

## Curriculum vitae -- Charles S. Wortmann

### **Current position**

Professor of Agronomy

Department of Agronomy and Horticulture, University of Nebraska–Lincoln,  
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### **Areas of expertise**

Soil fertility, nutrient use efficiency, water quality protection, rainfed and irrigated agronomy, smallholder farming, strengthening African national research and extension systems, program management

### **Educational record**

Ph. D. (Crop Science) University of Nebraska–Lincoln	1987
M. Sc. (Soil Science) University of Nebraska–Lincoln	1979
B. Sc. (Agronomy) University of Nebraska–Lincoln	1972

### **Previous positions**

Professor of Agronomy, University of Nebraska-Lincoln	2001-present
Independent crop consultant	1999-2000
Soil fertility and bean systems agronomist for Eastern and Southern Africa. Centro Internacional de Agricultura Tropical (CIAT), Kampala, Uganda	1987-1999
Extension and on-farm research specialist. Shinyanga-Mwanza Regional Integrated Development Program, Tanzania	1982-1984
Manager of an agricultural development project. Maryknoll Fathers and Brothers. Shinyanga, Tanzania.	1979-1982
Independent crop consultant, Holdrege NE	1979
Manager of an agricultural extension project. Mara Region, Tanzania.	1973-1976

**Summary of collaborative achievements in Africa:** 71 scientific journal publications; 59 other peer reviewed publications (books, chapter, proceedings, etc.); 92 computer decision tools including specificity for 73 recommendation domains in Africa; >4000 trained in advising farmers for nutrient use optimization; advising 11 African graduate students; hosting of ~15 research fellows; much other unquantified human and institutional capacity building; and >20 years living and working in Sub-Saharan Africa. Recognition of such achievements includes the 2018 International Agronomy Award of the American Society of Agronomy.

### **Refereed journal papers**

*Under review or accepted*

Liben, F., D. Wegary, C. Wortmann, Z. Stewart, H. Yang, J. Lindquist, T. Tadesse, H.K. Kim. 2019. Geospatial modeling of maize nitrogen response functions for Ethiopia. *Agric. Syst.* Submitted.

Liben, F., C. Wortmann, D. Wegary. 2019. Nitrogen management, tillage and crop rotation effects on maize yield and soil properties in Ethiopia. *Agric. Syst.* In Press.

- Nabahungu, N.L, A.R. Cyamweshi, J. Kayumba, C.J. Mirali, A. Mukuralinda, and C. Wortmann. Lowland rice yield and economic response to fertilizer application in Rwanda. *Agron. J. First Look*.
- Laborde, J, G. Baigorria, H. Blanco, and C. Wortmann. 2018. Identifying the drivers and predicting the outcome of conservation agriculture globally. *Agric. Syst.* In press.

*Published*

- Garcia-Montealegre, J.P., C. Wortmann, J. Schepers, R. Little. 2019. Applied Organic Nitrogen: Pre-plant and in-season estimation of corn nitrogen uptake. *Field Crops Res.* 241: <https://doi.org/10.1016/j.fcr.2019.107577>
- Garcia-Montealegre, J.P., C. Wortmann, R. Ferguson, T. Shaver, and J. Schepers. 2019. Nitrogen sidedress guided by corn canopy reflectance for manured fields. *Agron. J.* 111:2453-2461. doi:10.2134/agronj2019.02.0073
- Garcia-Montealegre, J.P., C. Wortmann, R. Ferguson, T. Shaver, and J. Schepers. 2019. Fertilizer equivalence of organic nitrogen applied in beef cattle manure. *Nutr. Cycl. Agroecosyst.* 114:225-235. /doi.org/10.1007/s10705-019-10003-6
- Maman, N., G. Abdoul, M. Garba, and C. Wortmann. 2018. Sesame sole crop and intercrop response to fertilizer in semi-arid Niger. *Agron. J.* 111:2069-2074. doi:10.2134/agronj2018.12.0756
- Laborde, J.P., C.S. Wortmann, H. Blanco-Canqui, A.J. McDonald, G. Baigorria, and J.L. Lindquist. 2019. Short-term impacts of conservation agriculture on soil physical properties and productivity. *Agron. J.* 111:2128-2139. doi:10.2134/agronj2018.11.0714.
- Laborde, J.P., C.S. Wortmann, H. Blanco-Canqui, A.J. McDonald, and J.L. Lindquist. 2019. Simulation-based maize-wheat cropping system optimization in the midhills of Nepal. *Agron. J.* 111:2569-2581. doi: 10.2134/agronj2018.08.0509.
- Wortmann, C.S., K.C. Kaizzi, N. Maman, R.A. Cyamweshi, M. Dicko, M. Garba, M. Milner, C. Senkoro, B. Tarfa, C. Kibunja, M. Munthali, P. Nalivata, D. Nkonde, L. Nabahungu, K. Ouattara, I. Serme. 2019. Diagnosis of crop nutrient deficiencies in sub-Saharan Africa. *Nutr. Cycl. Agroecosys.* 113:127-140. doi.org/10.1007/s10705-018-09968-7.
- Tenorio, F.A.M., A.J. Eagle, E.L. McLellan, K.G. Cassman, R. Howard, F.E. Below, J. P. Burzaco, I.A. Ciampitti, D.E. Clay, J.A. Coulter, A.B. Geyer, D.K. Joos, J.G. Lauer, M.A. Licht, A.J. Lindsey, B. Maharjan, C.M. Pittelkow, P. Thomison, T.J. Vyn, C.S. Wortmann, V.O. Sadras, P. Grassin. 2018. Assessing variation in maize grain nitrogen concentration in the North Central Region of the US. *Field Crops Res.* <https://doi.org/10.1016/j.fcr.2018.10.017>.
- Liben, F.M., C. Wortmann, H. Yang, J. Lindquist, T. Tadesse, and D. Wegary. 2018. Crop model and weather data generation evaluation for conservation agriculture in Ethiopia. *Field Crops Res.* 228:122-134. Doi:org/10.1016/j.fcr.2018.09.001
- Wortmann, C.S., M. Dicko, N. Maman, C. Senkoro, B. Tarfa. 2018. Fertilizer application effects on grain and storage root nutrient concentration. *Agron. J.* 110:1-7. doi:10.2134/agronj2018.04.0274
- Wortmann, C.S., C. Shapiro, T. Shaver, and M. Mainz. 2018. High soil test phosphorus effect on corn yield. *Soil Sci. Soc. Amer. J.* 82:1160-1167. doi:10.2136/sssaj2018.02.0068

