

Biographical Sketch - Quirine M. Ketterings



Professor in Nutrient Management in Agricultural Systems

Cornell Nutrient Management Spear Program

Department of Animal Science

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- o **Areas of work (70% extension and 30% research):**
 - Whole-farm nutrient management for New York dairy operations.
 - Use of organic (manure, compost) nutrients for fertility management.
 - Fertilizer guidelines for yield and quality of field crops in New York.
 - Soil testing for soil fertility and environmental risk assessment.
 - Indicators of environmental impact of nutrient management practices.
- o **Education:**
 - Ph.D. (Environmental Sciences). Ohio State University (OSU). December 10, 1999.
 - M.Sc. (Soil and Water, with Distinction). Wageningen University and Research Center, the Netherlands. January 22, 1992.
 - Ingenieurs (B.Sc. in Tropical and Subtropical Agriculture). International Agricultural College Deventer, the Netherlands. January 20, 1990.
- o **Professional Experience:**
 - Professor of Nutrient Management in Agricultural Systems. Cornell University, Department of Animal Science (January 2014-current).
 - Associate Professor Department of Animal Science (June 2008-January 2014) and Department of Crop and Soil Sciences (February 2006 – May 2008).
 - Assistant Professor of Nutrient Management in Agricultural Systems. Cornell University, Department of Crop and Soil Sciences. August 2000-January 2006.
- o **Professional Membership (selected):**
 - Soil Science Society of America, Agronomy Society of America. 1998-present.
- o **Editor/Reviewer (most recent) for:**
 - Associate Editor: Agricultural and Environmental Letters
 - Ad-hoc Reviewer: Agronomy Journal; European Journal of Agronomy; Journal of Environmental Management; Journal of Environmental Quality; Journal of Soil and Water Conservation; Soil Science; Soil Science Society of America Journal.
- o **Honors and Awards (2014-current; selected):**
 - 2018 Northeast Region Certified Crop Advisor Appreciation Award. Received on November 29, 2018, at the Annual NRCCA Training in Syracuse, NY.
 - 2017 Carl Sprengel Agronomic Research Award. Received at the 2017 ASA/SSSA/CSSA annual meeting in Tampa, Florida, October 22-25, 2017.
 - 2016 Cornell College of Agriculture and Life Sciences' Award for Outstanding Accomplishments in Extension/Outreach. Cornell University, Nov. 7, 2016.
 - 2015 Soil Science Society of America (SSSA) Fellow. Recognized at the 2015 ASA/SSSA/CSSA annual meeting in Minneapolis, Minnesota, November 15-18, 2015.

- 2014 Agronomy Society of America (ASA) Fellow. Recognized at the 2014 ASA/SSSA/CSSA annual meeting in Long Beach, California, November 2-5, 2014.
- **Book chapters:**
 - Koelsch, R.K. and Q.M. Ketterings (2017). Whole Farm Nutrient Balance: Systems Approach to Dairy Nutrient Planning. In: Large Dairy Herd Management, 3rd Edition. <http://ldhm.adsa.org/>. Editor D.K. Beede. Published by the American Dairy Science Association, Champaign, IL.
- **Peer-Reviewed Publications** (see separate listing at end of CV for publications in 2015-2020; see <http://nmsp.cals.cornell.edu/publications/journal.html> for a complete listing):

Total	'20	'19	'18	'17	'16	'15	'14	'13	'12	'11	'10	'09	'08	'07	'06	'05	'04	'03	'02	'01	'00	'99	'97
131	4	8	3	19	8	5	4	5	6	10	5	10	3	8	9	11	2	1	4	1	2	2	1

- **Other Publications/Presentations** (see <http://nmsp.cals.cornell.edu> for a complete listing):
 - 431 extension publications, 216 published abstracts associated with scientific meetings, 466 oral presentations, and two major websites (<http://nmsp.cals.cornell.edu>, Cornell website for nutrient management guidelines referred to in NRCS 590 standard, and <https://nrcca.cals.cornell.edu/>, for the Northeast Region Certified Crop Adviser program.

