

David Edward Clay
Professor Plant Science
South Dakota State University
Brookings, SD, 57007
E-mail: David.Clay@SDSTATE.EDU
Phone: 605-688-5081
Fax: 605-688-4602

Education

B.S., Soil Science, Natural Resources, University of Wisconsin, Madison, WI, 1976.
M.S., Soil Fertility, University of Idaho, Moscow, Idaho, 1984 MS. Thesis title: The influence of N source and rate on strawberry production.
Ph.D., Soil Biogeochemistry, University of Minnesota, St. Paul, 1988. Dissertation title: Nitrogen, tillage, and residue management influence on microbial activity and corn production.
Post Doc., Water Quality Center, University of Minnesota, St. Paul, 1988-1990.,
Lead21 Leadership training, 2010

Experience, Responsibilities, and Leadership

2017-2020 Editor for Agronomy Journal, First South Dakota Editor in American Society of Agronomy premier journal. This Journal is over 100 years old.
2016-18 SDSU Faculty Senate,
2001-pres. Professor Plant Science, 90% research and 10% teaching, SDSU, Brookings, SD,

Awards and Accomplishments

2016, Paper of the year, Smart, A.J., L.B. Perkins, T.N. Schramm, M.J. Nelson, P.J. Bauman, S.A. Clay, and D.E. Clay. 2016. The effects of patch-burn grazing on vegetation structural heterogeneity in the northern tallgrass prairie of South Dakota. *Great Plains Research* 26:57-70.
Co-author of one of the Top-cited (12 citations #4) and top down-loaded (1028 #7) papers from 2014-2016 for ASA publications.
Served on over 13 federal grant review panels,
2016 awarded the ASA Precision Agriculture Systems Impact Award, from the American Society of Agronomy, Precision Agricultural Systems community,
2016 selected for SDSU Faculty Senate,
2016, ASA Excellence for publication > 16 pages, Midwest Cover Crop Field Guide. 2nd Edition.
2016, Clay, D.E., G. Reicks, J. Chang, T. Kharel, and S.A.H. Bruggeman. 2016. Assessing a fertilizer program: Short and long-term approaches. *In* A. Chatterjee and D. Clay (eds), *Soil Fertility Management in Agroecosystems*. ASA/Crop Science/SSSA digital library, Madison WI, used to develop a certified crop consultant training guide.
2015, *AJ* 107:2363-2372 selected to be highlighted in the tri societies *Crops and Soils Magazine*,
Published over 250 referred papers and book chapters,
Served as editor or author on 15 books,
137 funded grants providing over 30

improve agricultural profitability and environmental sustainability. To achieve this goal I believe that we need to research the barriers to adopting technologies that clearly have economic and environmental benefits. I am committed to convert agricultural research into tools that producers can use to increase their profitability.

Books

1. Site-Specific Management Guideline. 1999. Clay, D.E. et al. (ed.). Potash and Phosphate Institute. Available at <http://www.ppi-far.org/ssmg>.
2. GIS Applications in Agriculture. 2007. Pierce F.J. and D. Clay (eds). CRC Press, Taylor and Francis, New York, New York. <http://www.crcpress.com/product/isbn/0849375266>
3. Soil Science: A Step-by-Step Field Analysis. 2008. Logsdon, S., D.E. Clay, D. Moore, and T. Tsegaye (eds). American Society of Agronomy. Madison, WI. Available at <https://portal.sciencesocieties.org/Resources/Files/downloads/pdf/B60915.pdf>
4. South Dakota Corn Best Management Practices. 2009. Clay, D.E., S.A. Clay, and K. Reistma (eds). SDSU, Brookings, SD. Available at http://pubstorage.sdstate.edu/AgBio_Publications/articles/EC929.pdf.
5. Mathematics and Calculations for Agronomists and Soil Scientists. 2011. Clay, D.E., S.A. Clay, C.G. Carlson, and S. Murrell. International Plant Nutrition Institute, available at <http://ppi-store.stores.yahoo.net/maandcaforag.html>
6. GIS Applications in Agriculture: Nutrient Management for Improved Energy Efficiency. Clay and Shanahan (eds). 2011. Available at <http://www.crcpress.com/product/isbn/0849375266>
7. IGROW Wheat: Best Management Practices for Wheat Production. 2012. Clay D.E., C.G. Carlson, and K. Dalsted (eds).
8. Mathematics and Calculations for Agronomists and Soil Scientists: Portuguese Version, 2013. Clay, D.E., S.A. Clay, C.G. Carlson, and S. Murrell. International Plant Nutrition Institute, available at <http://ppi-store.stores.yahoo.net/maandcaforag.html>.
9. Mathematics and Calculations for Agronomists and Soil Scientists: Metric Version, 2012. Clay, D.E., S.A. Clay, C.G. Carlson, and S. Murrell. International Plant Nutrition Institute, available at <http://ppi-store.stores.yahoo.net/maandcaforag.html>.
10. IGROW Soybeans: Best Management Practices for Soybean Production. 2013. Clay, D.E., S.A. Clay, C.G. Carlson, C. Hay, L. Wagner, and D. Deneke (eds.). Available at <http://www.sdsoybean.org/BMP>.
11. Midwest Cover Crop Field Guide. 2015. 2nd Edition. Fisher, B., C.K. Gerber, K.D. Johnson, E.J. Kladvik... D.E. Clay. Purdue.
12. IGROW Corn: Best Management Practices for Corn Production. 2016. Clay, D.E., S.A. Clay, C.G. Carlson, and E. Byamukama (eds.) SDSU
13. Precision Agriculture Basics, 2016

