

---

---

# Danielle M. Wilson

---

---

Iowa State University  
1494 Agronomy Hall  
Ames, IA 50011  
[dwilson@iastate.edu](mailto:dwilson@iastate.edu)  
515.979.1675

Website: <http://www.agron.iastate.edu/faculty/heaton/>

## EDUCATION:

**Iowa State University, Ames, IA**  
Master of Science Degree: May 2012  
Major: Crop Production & Physiology  
Major Professor: Dr. Emily Heaton  
Thesis: "Where's the nitrogen? The timing and impacts of internal nitrogen cycling on switchgrass (*Panicum virgatum* L.) yield and biofuel quality"  
GPA: 3.36/4.0

**Iowa State University, Ames, IA**  
Bachelor of Science Degree: May 2009  
Major: Agronomy  
GPA: 3.67/4.0  
Graduated with Distinction (Cum laude)

## RESEARCH EXPERIENCE:

**Iowa State University, Agronomy Department, Ames, IA**  
*Graduate Research Assistant*  
Research focused on dedicated bioenergy crops that can be used to meet our advanced biofuels goal, i.e., made from non-food sources like agricultural residues and lignocellulosic feedstocks, has found switchgrass (*Panicum virgatum* L.) to be a leading candidate species. Switchgrass requires nitrogen (N) in greater quantities, compared to other nutrients, for plant biomass production, but high N concentration ([N]) is undesirable in the harvested biomass feedstock for two reasons: 1) it is economically and environmentally expensive to replace N removed from cropping system and 2) N reduces the conversion efficiency of biomass to biofuels via thermochemical conversion. Immediate reductions in the [N] of the harvested portions of perennial feedstocks, including switchgrass, can be achieved by exploiting seasonal internal N cycling. The biology of switchgrass provides some opportunity to naturally manipulate the [N] of this biomass feedstock, but there is a trade-off between the quantity and quality of the feedstock depending on the time of harvest. The research objectives of this project were to: 1) elucidate the spatial and temporal distribution of N in above- and below-ground tissues of field-grown switchgrass to determine its impacts on yield and N removal and 2) determine how switchgrass harvest date influences biofuel quality from fast pyrolysis. We recommend harvesting post-frost switchgrass biomass for improved long-term yields and reduced [N] in the harvested portions of biomass that can result in reduced N removal. This will benefit both biomass producers and also thermochemical facilities who will receive low-N biomass to reduce conversion costs.

## **INTERNSHIPS/WORK EXPERIENCE:**

### **Forage Research Group, Iowa State University, Ames, IA**

*Research Associate II*, September 2013-Present

- Manage graduate students
- Train students on equipment and safety requirements
- Maintain safe laboratory procedures
- Develop Standard Operating Procedures (SOP's)
- Maintain chemical inventories

### **Iowa Sustainable Energy Pathway (ISEP), Ames, IA**

*ISEP Coordinator*, August 2012-August 2013

- Management of data
- Coordination and scheduled events
- Assisted in grant writing
- Management of website using Adobe Dreamweaver CS6
- Management of undergraduate employees
- Coordination of hiring and firing

### **Biomass Crop Production Group, Iowa State University, Ames, IA**

*Graduate Research Assistant*, May 2009-August 2013

- Field experimental design and trial implementation
- Management of Microsoft Office files and analytical proficiency in SAS
- Technical liaison with ConocoPhillips Company, Agronomy Dept., and the Center for Sustainable Environmental Technologies
- Management/organization of undergraduate employees at lab and field level
- Team and independent work
- Excellent time management and organization skills

### **Forages Research Group, Iowa State University, Ames, IA**

*Research Assistant*, June 2006-May 2009

- Preparation of biomass samples for fuel quality analysis (HPLC, GC, Fibers, Dry Matter, NIR)
- Identification of weed species and growth stage of perennial grasses
- Weighed samples and entered data into computer
- Team work

### **Flax Research Group, Iowa State University, Ames, IA**

*Summer Internship*, May 2007-August 2007

- Identification of weed species
- Harvested research plots and compiled data into excel spreadsheets
- Completed personal capstone project and poster presentation to upper management
- Independence and leadership skills used

