

RESUME

Bruno Basso, PhD

University Foundation Endowed Professor
Dept. Earth and Environmental Sciences
Michigan State University

Summary

Research interests:

- Precision Agriculture and Crop Modeling
- Water, carbon and nitrogen cycling and modeling
- Agricultural Systems and Environmental Sustainability

Dr. Basso has participated as PI and Co-PI in several international projects. He is the author of more than 150 technical publications.

Professional Preparation

PhD. 2000 Michigan State University, - Crop and Soil Sciences
Laurea 1992 University of Naples- Federico II, Italy - Agricultural Sciences

Appointments

2017 – present University Foundation Professor, MSU
2015- 2017 Full Professor, Dept. Earth and Environmental Sciences,
and W.K. Kellogg Biological Station, Michigan State University, USA
2012- present Tenure Assoc. Professor, Dept. Geological Sciences and W.K.
Kellogg Biological Station, Michigan State University, USA
2005 - 2012 Assoc. Professor, Dept. Crop Systems, Forestry and Environ.
Science, University of Basilicata, Italy
2000 - 2005 Assistant Professor, Dept. Crop Systems, Forestry and Environ.
Sciences, University of Basilicata, Italy
2008 - present Adjunct Professor, Queensland University of Technology, Ist.
Future Environment , Brisbane, Australia
1997 Visiting Research associate CIMMYT – Mexico DF. Mexico,
1998 Visiting Research associate -ICRISAT – Andhra Pradesh,. India
1993 Research assistant - CRC, CISRO- Waite Inst. Adelaide - Australia

Honors and Awards

2016 MSU Innovation of Year for Precision Agricultural Systems Analysis Software
2015 Fellow Soil Science Society of America
2013 Fellow of the American Society of Agronomy
2010 Pierre Robert Precision Agriculture Award - International Society of Precision
Agriculture
2008 L. Frederick Lloyd Soil Teaching Award - Soil Science Society of America
2007 L.R. Ahuja Agricultural System Modeling Award - Soil Science Society of

America

Selected Publications

Albarenque, SM., **B. Basso**, OP Caviglia, RJM Melchiori. 2016. Spatio-Temporal Nitrogen Fertilizer Response in Maize: Field Study and Modeling Approach. 2016. **Agronomy Journal** Vol. 108, Issue 5 1-13

Basso, B., Dumont, B. Cammarano, D., Pezzuolo, A., Marinello, F., Sartori, L. 2016. Environmental and economic benefits of variable rate nitrogen fertilization in a nitrate vulnerable zone. **Science of The Total Environment** Vol. 545–546, 1, Pages

Basso, B. Fiorentino, C., Cammarano, D., Schulthess U. 2016. Variable rate nitrogen fertilizer response in wheat using remote sensing. *Precision Agriculture* Volume 17 Issue 2 Pages 168-182

Basso, B., Liu, L., Ritchie, J.T. 2016. A Comprehensive Review of the CERES-Wheat, -Maize and-Rice Models' Performances. **Advances in Agronomy**. Pages 1-106
<http://dx.doi.org/10.1016/bs.agron.2015.11.004>

Basso, B., Giola P., Dumont, B., Cammarano D., De Antoni Migliorati, M. Pruneddu, G., Giunta, F. 2016 Tradeoffs between maize yield and nitrate leaching in a Mediterranean nitrate-vulnerable zone under current and projected climate scenarios. **PLOS ONE**
DOI: 10.1371/journal.pone.0146360

Basso B., Hyndman, D.W., Kendall A.D., Grace P.R., Robertson, G.P. 2015. Can Impacts of Climate Change and Agricultural Adaptation Strategies Be Accurately Quantified if Crop Models Are Annually Re-Initialized? **PLOS ONE**, Vol 10, 6. DOI: 10.1371/journal.pone.0127333

