

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/s10705018-09968-7.
- 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. Grassini. 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. Waldrup, 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
- Daudu, C.K., E.M. Ugbaje., E.Y. Oyinlola, B.D. Tarfa, Y.A. Alhaji, I.Y. Amapu and C. Wortmann. 2018. Lowland rice nutrient response functions for Nigeria. *Agron J.* 110:1079-1088. doi: 10.2134/agronj2017.08.0469
- Senkoro, C.J., F.M. Tetteh, C.N. Kibunja, K.W. Ndungu-Magiroi, G.W. Quansah, A.E. Marandu, G.J. Ley, T.J. Mwangi, C.S. Wortmann. 2018. Cassava yield and economic response to fertiliser in Tanzania, Kenya and Ghana. *Agron. J.* 110:1600-1606. doi: 10.2134/agronj2018.01.0019

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- Liben, Feyera, Birhanu Tadesse, Yaya T. Tola, Charles S Wortmann, Hae K. Kim, and Walter Mupangwa. 2018. Conservation agriculture effects on crop productivity and soil properties in Ethiopia. *Agron. J.* 110: 758-767, doi: 10.2134/agronj2017.07.0384.
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- Tesfahunegn, G.B. and C.S. Wortmann. 2016. Maize [*Zea Mays* (L.)] crop-nutrient response functions extrapolation for Sub-Saharan Africa. *Nutr. Cycl. Agroecosyst.* 109:269-289. DOI 10.1007/s10705-017-9887-1
- 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.
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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).
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