### **Agriscience Research Project, National FFA Organization**

*Researcher*, "Grass for Biomass"

- Completed project on biomass crops for energy purposes
- Compiled data and entered into Excel, Word, and PowerPoint
- Performed statistical analysis
- Presented results to various audiences

**INTERNATIONAL  
EXPERIENCE:**

**Massey University, Palmerston North, New Zealand**  
*Semester of undergraduate studies: Spring 2008*

**PUBLICATIONS/  
PEER REVIEWED  
JOURNALS:**

- **Wilson D. M.**, E.A. Heaton, L.A. Schulte, T.P. Gunther, R.B. Hall, W.L. Headlee, K.J. Moore, M.E. Maier & N.N. Boersma. *In press*. Establishment and short-term productivity of annual and perennial bioenergy crops across a landscape gradient. *BioEnergy Research*.
- Cole, P.D., E.A. Smith, D. Dalluge, **D.M. Wilson**, E.A. Heaton, R.C. Brown, & Y.L. Lee. 2013. Molecular characterization of Nitrogen-containing species in switchgrass bio-oils at various harvest times. *Fuel*. 111:718-726.
- **Wilson D.M.**, E.A. Heaton, M. Liebman, & K.J. Moore. 2013. Intra-seasonal changes in switchgrass nitrogen distribution compared to corn. *Agronomy Journal*. 105:285-294.
- **Wilson D.M.**, D.L. Dalluge, M. Rover, E.A. Heaton, & R.C. Brown. 2013. Crop management impacts biofuel quality: influence of switchgrass harvest time on yield, nitrogen, and ash of fast pyrolysis products. *BioEnergy Research*. 6:103-113.
- **Wilson D.M.** 2012. Where's the nitrogen? The timing and impacts of internal nitrogen cycling on switchgrass (*Panicum virgatum* L.) yield and biofuel quality. Iowa State University Graduate College, Thesis.

**PUBLICATIONS/  
PEER REVIEWED  
FACT SHEETS:**

- **Wilson D.M.** & Heaton E.A. 2013. Giant *Miscanthus* Establishment. Iowa State University Extension publication.  
<https://store.extension.iastate.edu/ItemDetail.aspx?ProductID=14006>
- **Wilson D.M.** & Heaton E.A. 2013. Giant *Miscanthus* Eradication. Iowa State University Extension publication.  
<https://store.extension.iastate.edu/ItemDetail.aspx?ProductID=13996>
- **Wilson D.M.**, & Heaton E.A. 2013. Giant *Miscanthus* Weed Control. Iowa State University Extension publication.  
<https://store.extension.iastate.edu/ItemDetail.aspx?ProductID=14000>

**PRESENTATIONS:**

- **Wilson D. M.**, Heaton E. A., Schulte L.A., Gunther T.P., Hall R.B., Headlee W.L., Moore K.J., Maier M.E. & Boersma N.N. Nov. 4, 2013. Influence of landscape position on biomass feedstock productivity. ASA-CSSA-SSSA International Annual Meetings. Tampa, FL.
- Heaton E.A., Schulte L.A., & **Wilson D.M.** June 22, 2013. Integrating food and fuel production in temperate climates. BioFuelNet Annual General Meeting Workshop. McGill University. Montreal, Canada.
- **Wilson D. M.**, Heaton E.A., & Schulte L.A. April 26, 2013. Management Matters! Biofuels Workshop at BCRF. Ames, IA
- Heaton E.A., Boersma N.N., Schulte L.A. & **D.M. Wilson**. March 19, 2013. Perennial energy crops in Iowa. 3<sup>rd</sup> Annual Biomass Workshop. Iowa City, IA.