Stellacci, AM., Castrignanò A., Troccoli A., **Basso B.**, Buttafuoco G. 2016. Selecting optimal hyperspectral bands to discriminate nitrogen status in durum wheat: a comparison of statistical approaches. *Environmental monitoring and assessment* 188, 3, 1-15

Dumont, B., **Basso, B.** Leemas, B.Bodson, J.P. Destain, M.F. Destain. 2015. Systematic analysis of site-specific yield distributions resulting from nitrogen management and climatic variability interactions. **Precision Agriculture** Vol 16, Issue 4, 361-384

Stuart D., **Basso, B.** S. Marquat-Pyatt, Robertson, G.P., Zhao J. 2015. Coupled Human-Natural Systems Understanding of Agricultural Nitrogen Loss. **Bioscience** 65,6, 571-578

Dumont, B., **Basso, B.** Leemas, B.Bodson, J.P. Destain, M.F. Destain. 2015. A comparison of within season yield prediction algorithms based on crop model behaviour analysis. **Agricultural and Forestry Meteorology**. Vol 204, 10-21

Dumont, B., **Basso, B.** Leemas, B. Bodson, J.P. Destain, M.F. Destain. 2015. Climatic risk assessment to improve nitrogen fertilisation recommendations : A strategic crop model-based approach. **European Journal of Agronomy** Vol 65, 10-17.

Basso B. and J. T. Ritchie. 2014. Temperature and drought effects on maize yield. **Nature Climate Change** 4, 233 (2014) doi:10.1038/nclimate2139

Cammarano D., G. Fitzgerald, R. Casa, **B. Basso.** 2014. Assessing the robustness of vegetation indices to estimate wheat N in Mediterranean environments. **Remote Sensing.** 2014, 6, 2827-2844; doi:10.3390/rs6042827

Marino, S., M. Aria., **B. Basso,** A. Leone., A. Alvino. 2014. Use of soil and vegetation spectroradiometry to investigate water use efficiency of a drip irrigated tomato. 2014. **European Journal of Agronomy** 59, 66-77.

Basso, B. A.D. Kendall, D.W. Hyndman. 2013. The future of agriculture over the Ogallala Aquifer: Solutions to grow crops more efficiently with limited water. *Earth's Future.* 10.1002/2013EF000107

Casa, R., F. Castaldi, S. Pascucci, **B. Basso,** and S. Pignatti. 2013. Geophysical and hyperspectral data fusion techniques for in-field estimation of soil properties. **Vadose Zone Journal** vol. 12. doi:10.2136/vzj2012.0201

Basso, B., Cammarano, D., Fiorentino, D. Ritchie, J.T. 2013. Wheat yield response to spatially variable nitrogen fertilizer in Mediterranean environment. **European Journal of Agronomy,** Volume 51, November 2013, Pages 65-70

Basso, B., Sartori, L., Cammarano D., Grace P., Sorensen C., Fountas S. 2012. Environmental and economic evaluation of N fertilizer rates in a maize crop in Italy: a spatial and temporal analysis using crop models. *Biosystems Engineering,* 113, 2,103-111 DOI: 10.1016/j.biosystemseng.2012.06.012

Basso B. and J.T. Ritchie. 2012. Assessing the impact of management strategies on water use efficiency using soil-plant-atmosphere models. *Vadose Zone Journal* Volume: 11 Issue: 3 DOI: 10.2136/vzj2011.0173 Published: AUG 2012

Diacono, M, Castrignanò, M., Troccoli, A. De Benedetto, D., **Basso, B.,** Rubino, P. 2012. Spatial and temporal variability of wheat grain yield and quality in a Mediterranean environment: A multivariate geostatistical approach. *Field Crops Research* 131, 49–62

Basso, B, Fiorentino, C, Cammarano, D., Cafiero, G., Dardanelli, J. 2012. Analysis of rainfall distribution on spatial and temporal patterns of wheat yield in Mediterranean environment. *European Journal of Agronomy* 41 (2012) 52– 65

