

MARI S. CHINN

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EDUCATION

Doctor of Philosophy in Biosystems Engineering. University of Kentucky, December 2003. *Dissertation: Solid Substrate Cultivation of Anaerobic Thermophilic Bacteria for the Production of Cellulolytic Enzymes*. GPA: 3.95

Master of Science in Biosystems Engineering. University of Kentucky, December 2000.
Thesis: Temperature control of a solid substrate cultivation deep bed reactor for the production of xylanase by Trichoderma longibrachiatum. GPA: 3.93

Bachelor of Science in Biological Systems Engineering. University of California, Davis, June 1998. Area of emphasis: Biotechnology.

PROFESSIONAL POSITIONS HELD

Professor, Department of Biological and Agricultural Engineering, North Carolina State University, August 2015 to present.

Associate Professor, Department of Biological and Agricultural Engineering, North Carolina State University, August 2010 to 2015.

Assistant Professor, Department of Biological and Agricultural Engineering, North Carolina State University, December 2003 to July 2010.

Instructor, Department of Biological and Agricultural Engineering, North Carolina State University, August 2003 to December 2003.

Graduate Research Assistant, Department of Biosystems and Agricultural Engineering, University of Kentucky, August 2001 to August 2003.

National Science Foundation Graduate Research Fellow, Department of Biosystems and Agricultural Engineering, University of Kentucky, August 1998 to August 2001.

Undergraduate Research Assistant, Department Biological and Agricultural Engineering, University of California, Davis, June 1997 to August 1998.

TEACHING EXPERIENCE

BAE 451 and 452—Senior Design: Fall/Spring 2015 to present

BAE 592/792—Research Methods II: Spring 2015- present

BAE 591/791—Research Methods I: Fall 2014- present

BAE 425/525—Industrial Microbiology and Bioprocessing: Spring 2013

BAE 315—Properties of Biological Engineering Materials: Spring semesters 2004-2010

BAE 308—Fundamentals of Bioprocess Engineering: University of Kentucky Co-taught Fall 2001

PROFESSIONAL SERVICE

- CALS College Committees: *CALS Diversity Council* (2010-2014); *Biofuels Field Day Planning Committee*, member (2007-present); *Bioprocessing Committee*, member (2005); *Biotech/Bioprocessing Focus Centers Committee*, member (2004)
- COE College Committees: *University and Engineering Open House Coordinator* (2005-2012)
- Park Scholars: *Enrichment Grants Committee* (2010-present); *Finalist Interviewer* (2010--)