- [dcdd-556b-9a02-41bb203c1ea8.html](http://www.agprofessional.com/news/data-driven-decisions-south-dakota-land), 2016
4. <http://www.agprofessional.com/news/data-driven-decisions-south-dakota-land>, 2016
 5. http://www.usagnet.com/state_headlines/state_story.php?tbl=SD2016&ID=98, 2016
 6. Radio, Ag New 890, Mich Kjar, Jan 22, 2016.
 7. South Dakota Soybean Leader, September/October 2016, Soybean check off helps farmers reach for 100 bushels per acre.
 8. Growing South Dakota, SDSU College of Agriculture and Biological Sciences, 2015 Annual Report, Saving our Soil.
 9. Growing South Dakota, SDSU College of Agriculture and Biological Sciences, Summer 2016, Curricula collaboration,
 10. South Dakota Soybean Leader, March/April 2017, Real World through On-Farm Research.
 11. Radio interview, Tom Steever, On-farm Research, September 8, 2017.

Peer reviewed outreach and book chapters

1. Franzen, A., C.G. Carlson, C.L. Reese, and D.E. Clay. 2017. Chapter 2: Writing simple programs in Microsoft Excel for automating precision farming calculations. Clay, D.E., S.A. Clay, and S. Bruggeman (eds), Practical Mathematics for Precision Farming. American Society of Agronomy, Madison WI.
2. Clay, D.E., G. Hatfield, and S.A. Clay. 2017. Chapter 3: An Introduction to experimental design and models. Clay, D.E., S.A. Clay, and S. Bruggeman (eds), Practical Mathematics for Precision Farming. American Society of Agronomy, Madison WI.
3. Clay, D.E., T.A. Brase, and G. Reicks. 2017. Chapter 4: Mathematics of latitude and longitude. Clay, D.E., S.A. Clay, and S. Bruggeman (eds), Practical Mathematics for Precision Farming. American Society of Agronomy, Madison WI.
4. Clay, D.E., C. Robinson, and T. M. DeSutter. 2017. Chapter 6: Soil testing and understanding soil testing results for precision farming. Clay, D.E., S.A. Clay, and S. Bruggeman (eds), Practical Mathematics for Precision Farming. American Society of Agronomy, Madison WI.
5. Clay, D.E., N.R. Kitchen, E. Byamukama, and S. Bruggeman. 2017. Chapter 7: Calculations supporting management zones. Clay, D.E., S.A. Clay, and S. Bruggeman (eds), Practical Mathematics for Precision Farming. American Society of Agronomy, Madison WI.
6. Clay, D.E., and T.P. Trooien. 2017. Chapter 8: Understanding soil water and yield variability in precision farming. Clay, D.E., S.A. Clay, and S. Bruggeman (eds), Practical Mathematics and Precision Farming. American Society of Agronomy, Madison WI.
7. Chang, J., D.E. Clay, B. Arnall, and G. Reicks. 2017. Chapter 10: Essential plant nutrients, fertilizer sources, and application rate calculations. Clay, D.E., S.A. Clay, and S. Bruggeman, Practical Mathematics for Precision Farming. American Society of Agronomy, Madison WI.
8. Fausti, S., B.J. Erickson, D.E. Clay, and C.G. Carlson. 2017. Chapter 11: Deriving and using equations to calculate the economic optimum fertilizer and seeding rates. Clay, D.E., S.A. Clay, and S. Bruggeman, Practical Mathematics for Precision Farming. American Society of Agronomy, Madison WI.
9. Graham, C., D.E. Clay., and S. Bruggeman. 2017. Chapter 15: Developing yield response curves for fertilizer and seeding rates. Clay, D.E., S.A. Clay, and S. Bruggeman, Practical Mathematics and Agronomy for Precision Farming. American Society of Agronomy, Madison WI.
10. Clay, D.E. 2017. Chapter 16: A site-specific fertilizer program assessment using soil and nutrient removal benchmarks. Clay, D.E., S.A. Clay, and S. Bruggeman, Practical Mathematics and Agronomy for Precision Farming. American Society of Agronomy, Madison WI.
11. Sharda, A.J., A. Franzen, and D.R. Clay. 2017. Precision variable equipment, chapter 5 In Shannon, K, D.E. Clay, and N. Kitchen (eds) Precision Agriculture Basics, American Society of