Fiorentino, C., Tarantino C., Pasquariello G., **Basso B.** 2011. Improved Method For Discriminating Agricultural Crops Using Geostatistics And Remote Sensing. 2011. Journal Applied Remote Sensing Vol. 5 1-18

Cammarano D., Fitzgerald, G., **Basso, B.**, O'leary, G. Grace, P.R., Fiorentino C. 2011. Use of the Canopy Chlorophyll Content Index (CCCI) For Remote Estimation Of Wheat Nitrogen Content In Rainfed Environments. Agronomy Journal 103: 6 - 1597-1603

Basso B., Ritchie, J.T., Cammarano, D., Sartori L. 2011. A strategic and tactical management approach to select optimal N fertilizer rates for wheat in a spatially variable field. European Journal of Agronomy 35 (2011) 215– 222

Basso B., Sartori L., Bertocco M., Cammarano D., Grace P.R. 2011. Economic and environmental evaluation of site-specific tillage in a maize crop in NE Italy. European Journal of Agronomy 35, 83–92 Research Highlight by the European Journal of Agronomy Editor

Basso B., Cammarano D., Troccoli A., Chen D., Ritchie J.T. 2010. Long-term wheat response to nitrogen in a rainfed Mediterranean environment: Field data and simulation analysis. European Journal of Agronomy 33 (2010) 132–138

Sørensen, C.G., Fountas, S., Nash, E., Pesonen, L., Bochtis, D., Pedersen, S.M. **Basso B.** Blackmore S.B. 2010. Conceptual model of a future farm management information system. Comp. Elect. In Agric. 72, 1. 37-47

Basso, B., Amato, M., Kravchenko, A.N., Rossi, R., Sartori, L., Bitella, G. 2010. 2-D Spatial and Temporal Variation of Soil Physical Properties In tillage Systems using Electrical Resistivity Tomography. Agronomy Journal. 102, 2 441-442

Basso B., Cammarano D. Chen D., Cafiero G., Amato M., Bitella G., Rossi R., Basso F. 2009. Landscape Position and Precipitation Effects on Spatial Variability of Wheat Yield and Grain Protein in Southern Italy. Journal of Agronomy and Crop Science (195) 301–312

Ritchie J.T. and **B. Basso**. 2008. Water Use Efficiency is NOT Constant when Crop Water Supply is Adequate or Fixed: The Role of Agronomic Management. European Journal of Agronomy 28, 273–281

Amato, M. **B. Basso**, G. Bitella, R. Rossi, G. Celano, G. Morelli. 2008. In-situ detection of tree root distribution and biomass with multi-electrode resistivity imaging. Tree Physiology, 28, 1441–1448

Bertocco, M., **B. Basso**, L. Sartori, E.C. Martin. 2008. Evaluating energy efficiency of site-specific tillage in maize in NE Italy. Bioresource Technology 99 (2008) 6957–6965.

Basso B., Bertocco M, Sartori L, Martin, E.C. 2007. Analyzing the effects of climate variability on spatial pattern of yield in a maize-wheat-soybean rotation. European Journal of Agronomy. 26 (2): 82-91

Sartori L; **Basso B**; Bertocco M. 2005. Energy use and economic evaluation of a three year crop rotation for conservation and organic farming in NE Italy. Biosystems Engineering Vol. 91 2: Pages: 245-256

Basso, B., J.T. Ritchie. 2005. Impact of compost, manure and inorganic fertilizer on nitrate leaching and yield for a 6-year maize-alfalfa rotation in Michigan. Agriculture Ecosystem and Environment 108 (329-241).

Batchelor, W.D., **B. Basso**, J.O. Paz. 2002. Examples of strategies to analyze spatial and temporal yield variability using crop models. European Journal of Agronomy Vol. 18, pp. 141-158.

Basso, B., J.T. Ritchie, F.J. Pierce, J.W. Jones, R.N. Braga. 2001. Spatial validation of crop models for precision agriculture. Agricultural Systems 68: 97-112.