- NCSU BAE Department Committees: *Course and Curriculum Committee*, member (2003-present); *Recruitment and Placement Committee*, member (2003-present); *Scholarship Committee*, member (2011 - present) *Committee for Biomechanics Service Laboratory*, co-chair (2006-present), member (2005-present); *Ad hoc committee for Bioprocess Engineering Comprehensive Review and Departmental Compact Plan*, Chair (2005-present); *Ad hoc committee for Annual Staff Award and Appreciation Luncheon*, member & organizer (2005-present); *Ad hoc committee for Departmental Spring Banquet*, member & organizer (2007-present); *Ad hoc committee for BAE recruitment video*, member (2008); *Ad-hoc Committee for Assessing BAE's Role in the Dole Foods Initiatives*, member (2005); *Ad hoc Selection Committee for Bioprocess Engineering Extension Position*, member (2005); *Ad hoc Selection Committee for BAE Administrative Assistant*, member (2004); *Ad hoc Committee for the BAE Research Shop*, member (2003); *Ad-hoc Committee for Bioprocess Engineering*, member (2003-2004).
- Biotechnology Faculty Member (NCSU Biotechnology Program)
- M-115 Young Educator Award Selection Jury Committee, ASABE, Secretary/Chair Elect (2011-2012)
- American Society of Agricultural and Biological Engineers (ASABE), Nominating Committee (2009-2011)
- American Society of Agricultural and Biological Engineers (ASABE), BE Division-28, past Chair (2008), Chair (06-07), Vice-chair/acting chair (2004-06).
- American Society of Agricultural and Biological Engineers (ASABE), 2006 Annual International Meeting Session Moderator, Session 120-BE10—Challenges in Lignocellulosic Conversion; 2005 Annual International Meeting Session Organizer and Moderator, Sessions 708a,b—Bioconversion and Bioprocessing.
- American Society of Agricultural Engineers (ASAE) NC Section, President (2011- present); Vice President (2004 to 2011)
- Institute of Biological Engineering (IBE), Student Chapters Committee, member (2005 to 2007)
- NC Biomass Council, member
- ASAE Southeast Regional Rally for Pre-professionals, 2005. Organized and coordinated a three day mini-conference, consisting of industry tours, activities, meals, and business meetings, for pre-professionals from peer institutions in the southeast (~50 participants, 7 universities, April 7-9, 2005)
- ASABE Southeast Regional Rally for Pre-professionals, 2010. Chaperone for NCSU pre-professional participants (7 students, Host: NC A&T State University, April 2, 2010)
- ASABE Southeast Regional Rally for Pre-professionals, 2009. Chaperone for NCSU pre-professional participants (10 students, Host: University of Georgia, March 26-28, 2009)
- ASABE Professional Development Ropes Course Excursion for Pre-professionals, 2008. Chaperone for NCSU and Virginia Tech pre-professional participants (13 students + Virginia Tech Attendees, Host: NC State University, April 4-6, 2008)
- ASABE Southeast Regional Rally for Pre-professionals, 2007. Chaperone for NCSU pre-professional participants (11 students, Host: Auburn University, March 22-24, 2007)
- ASABE Southeast Regional Rally for Pre-professionals, 2006. Chaperone for NCSU pre-professional participants (7 students, Host: University of Kentucky, April 6-8, 2006)
- NC A&T Biological Engineering Program Advisory Board Member (2009-present)
- NSF SBIR/STTR Program, Panel Reviewer
- Bank of America Jeffress Memorial Trust Research Grant, Proposal Reviewer
- USDA SBIR Animal Waste Management Program, Proposal Reviewer
- RPT Package External Reviewer, 1 package
- Reviewer: Transactions of ASAE, Biotechnology Progress, Bioresource Technology, Biochemical Engineering Journal, International Journal of Molecular Sciences
- Internal Departmental Reviewer for manuscript submissions, 1-2 per year
- BAE Department Teaching Reviews, Peer Reviewer, 1-2 per year (2005 to present)
- Graduate Councilor, Institute of Biological Engineering. March 1999 to December 2001.
- University of Kentucky Committees: *Graduate Committee Member* (2 years), *Undergraduate Curriculum Committee Member* (2 years), *Student Government Departmental Contact* (2 years), *Search Committee Member for Associate Dean for Research* (4 months), *Reviewer for Society of Women Engineers (SWE) Scholarships*.

RESEARCH FUNDING/GRANTS AWARDED

Funded External and Internal Support (competitive research dollars):

As of August 2014, 25 project proposals have been awarded totaling **\$4,849,519** of which **\$2,124,686** were secured as a **Lead PI**, **\$835,052** as a **PI**, and **\$1,889,781** as a **Co-PI**.

The following descriptions are used to define my investigative roles in the funded grants:

Lead PI—Leading/responsible investigator	PI—Major significant role, routinely active
Co-PI—supporting role, actively involved	Collaborator—Advisory or supporting role