University.

42. Clay, D.E., and K. Gustafson. 2013. Late season N applications. Chapter 24. *In* Clay, D.E., Carlson, C.G. Clay, S.A., Wagner, L., Deneke, D., Hay, C. (eds). *iGrow Soybean: Best Management Practices*. South Dakota State University.

Water quality under a ridge-tilled corn/soybean farming system. P. 85-88 Vol. 3 *In Proc. ASAE Clean Water Clean Environment 21st Century*. March 5-8, Kansas City Missouri.

114. Schumacker, T.E., M.J. Lindstrom, M.L. Blecha, N.P. Congo, D.E. Clay, and B.H. Bleakley. 1995. Soil management after CRP contracts expire. p. 239-242 Vol.3 *In Proc. ASAE Clean Water Clean Environment 21st Century*. March 5-8, Kansas City Missouri.
115. Clapp, C.E., S.A. Stark, D.E. Clay, and W.E. Larson. 1986. Sewage sludge organic matter and soil properties. *In* Y. Chen and A. Avnimelech (ed). *The Role of Organic Matter in Modern Agriculture*. Martinus Nijhoff Publishers. Boston, US.

Referred Journal Papers

116. Birru, G.A., D.E. Clay*, T.M. DeSutter, C.L. Reese, A.C. Kennedy, S.A. Clay, S.A. Bruggeman, and D.D. Malo. 2018. Will precision management of saline-sodic soils enhance productivity. *Agron J.* In review.
117. Kharel, K., D.E. Clay, S.A. Clay, and T. DeSutter. 2018. Water movement and chemical remediation in non-irrigated semi-arid saline/sodic soils. Submitted to *Agron J.*
118. Dose, H.L., Y. He, R.K. Owens, D. Hopkins, B. Deutsch, J. Lee, D.E. Clay, C. Reese, D.D. Malo, and T.M. DeSutter. 2017. Predicting electrical conductivity of the saturation extract from a 1:1 solution to water ration. *Comm. Soil Sci Plant Anal.* 48:2148-2154.
119. Fausti, S., B. Erickson, S.A. Clay, L. Schumacher, D.E. Clay, and D. Scouby. 2017. Educator survey: Do institutions provide the precision agriculture education needed by agribusiness. *Environ. Ed. Res.* (In review)
120. Erickson, B., S. Fausti, D.E. Clay, and S.A. Clay. 2017. Knowledge skills, and ability of precision agriculture. *J. Ag. Education* (In review).
121. Chang, J., D.E. Clay, S.A. Clay, A. Smart, and M. Ohrtman. 2017. A rapid method for measuring feces ammonia-nitrogen and carbon dioxide-carbon emissions and decomposition rate constants. *Agron J.* 109:1-9.
122. Clay, D.E., T. M. DeSutter, S.A. Clay, and C. Reese. 2017. From plows, horses, and harnesses to precision technologies in the north American Great Plains, *Oxford Research Encyclopedia of Environmental Science*. DOI: 10.1093/acrefore/9780199389414.013.196.
123. Wamono, A., D. Steele, Z. Lin, T. DeSutter, X. Jia, and D. Clay. 2016. Effects of calcium based surface amendments on the penetration resistance of subsurface drained sodic soils. *Trans. ASABE* 59(4):869-877. DOI 10.13031/trans.59.11516.
124. Dose, H.L., T.M. DeSutter, F.X.M. Casey, and D.E. Clay. 2017. Naturally occurring soil salinity does not reduce N-transforming enzymes or organisms. *Can. J. Soil Sci.* (with drawn).