- Wortmann, C., C. Senkoro, A.R. Cyamweshi, C. Kibunja, D. Nkonde, M. Munthali, P. Nalivata, L.N. Nabahungu, K. Kaizzi. 2018. Maize-nutrient response functions for Eastern and Southern Africa. *Agron. J.* 110:2070-2079. doi:10.2134/agronj2018.04.0268
- Garba, M., M. Dicko, N. Kamissoko, N. Maman and C. Wortmann. 2018. Fertilizer use efficiency and profitability of irrigated rice in Mali and Niger. *Agron. J.* 110:1951-1959. DOI: 10.2134/agronj2017.09.0512.
- Cadenas, M., L.M. Durso, D.N. Miller, H. M. Waldrip, B.L. Castleberry, R.A. Drijber, and C. Wortmann. 2018. Tetracycline and sulfonamide antibiotic resistance genes in soils from Nebraska organic farming operations. *Frontiers Microbiol.* 9:1283. doi: 10.3389/fmicb.2018.01283.
- Garba, M., I. Serme, and C.S. Wortmann. 2018. Crop yield response to fertilizer relative to soil properties in Sub-Saharan Africa. *Soil Sci. Soc. Amer. J.* 82:862-870. doi:10.2136/sssaj2018.02.0066
- Serme, I., M. Dicko, K. Ouattara, B. Sidibe and C. Wortmann. 2018. Rainfed rice response to fertilizer in the Sudan Savanna of West Africa. *Afr. J. Agric. Res.* 13:1033-1041. <https://doi.org/10.5897/AJAR2018.13160>
- Munthali, M.W, C. Senkoro, P. Nalivata, W.I. Makumba, J. Msaky, M. Mzimhiri and C. Wortmann. 2018. Cowpea nutrient response functions for eastern and southern Africa. *Afr. J. Agric. Res.* 13:1026-1032. <https://doi.org/10.5897/AJAR2018.13161>
- Serme, I., N. Maman, G. Maman, K. Ouattara, A. Gonda, and C. Wortmann. 2018. Cowpea response to applied nutrients in Burkina Faso and Niger. *Afr. J. Agric. Res.* 13:1508-1515. DOI: 10.5897/AJAR2018.13207
- Garba, M., I. Serme, N. Maman, K. Ouattara, A. Gonda, C.S. Wortmann, and S.C. Mason. 2018. Crop response to manure plus fertilizer in Burkina Faso and Niger. *Nutr. Cycl. Agroecosyst.* 111:175-188. Doi: 10.1007/s10705-018-9921-y
- Kaizzi, C.K., R.A. Cyamweshi, C.N. Kibunja, C. Senkoro, D. Nkonde, R. Maria, C.S. Wortmann. 2018. Bean response to fertilizer in eastern and southern Africa. *Nutr. Cycl. Agroecosyst.* 111:47-60. Doi: 10.1007/s10705-018-9915-9
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- Senkoro, C.J., A.E. Marandu, G.J. Ley, and C.S. Wortmann. 2017. Maize and pigeon pea sole crop and intercrop nutrient response functions for Tanzania. *Nutr. Cycl. Agroecosys.* 109:303–314. DOI 10.1007/s10705-017-9889-z
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5. Developed the Uganda Fertilizer Optimization Tool that enables farmers with much limited capital for fertilizer purchase to maximize their net returns to fertilizer use.
6. Revised the Nebraska P Index
7. Redesigned and updated soil fertility.unl.edu website, 2010.
8. Designed and provided content for the 'soil management' parts of the Cropwatch Crops website (2009-2010).
9. Co-led the design and development of the Heartland Bioenergy & Water Resources website (2009-10).
10. Revised soiltest.unl.edu. 2009.
11. Contributed the UNL Water website (2008-10).
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