developing and Interpreting Productivity Zones Using Site Properties. *Plant and Soil.* 288:357-371.
63. Ruffo, Matías L., Germán A. Bollero, David S. Bullock and Don Bullock. 2006. Site-specific production functions for variable rate corn nitrogen fertilization. *Precision Agriculture* 7:327-342.
64. Villamil M.B., G.A. Bollero, R.G. Darmody, F.W. Simmons, and D.G. Bullock. 2006. No-till corn-soybean systems including winter cover crop: Effects on soil properties. *Soil Sci. Soc. Am. J.* 70:1936–1944 (2006).
65. Bullock, David S., Newell Kitchen, Donald G. Bullock. 2007. Multi-Disciplinary Teams - A Necessity for Research in Precision Agriculture Systems. *Crop Sci* 47: 1765-1769.
66. Nicolás Martín, Don Bullock and Germán Bollero. 2007. Relationship between secondary data and soybean yield, protein and oil seed concentration in an Illinois production field. *ASABE* 50(4): 1271-1278

67. Bullock, David S. , Ruffo, Matías L., Donald G. Bullock and Germán A. Bollero. 2008. Using precision technology to gather information necessary to make precision agriculture profitable: An on-farm demonstration. *American Journal of Agricultural Economics*. In Press.

Peer-Reviewed Proceedings

68. Hollinger, S. E., G. A. Bollero, M. Belding, and D. G. Bullock. 1996. Maize yield and canopy responses to early season soil temperature. pp. 175-179. *In Reprints of 22nd Conf. on Agricultural and Forest Meteorology*.
69. Bullock, D.S., D.G. Bullock and E. Nafziger. 1999. Variable rate seeding of maize in the Midwestern USA. *Proceedings of the 2nd European Conference on Precision Agriculture*, pp.749-757, Odense Congress Centre, Denmark
70. Bullock, D.S. and D.G. Bullock. 1999. The economics of precision farming: a primer for agronomists designing experiments. *2nd European Conference on Precision Agriculture. Proceedings of the 2nd European Conference on Precision Agriculture*, pp.937-946, Odense Congress Centre, Denmark.
71. Kravchenko, A.N., D.G. Bullock, and H.F. Reetz. 1999. Spatial variability of grain yield as a function of topography and soil properties. *Proceedings of the 2nd European Conference on Precision Agriculture*, pp.441-450, Odense Congress Centre, Denmark.
72. Ruffo, Matías, G.A. Bollero and D.G. Bullock. 2005. Spatial variability of the Illinois soil nitrogen test. *Proceedings of the 5th European Conference on Precision Agriculture*, pp.751-757. Uppsala, Sweden.