125. Sieverding, H., D.E. Clay, E. Khan, J. Sivaguru, M. Pattabiraman, R.T. Koodali, M. Ndiva-Mongoh, J.J. Stone. 2016. A sustainable rural food-energy-water nexus framework for the northern Great Plains. *Ag and Environmental Letters*. 1:160008, doi:10.2134/aer2016.02.0008
126. Lai, L., S. Kumar, R. Chintala, V.N. Owens, D.E. Clay, J. Schumacher, A.S. Nazami, S.S. Lee, and R. Rafique. 2016. Modeling the impact of temperature and precipitation changes on soil CO₂ fluxes from switchgrass stand recently converted from cropland. *J. Environ. Sci.* <http://dx.doi.org/10.1016/j.jes.2015.08.019>.
127. Chang, L., D. E. Clay, A. Smart, and S. Clay. 2016. Estimating annual root decomposition in grassland systems. *Rangeland Ecology & Management* 69:288-291.
128. Chang, J. D.E. Clay, S.A. Clay, R. Chintala, J. Miller, and T. Schumacher. 2016. Corn stover biochar reduced N₂O and CO₂ emissions in soil with different water filled pore spaces and diurnal temperature cycles. *Agron J.* 108:2214-2221.

146. Nemali, K.S., C. Bonin, F.G. Dohleman, M. Stephens, W. R.

163. Mamani-Pati, F., D.E. Clay, S.A. Clay, H. Smeltekop, and M.A. Yujra-Callata. 2012. The influence of strata on the nutrient recycling within a tropical certified coffee production system. ISRN Agronomy# 89290, doi:10.5402/2012/389290. Available at <http://www.isrn.com/journals/agronomy/contents/>.
164. Clay, D.E., J. Chang, S.A. Clay, J.J. Stone, R.H. Gelderman, C.G. Carlson, K. Reitsma, M. Jones, L. Janssen, and T. Schumacher. 2012.

doi:10.1094/CM-2002-12XX-01-MA.

214. Clay, D. E., Kitchen, N., Carlson, C. G., Kleinjan, J. L., and Tjentland, W. A. 2002. Collecting representative soil samples for N and P fertilizer recommendations.

- DeSutter. 1997. Field scale variability of nitrogen and delta 15-N in soil and plants. *Comm. Soil and Plant Analysis*. 28:1513-1527.
234. Clay, S.A., D.E. Clay, Z. Liu, and S.S. Harper. 1996. The effect of ammonia on atrazine sorption and transport. In Meyer M.T. and E.M. Thurman (eds) *Herbicide Metabolites in Surface Water and Groundwater*

254. Clay, D.E., C.E. Clapp, D.R. Linden, and J.A.E. Molina. 1989. Nitrogen-tillage-residue management: 3: The interrelationship between soil depth, N mineralization, and maize production. *Soil Sci.* 147:319-325.
255. Clay, D.E., C.E. Clapp, J.A.E. Molina, and D.R. Linden. 1985. Nitrogen-tillage-residue management: 1: Simulating soil and plant behavior with the model NCSWAP. *Plant and Soil.* 84:67-77.
256. Clay, D.E., J.A.E. Molina, C.E. Clapp, and D.R. Linden. 1985. Nitrogen-tillage-residue management: 2: Calibration of maximum nitrification and denitrification by model simulation. *Soil Sci. Soc. Am. J.* 49:322-325.
257. Clay, D.E., R.L. Mahler, and H.A. Mensor. 1984. The influence of N sources and rates on soil N parameters related to strawberry production in northern Idaho. *Comm. Soil Sci. and Plant Anal.* 15: 819-832.