

## **Frank M. Hons**

Professor of Soil Fertility/Chemistry and AgriLife Research Faculty Fellow  
Dept. of Soil and Crop Sciences, Texas A&M University, College Station, Texas

### **Education/Training**

1978 PhD Soil Science, Texas A&M University  
1974 MS Soil Chemistry, Texas A&M University  
1972 BA Chemistry, University of Dallas

### **Positions and Employment**

1981- present Assistant/Associate/Full Professor, Soil and Crop Sciences, Texas A&M University  
1978-1981 Assistant Professor, Plant and Soil Sciences, Texas Tech University  
1972-1977 Research Assistant; Soil and Crop Sciences, Texas A&M University

### **Program Overview**

My research focuses on soil carbon and nitrogen dynamics, carbon sequestration, bioenergy, conservation tillage, soil testing, production agriculture, and reclamation. Laboratory research deals with basic soil chemistry/biogeochemistry plus applied analyses to complement field research. Field research is centered on nutrient use efficiency and cycling in various production systems; and soil carbon and nitrogen dynamics. Further emphasis has been placed on soil science/agronomic - environmental relationships, soil carbon sequestration, and bioenergy over the past several years. I currently teach an upper-level undergraduate course in Soil Fertility and Plant Nutrient Management (SCSC 422) and associated lab (SCSC 432) each Fall semester and a graduate course in Soil Fertility and Chemistry (SCSC 627) each Spring semester.

### **Significant 5 Year Accomplishments**

Research: Acquired \$2,409,265 of which \$1,714,265 went to my research program. Conducted research on newer GMO cotton varieties showing lower nitrogen requirements compared to older varieties. Developed through research a strategy for revegetation of USEPA's largest Superfund site and assisted with implementation. Conducted research on impact of oilseed meals from dedicated biofuel crops on growth of crop and weed species. Further demonstrated effects of lipid-extracted algae from biodiesel production on soil properties, nutrient availability and plant growth. Research on lignite mine reclamation indicated that although many soil physical and chemical properties achieved native (pre-mined) conditions shortly after reclamation, microbial activity and populations recovered after 15-20 years, and microbial community composition stabilized into a unique climax community. Showed that bioenergy sorghum can produce greater than 30 dry Mg ha<sup>-1</sup>. Carbon dioxide and nitrous oxide emissions were relatively large in this system but were more than offset by the high soil organic C accrual rate and had a favorable life cycle analysis. Complete aboveground biomass removal, however, will deplete soil nutrients over time. Since 2011, authored/co-authored 19 peer-reviewed publications. Teaching: Instructed five semesters of Soil Fertility and Plant Nutrient Management [SFPNM (SCSC 422)], five semesters of SFPNM Lab (SCSC 432), and four semesters of Soil Chemistry and Fertility (SCSC 627). Supervised 3 postdoctoral research associates, 2 Assistant Research Scientists, 7 PhD and 2 MS students, 3 of whom are now assistant professors at various institutions. Supervised 6 undergraduate research projects.

### **Publications**

#### ***Ten most recent publications (120 total)***

1. Shahandeh, H., F.M. Hons, J.P. Wight, and J.O. Storlien. 2015. Harvest strategy and N fertilizer effects on bioenergy sorghum production. *AIMS Energy* 3:377-400. doi: 10.3934/energy.2015.3.377

2. Hu, P., E.B. Hollister, A.S. Somenahally, F.M. Hons, and T.J. Gentry. 2015. Soil bacterial and fungal communities respond differently to various isothiocyanates added for biofumigation. *Front. Microbiol.* 5:729. doi: 10.3389/fmicb.2014.00729.
3. Rothlisberger-Lewis, K.L., J.L. Foster, and F.M. Hons. 2015. Soil carbon and nitrogen dynamics as affected by lipid-extracted algae application. *Geoderma* 262:140-146.
4. Dou, F., J.P. Wight, L.T. Wilson, J.O. Storlien, and F.M. Hons. 2014. Simulation of biomass yield and soil organic carbon under bioenergy sorghum production. *PLOS ONE* 9(12): e115598. doi:10.1371/journal.pone.0115598.
5. Dou, F., F.M. Hons, A.L. Wright, T.W. Boutton, and X.Yu. 2014. Soil carbon sequestration in sorghum cropping systems: Evidence from stable isotopes and aggregate-size fractionation. *Soil Sci.* 179:68-74.
6. Storlien, J.O., F.M. Hons, J.P. Wight, and J.L. Heilman. 2014. Carbon dioxide and nitrous oxide emissions impacted by bioenergy sorghum management. *Soil Sci. Soc. Am. J.* 78:1694-1706.
7. Amatya, P., J.P. Wight, J.W. Mjelde, and F.M. Hons. 2014. Sustainable bioenergy sorghum [*Sorghum bicolor* (L.) Moench.] production for biofuel and its net-returns. *Bioenergy Research* 7:1144-1154.
8. Wight, J.P., F.M. Hons, and G.O. Osuji. 2014. Responses of bioenergy sorghum cell wall metabolism to agronomic practices. *Advances in Biological Chemistry* 4:67-78.
9. R. Carrillo-Gonzalez, M.C.A. González-Chávez, J.A. Aitkenhead-Peterson Peterson, F.M. Hons, and R.H. Loeppert. 2013. Extractable DOC and DON from a dryland long-term rotation and cropping system in Texas, USA. *Geoderma* 198:79-86.
10. Dou, F., F.M. Hons, W.R. Ocumpaugh, J.C. Read, M.A. Hussey, and J.P. Muir. 2013. Soil organic carbon pools under switchgrass grown as a bioenergy crop compared to other conventional crops. *Pedosphere* 23:409-416.

#### **Awards and Honors**

- 2015, Soil Science Education Award, Soil Science Society of America
- 2014, Agronomic Resident Education Award, American Society of Agronomy
- 2012, Luminant Environmental Research Steering Committee
- 2012, Superior Service Award, Deep Profile Nitrate Soil Sampling Team, Texas AgriLife Ext. Service

#### **Professional Experience**

- Advised/co-advised 5 postdoctoral research associates, 19 PhD students, and 24 MS students.
- Authored/co-authored 120 peer-reviewed journal articles, 1 lab manual, 4 book chapters, 60 proceedings, and 248 scientific abstracts/presentations.
- Acquired \$8,250,510 of which \$6,465,281 went to my program.
- Courses instructed: Soil Fertility and Plant Nutrient Management (SCSC 422), Soil Fertility and Plant Nutrient Management Lab (SCSC 432), Soil Chemistry and Fertility (SCSC 627), and Biofuels and the Environment (SCSC 425/625).