## PRESENTATIONS CONT.:

- Heaton E.A., Schulte L. & **D.M. Wilson**. March 12, 2013. Managing for bioenergy-integrating food and fuel production. Ag Education Day. Emmetsburg, IA.
- **Wilson D. M.**, D.L. Dalluge, M. Rover, E.A. Heaton, & R.C. Brown. Oct. 23, 2012. Crop management impacts biofuel quality: Influence of switchgrass harvest time on yield, nitrogen, and ash of fast pyrolysis products. ASA-CSSA-SSSA International Annual Meetings. Cincinnati, OH.
- Heaton E.A., **Wilson, D.M.**, Dalluge D.L., Rover M. & Schulte L.A. August 2012. Management matters: what engineers should learn about agronomy. Agronomy departmental seminar, Purdue University, W. Lafayette, IN.
- Heaton E.A. **Wilson D.M.**, Dalluge D.L., Rover M. & Schulte L.A. July 2012. Switchgrass and pyrolysis (and more!). (plenary). 3<sup>rd</sup> PanAmerican Congress on Plants and Bioenergy. Urbana-Champaign, IL.
- **Wilson D. M.** April 2, 2012. Where's the nitrogen? The timing and impacts of internal nitrogen cycling on switchgrass (*Panicum virgatum* L.) yield and biofuel quality. Masters defense (public presentation). Agronomy Hall, Iowa State University.
- **Wilson D. M.**, Heaton E. A., & Liebman M. Oct. 17, 2011. Impacts of Internal Nitrogen Cycling within Switchgrass on Biomass Feedstock Sustainability. ASA-CSSA-SSSA International Annual Meetings. San Antonio, Texas
- **Wilson D. M.**, Heaton E.A., & Liebman M. Nov. 2, 2010. Quantifying the timing and impact of internal N movement with switchgrass on crop sustainability. ASA-CSSA-SSSA International Annual Meetings. Long Beach, California.
- **Wilson D. M.**, Heaton E.A. & Liebman M. June 29, 2010. Where and when? Quantifying the movement of nitrogen in switchgrass. 2010 Bio-char Initiative Conference field day.
- **Wilson D. M.**, Heaton E.A., & Liebman M. June 24, 2010.. Where and when? Quantifying the movement of nitrogen in switchgrass. Switchgrass plot field day
- **Wilson D.M.**, March 9, 2010. This is Big!! Graduate Students Pursue Cutting Edge Biorenewable Research. Celebration of Agriculture. Cedar Rapids, Iowa. [http://www.ag.iastate.edu/video/v/This\\_is\\_Big](http://www.ag.iastate.edu/video/v/This_is_Big)
- **Wilson D.M.**, 2009. 2009 BioCentury Research Farm Report. <http://www.biocenturyresearchfarm.iastate.edu/sites/default/files/2009%20BioCentury%20Research%20Farm%20Report.pdf>.
- Heaton E.A., **Wilson D.M.**, & Boersma N. 2009. Miscanthus – Separating Hope from Hype? Iowa State University Agronomy 600 Seminar.

## POSTERS:

- **Wilson D.M.**, Dalluge D.L., Rover M., Heaton E.A., & Brown R.C. February 25, 2013. Crop management impacts biofuel quality: Impact of switchgrass harvest time on yield, nitrogen and ash of fast pyrolysis products. Symposium on Sustainability. Connecting Today's Bottom Line with a Sustainable Future: Our Growing Commitment. Iowa State University Memorial Union.

**POSTERS CONT.:**

- **Wilson D.M.,** Dalluge D.L., Rover M., Heaton E.A., & Brown R.C. November 1, 2012. Crop management impacts biofuel quality: Impact of switchgrass harvest time on yield, nitrogen and ash of fast pyrolysis products. Agronomy Department Research Symposium and Poster Session. Iowa State University.
- **Wilson D.M.,** Dalluge D.L., Rover M., Heaton E.A., & Brown R.C. September 12, 2012. Crop management impacts biofuel quality: Impact of switchgrass harvest time on yield, nitrogen and ash of fast pyrolysis products. New Technology Expo. BioCentury Research Farm. Iowa State University.
- **Wilson D.M.,** Heaton E.A., & Libeman M. November 3, 2011. Impacts of internal nitrogen translocation within switchgrass on biomass feedstock sustainability. Agronomy Department Research Symposium and Poster Session. Agronomy Hall, Iowa State University.
- **Wilson D.M.,** Heaton E.A., & Libeman M. September 21, 2011. Impacts of internal nitrogen translocation within switchgrass on biomass feedstock sustainability. Association of Applied Biologists. Biomass and Energy Crops IV Conference. Champaign, IL.
- **Wilson D. M.,** Heaton E.A.,& Liebman M. Nov. 18, 2010. Quantifying the timing and impact of internal N movement within switchgrass on crop sustainability. Agronomy Department Research Symposium and Poster Session. Agronomy Hall, Iowa State University.
- **Wilson D.M.,** Heaton E.A., Liebman M., & Darr M. Oct. 29, 2009. Quantifying the timing and impact of internal N cycling on switchgrass sustainability and feedstock storage. Agronomy Department Research Symposium and Poster Session. Memorial Union, Iowa State University.
- **Wilson D.M.,** Heaton E.A., Liebman M., & Darr M. Oct. 6, 2009. Quantifying the timing and impact of internal N cycling on switchgrass sustainability and feedstock storage. Live Green Presidential Lecture Series. Iowa State University.
- **Wilson D.M.,** Heaton E.A., Liebman M., & Darr M. Sept. 22, 2009. Quantifying the timing and impact of internal N cycling on switchgrass sustainability and feedstock storage. BioCentury Research Farm Dedication. Iowa State University.