	What's Cropping Up?	Extension Series	Agronomy Fact sheets	Others	Total
2020	4	1	4	5	14
2019	4	1	5	3	13
2018	7	1	4	1	13
2017	3	1	4	2	10
2016	8		7	5	20
2015	7		5	4	16
2014	1		4	3	8
2013	5		4	3	12
2012	9		11	2	22
2011	10		9	7	26
2010	6		<u>7 + 2</u>	3	<u>16 + 2</u>
2009	5		4	6	15
2008	6	2 + 1	8	1	2 + 16
2007	5	54	15	5	54 + 25
2006	1	4	11	5	21
2005	5	2	9	6	22
2004	6	31 + 1		2	31 + 9
2003	9	25 + 7		2	25 + 18
2002	6	1		2	9
2001	8	5		1	14
2000					
Total	115	112 + 25	111 + 2	68	112 + 319 + 2

In *italics* are county-based soil fertility summaries for 1995-2001 or 2002-2006.
Underlined are two factsheets written by non-NMSP staff (editing by QMK).

Peer reviewed journal articles in 2015-current (*student/postdoc/staff member supervised)

1. Sunoj*, S., D. Kharel*, T. Kharel*, J. Cho*, K.J. Czymmek, and Q.M. Ketterings (2020). Impact of headland area on whole field and farm corn silage and grain yield. *Agronomy Journal* (*in press*). <https://doi.org/10.1002/agj2.20489>.
2. Franzluebbbers, A., D. Hunt, G. Telford, S. Bittman, and Q.M. Ketterings (2020). Integrated crop-livestock systems: lessons from New York, British Columbia, and the south-eastern United States. *Frontiers of Agricultural Science and Engineering* (*in press*). <https://doi.org/10.15302/J-FASE-2020365>.
3. Maresma*, A., L. Chamberlain*, A. Tagarakis*, T. Kharel*, G. Godwin*, K.J. Czymmek, E. Shields, and Q.M. Ketterings (2020). Accuracy of NDVI-derived corn yield predictions is impacted by time of sensing. *Computers and Electronics in Agriculture* 169: 105236. <https://doi.org/10.1016/j.compag.2020.105236>.
4. Ros*, M.B.H., K.J. Czymmek, and Q.M. Ketterings (2020). Combining field phosphorus (P) runoff risk assessments with whole-farm P balances to guide manure management decisions. *Journal of Environmental Quality* 49: 496-508. <https://doi.org/10.1002/jeq2.20043>.
5. Lyons*, S.E., Q.M. Ketterings, G.S. Godwin*, J.H. Cherney, D.J. Cherney, J.J. Meisinger, and T.F. Kilcer (2019). Double-cropping with forage sorghum and forage triticale in New York. *Agronomy Journal* 111: 3374-3382. doi:10.2134/agronj2019.05.0386.
6. Maresma*, A., P. Berenguer*, R.S. Breslauer*, A.C. Tagarakis*, T.P. Kharel*, K.J. Czymmek, and Q.M. Ketterings (2019). In-field spatial variability of corn stalk nitrate test results. *Agronomy Journal* 111: 2864-2873. doi:10.2134/agronj2019.02.0080
7. Kharel*, T.P., A. Maresma*, K.J. Czymmek, E.K. Oware, and Q.M. Ketterings (2019). Combining spatial and temporal corn silage yield variability for management zone development. *Agronomy Journal* 111: 2703-2711. doi: 10.2134/agronj2019.02.0079.
8. Ros*, M.B.H., Q.M. Ketterings, S. Cela*, and K.J. Czymmek (2019). Evaluating management implications of the New York Phosphorus Index with farm field information. *Journal of Environmental Quality* 48:1082–1090. doi:10.2134/jeq2019.01.0010.
9. Lyons*, S.E., Q.M. Ketterings, S. Ort*, G.S. Godwin*, S.N. Swink*, K.J. Czymmek, D.J. Cherney, J.H. Cherney, J.J. Meisinger, and T.F. Kilcer (2019). Nitrogen management for forage winter cereals in the Northeastern USA. *Soil Science Society of America Journal* 83: 1111-1123. doi:10.2136/sssaj2019.01.0004.
10. Lyons*, S.E., Q.M. Ketterings, G.S. Godwin*, D.J. Cherney, J.H. Cherney, M.E. Van Amburgh, J.J. Meisinger, and T.F. Kilcer (2019). Optimal harvest timing for brown midrib forage sorghum yield, nutritive value, and ration performance. *Journal of Dairy Science* 102: 7134–7149. DOI: <https://doi.org/10.3168/jds.2019-16516>.
11. Lyons*, S.E., Q.M. Ketterings, G.S. Godwin*, D.J. Cherney, J.H. Cherney, J.J. Meisinger, and T.F. Kilcer (2019). Nitrogen management of brachytic dwarf brown midrib forage sorghum in New York. *Agronomy Journal* 111: 1468-1477. doi:10.2134/agronj2018.09.0583.
12. Kharel*, T.P., S.N. Swink*, A. Maresma*, C. Youngerman*, D. Kharel*, K.J. Czymmek, and Q.M. Ketterings (2019). Yield monitor data cleaning is essential for accurate corn grain/silage yield determination. *Agronomy Journal* 111: 509-516. doi:10.2134/agronj2018.05.0317.
13. Lyons*, S.E., Z. Tang, J. Booth, Q.M. Ketterings (2018). Nitrogen response models for winter cereals grown for forage. *Journal of Agronomy and Crop Science* 1-14. doi:10.1111/jac.12310.
14. Lyons*, S.E., Q.M. Ketterings, G. Godwin*, J.H. Cherney, K.J. Czymmek, and T. Kilcer (2018). Spring N management is important for triticale forage yield and quality. *Agronomy Journal* 110: 2025-2032. doi:10.2134/agronj2018.01.0041.
15. Tagarakis*, A., and Q.M. Ketterings (2018). Proximal sensor-based algorithm for variable rate nitrogen application in maize in the Northeastern USA. *Computers and Electronics in Agriculture* 145: 373-378. <https://doi.org/10.1016/j.compag.2017.12.031>.