**PROFESSIONAL DEVELOPMENT/ CONFERENCES:**

- ASA-CSSA-SSSA International Annual Meetings. Nov. 3-6, 2013. Tampa, Florida.
- Landscape Biomass field day. Iowa State University BioCentury Farm. July 15, 2013.
- World Food Prize Scholars. Iowa State University field tour. April 29, 2013.
- West Central Valley Career Fair. ISU Agronomist representative. March 28, 2013.
- Biomass Crop Production Workshop. March 19, 2013. Iowa City, IA.
- ASA-CSSA-SSSA International Annual Meetings. Oct. 22-24, 2012. Cincinnati, Ohio.
- Biomass Crop Workshop. October 15, 2012. Chicago High School for Agricultural Sciences visit to Iowa State University. Field Education Lab.
- New Technology Expo. BioCentury Research Farm. Iowa State University. September 12, 2012. Ames, IA.

**PROFESSIONAL  
DEVELOPMENT/  
CONFERENCES CONT.:**

- CenUSA Intern Tour: Biomass Education. July 9, 2012. Ames, IA.
- Biomass Crop Production Workshop. March 8, 2012. Creston, IA.
- ASA-CSSA-SSSA International Annual Meetings. Oct. 17, 2011. San Antonio, TX.
- Association of Applied Biologists. Biomass and Energy Crops IV Conference. Sept. 21, 2011. Champaign, IL.
- ASA-CSSA-SSSA International Annual Meetings. Nov. 2, 2010. Long Beach, CA.
- Bioenergy Feedstock Conference. 2010. University of Illinois, Champaign, IL.
- ASA-CSSA-SSSA International Annual Meetings. 2009. Pittsburgh, PA.

**PROFFESIONAL  
ASSOCIATIONS/CLUBS:**

- 2009- Present. Crop Science Society of America (CSSA)
- 2009- Present. Soil Science Society of America (SSA)
- 2009- Present. Agronomy Society of America (ASA)
- 2009 -Present. Gamma Sigma Delta Agricultural Fraternity
- 2007-2008 Golden Key International Honor Society
- 2005-2006 Agriculture Education Club
- 2006- Present. National Society of Collegiate Scholars
- 2001- 2007 National FFA Organization

**HONORS/AWARDS:**

- World Food Prize Institute 2013
- Celebration of Agriculture Scholarship 2010
- ConocoPhillips Funding 2009-2012
- Agronomy Scholarship 2009-2012
- Pioneer Agronomy Scholarship 2008
- Kiley and Marie Powers, ISU Ag Endowment 2007-2008
- Edgar Timm Memorial Scholarship 2008
- Global Agriculture Programs Scholarship 2008
- Sojourner Scholarship 2008
- Agronomy Travel Fellowship 2008
- George & Nellie Heald Scholarship 2007
- Agronomy Scholarship Endowment 2007
- Western Seed Association Scholarship 2006
- American FFA Degree 2006
- Dean's List at Iowa State University 2005-2009
- ISU Academic Achievement Award/Scholarship 2005-2009
- Iowa FFA Degree 2005
- Iowa Energy Scholarship 2005
- Iowa Biotechnology Scholarship 2005