16. Sadeghpour*, A., Q.M. Ketterings, F. Vermeulen, G.S. Godwin, and K.J. Czymmek (2017). Nitrous oxide emissions from surface versus injected manure in perennial hay crops. *Soil Science Society of America Journal* 82: 156-166. doi: 10.2136/sssaj2017.06.0208.
17. Morris, T.F., T. Murrell, D. Beegle, J.J. Camberato, R.B. Ferguson, J. Grove, Q.M. Ketterings, P.M. Kyveryga, C.A.M. Laboski, J.M. McGrath, J.J. Meisinger, J. Melkonian, B.N. Moebius-Clune, E.D. Nafziger, D. Osmond, J.E. Sawyer, P.C. Scharf, W. Smith, J.T. Spargo, H.M. van Es, H. Yang (2017). Strengths and limitations of nitrogen rate recommendations for corn and opportunities for improvement. *Agronomy* J.110:1–37 doi:10.2134/agronj2017.02.0112.
18. Cherney, J.H., Q.M. Ketterings, M.H. Davis, D.J.R. Cherney, and K. M. Paddock (2017). Management of warm- and cool-season grasses for biomass on marginal lands: II. Composition and Nutrient Balance. *BioEnergy Research*. DOI 10.1007/s12155-017-9870-3
19. Cherney, J.H., J.H., Q.M. Ketterings, M. Davis, D.J.R. Cherney, and K.M. Paddock (2017). Management of warm- and cool-season grasses for biomass on marginal lands: I. yield and soil fertility status. *BioEnergy Research* DOI 10.1007/s12155-017-9869-9.
20. Ketterings, Q.M., S. Gami*, G. Godwin*, E. Hong*, K. Orloski*, R. Breslauer*, C. Liu*, and R.R. Mathur (2017). Improving sample collection, sample processing, and laboratory analyses for corn stalk nitrate test. *Agronomy Journal* 109:2312–2322. doi:10.2134/agronj2017.03.0127.
21. Sadeghpour*, A., Q.M. Ketterings, F. Vermeulen, G.S. Godwin*, and K.J. Czymmek (2017). Nitrous oxide emissions with nitrogen vs. phosphorus-based manure management of corn. *Soil Science Society of America Journal* 81:1127–1138. doi:10.2136/sssaj2016.03.0417.
22. Maresma*, A., and Q.M. Ketterings (2017). In-field variability of Illinois soil nitrogen test and loss-on-ignition for nitrogen management. *Soil Science Society of America Journal* 81:1211–1221. doi:10.2136/sssaj2016.10.0334.
23. Tagarakis*, A.C., and Q.M. Ketterings (2017). In-season estimation of corn yield potential using proximal sensing. *Agronomy Journal* 109:1323–1330. doi: 10.2134/agronj2016.12.0732.
24. McRoberts*, K.C., D. Parsons, Q.M. Ketterings, T.T. Hai, N.H. Quan, N.X. Ba, C.F. Nicholson, and D.J.R. Cherney (2017). Urea and composted cattle manure affect forage yield and nutritive value in sandy soils of South-Central Vietnam. *Grass and Forage Science*. doi: 10.1111/gfs.12289.
25. Lyons*, S., Q.M. Ketterings, G. Godwin*, J. Cherney, and T. Kilcer (2017). Early planting increases growth and nitrogen uptake of winter cereals. *Agronomy Journal* 109:795–801. doi:10.2134/agronj2016.10.0620.
26. McRoberts*, K.C., C.F. Nicholson, D. Parsons, L.V. Nam, N.X. Ba, Q.M. Ketterings, D.J.R. Cherney (2017). Structure and impact of cattle manure trade in crop-livestock systems of Vietnam. *Renewable Agriculture and Food Systems* doi:10.1017/S1742170517000072.
27. Hussein, M., V.V. Pillai, J.M. Goddard, W.J. Park, K.S. Kothapalli, D.A. Ross, Q.M. Ketterings, J.T. Brenna, M. Milstein, H. Marquis, P.A. Johnson, J.P. Nyrop and V. Selvaraj (2017). Sustainable production of housefly (*Musca domestica*) larvae as a protein-rich feed ingredient by utilizing cattle manure. *PLoS ONE* 12:e0171708. <http://dx.doi.org/10.1371/journal.pone.0171708>.
28. Sadeghpour*, A., Q.M. Ketterings, G. Godwin*, and K.J. Czymmek (2017). Shifting from N-based to P-based manure management maintains soil test P dynamics in a long-term corn and alfalfa rotation. *Agronomy for Sustainable Development* 37:8 doi: 10.1007/s13593-017-0416-z.
29. Ketterings, Q.M., S. Cela*, A. Collick, S. Crittenden*, and K.J. Czymmek (2017). Restructuring the P index to better address P management in New York. *Journal of Environmental Quality* 46:1372–1379. doi:10.2134/jeq2016.05.0185.
30. Crittenden*, S., Q.M. Ketterings, and K.J. Czymmek (2017). Soil phosphorus saturation ratio sets comparable manure application cutoffs across states differing in agronomic soil test. *Soil Science* 182: 36-44. doi: 10.1097/SS.000000000000192.

31. Veltman, K., C.D. Jones, R. Gaillard, S. Cela*, L. Chase, B. Duval., R.C. Izaurralde, Q.M. Ketterings, C. Li, M. Matlock, A. Reddy, A. Rotz, W. Salas, P. Vada, and O. Jolliet (2017). Comparison of process-based models to quantify nutrient flows and greenhouse gas emissions associated with milk production. *Agriculture, Ecosystems and Environment* 237: 31-44. <http://dx.doi.org/10.1016/j.agee.2016.12.018>.
32. Tagarakis*, A.C., Q.M. Ketterings, S. Lyons*, and G. Godwin* (2017). Proximal sensing to estimate yield of brown midrib forage sorghum. *Agronomy Journal* 109:107–114. doi: 10.2134/agronj2016.07.0414.
33. Cela*, S., Q.M. Ketterings, M., Soberon*, C. Rasmussen*, and K.J. Czymmek (2017). Upper Susquehanna watershed and New York State improvements in nitrogen and phosphorus mass balances of dairy farms. *Journal of Soil and Water Conservation* 27:1-11. doi: 10.2489/jswc.72.1.1.
34. Sadeghpour*, A., Q.M. Ketterings, G.S. Godwin*, and K.J. Czymmek (2017). Under- or over-application of nitrogen impact corn yield, quality, soil, and environment. *Agronomy Journal*
35. Sadeghpour*, A., Q.M. Ketterings, F. Vermeulen, G.S. Godwin*, and K.J. Czymmek (2016). Soil properties under nitrogen- vs phosphorus-based manure and compost management of corn. *Soil Science Society of America Journal* 80:1272–1282. doi:10.2136/sssaj2016.03.0086.
36. Van Almelo, J., Q.M. Ketterings, and S. Cela* (2016) Integrating record keeping with whole farm nutrient mass balance: A case study. *Journal of Agricultural Science* 8: 22-32. DOI: <http://dx.doi.org/10.5539/jas.v8n6p22>.
37. Cela*, S., Q.M. Ketterings, K.J. Czymmek, J.L. Weld, D.B. Beegle, and P.J.A. Kleinman (2016). Nutrient management planners' feedback on New York and Pennsylvania phosphorus indices. *Journal of Soil and Water Conservation* 71: 281-288. DOI: 10.2489/jswc.71.4.281.
38. Cherney, J.H, Q.M. Ketterings, and D.J. Cherney (2016). Soil contamination of grass biomass hay; measurements and implications. *Bioenergy Research* 9:773–781. DOI: 10.1007/s12155-016-9725-3.
39. Long*, E., Q.M. Ketterings, D. Russell, F. Vermeulen, and S.D. DeGloria (2016). Assessment of yield monitoring equipment for dry matter and yield of corn silage and alfalfa/grass. *Journal of Precision Agriculture* 17:546–563. DOI:10.1007/s11119-016-9436-y.
40. Long*, E., and Q.M. Ketterings (2016). Factors of yield resilience under changing weather evidenced by a 14-years record of corn-hay yield in a 1000-cow dairy farm. *Agronomy for Sustainable Development* 36:16. DOI: 10.1007/s13593-016-0349-y.
41. McRoberts*, K. Q.M. Ketterings, D. Parsons*, T. Thanh Hai, N. Hai Quan, N. Xuan Ba, C.F. Nicholson and D.J. Cherney (2016). Impact of forage utilization with urea and composted cattle manure on soil fertility in sandy soils of south central Vietnam. *International Journal of Agronomy*. <http://dx.doi.org/10.1155/2016/4709024>.
42. Sadeghpour*, A., Q.M. Ketterings, G. Godwin* and K.J. Czymmek (2016). Nitrogen- vs phosphorus-based manure and compost management of corn. *Agronomy Journal* 108: 185-195. DOI:10.2134/agronj2015.0218.
43. Cela*, S., Q.M. Ketterings, K.J. Czymmek, M. Soberon*, and C.N. Rasmussen* (2015). Long-term trends of nitrogen and phosphorus mass balances on New York dairy farms. *Journal of Dairy Science* 98: 7052-7070. <http://dx.doi.org/10.3168/jds.2015-9776>
44. Soberon*, M., S. Cela*, Q.M. Ketterings, K.J. Czymmek, and C.N. Rasmussen* (2015). Changes in nutrient mass balances over time and related drivers for 54 New York dairy farms (2015). *Journal of Dairy Science* 98: 5313–5329. <http://dx.doi.org/10.3168/jds.2014-9236>.
45. Little*, N.G., C.L. Mohler, Q.M. Ketterings, and A. DiTommaso (2015). Effects of organic nutrient amendments on weed and crop growth. *Weed Science* 63: 710-722. doi: 10.1614/WS-D-14-00151.1.

46. Ketterings Q.M., S.N. Swink*, S.W. Duiker, K.J. Czymmek, D.B. Beegle, and W.J. Cox (2015). Review and interpretation: integrating cover crops for N management in corn systems on northeastern dairies. *Agronomy Journal* 107: 1365-1376. doi:10.2134/agronj14.0385.
47. Ketterings, Q.M., S. Ort*, S.N. Swink*, G. Godwin*, T. Kilcer, J. Miller, W. Verbeten, and K.J. Czymmek (2015). Winter cereals as double crops in corn rotations on New York dairy farms. *Journal of Agricultural Science* DOI: 10.5539/jas.v7n2p18.