1. M.W. Veal and **M.S. Chinn**. A Study to Determine if the Biofuel Crop Camelina is a Wildlife Attractant. *North Carolina Department of Transportation 2014*, \$293,132, 2 years.
Role: Current **Lead PI** (previous Lead—Veal), Research Associate
Impact: Camelina production in NC will be demonstrated and additional yields collected to assess feasibility of growing this alternative oilseed in a generally warmer climate and as a rotational crop. Change in land use at local airports will be assessed as to not disrupt land typically used for food and feed. Changes in wildlife pattern will be documented. Near-term camelina markets will be explored.
2. R. Gehl (Smyth, Crozier), M.W. Veal and **M.S. Chinn**. Production of Potential Bioenergy Crops on Swine Effluent Sprayfields in North Carolina. *NC Department of Agriculture 2014*, \$99,934, 1 year.
Role: **PI** *Impact:* See funded project #9
3. M.W. Veal and **M.S. Chinn**. Evaluating Cotton Field Soil Health Improvements by Cover Crops. Cotton Incorporated 2014, \$20,000, 1 year.
Role: Current **Lead PI** (previous Lead—Veal), M.S. graduate student
Impact: The effects of using multi-species cover crops in cotton production to reduce soil compaction, enhance soil nutrients, and reduce weeds will be evaluated and data used to make recommendations for future management practices.
4. **M. S. Chinn**, M.W. Veal and Avoca, Inc. Rapid Quantification of Natural Products by NIR Methods and Characterization of Marketable Co-Products: Applications in Clary Sage. *NC Biotechnology Center-CFG 2013*, \$120,000, 2 years.
Role: **Lead PI**, Post-Doctoral Fellow
Impact: NIR model development for measurement of moisture content and sclareol will enhance processing efficiency and research and development efforts at AVOCA Inc. in their botanical extraction process. Additional value-added products from residue streams will be investigated for improved sage utilization.
5. R. Gehl, M.W. Veal and **M.S. Chinn**. Production of Potential Bioenergy Crops on Swine Effluent Sprayfields in North Carolina. *Biofuels Center of North Carolina (2013)*, \$95,983, Year 3/recurring.
Role: **PI** *Impact:* See funded project #9
6. **M.S. Chinn**, M.W. Veal and J.M. Bruno-Barcelona. On-Farm Biomass Processing Towards an Integrated High Solids Transporting/Storing/Processing System. *US Department of Agriculture BRDI, 2010—subcontract University of Kentucky*, \$1,186,904, 4 years.
Role: **Co-Lead PI**, Primary supervisor of multiple personnel including research associates, technicians, PhD and M.S. graduate students and undergrad research assistants.
Impact: Data for various operations within an integrated on-farm processing system involving production and storage of perennial grasses and sorghum, multiple anaerobic cultures for fermentation and gasification technology for maintaining appropriate environmental conditions and handling residues will be collected and assessed. Functional integration of successful methods will be explored to enhance the value of the farm-gate product.
7. **M.S. Chinn**, M.W. Veal, R. Heiniger and J. Bruno-Barcelona. Sorghum Biofuels: A Route to Commercialization in North Carolina. *Biofuels Center of North Carolina 2010*, \$149,488, 1 year.
Role: **Lead PI**, Research Associate, M.S. graduate student (committee member)

Impact: Demonstration of industrial-scale sorghum production, harvest, juice extraction and fermentation. Economic and life cycle analysis of the process will provide interested stakeholders with information significant to making investment decisions. Butanol fermentations using sorghum sugars will be explored.

8. R. Gehl, M.W. Veal and **M.S. Chinn**. Production of Potential Bioenergy Crops on Swine Effluent Sprayfields in North Carolina. *Biofuels Center of North Carolina (2012)*, \$180,684, Year 2/recurring.
Role: **PI** *Impact:* See funded project #9
9. R. Gehl, M.W. Veal and **M.S. Chinn**. Production of Potential Bioenergy Crops on Swine Effluent Sprayfields in North Carolina. *Biofuels Center of North Carolina 2011*, \$234,983, Year 1/recurring (5 years).
Role: **PI**, Supervise research technicians and undergraduate research assistants
Impact: Data collected from this work will provide yields for perennial grasses and sorghums that can serve as feedstocks for bioenergy and biobased products. Nutrient uptake on sprayfields and related economics will assist in development of application management strategies and regulations.
10. M. Flickinger, S. Peretti, A. Grunden, **M.S. Chinn**. Gas Stream Cox Adsorption and Ethnaol Synthesis using Latex Immobilized Microbes—CBERD Core Project. 2012 *NSF CBERD Project*, \$33,000, 1 year.
Role: **Co-PI** *Impact:* See funded project #11
11. M. Flickinger, S. Peretti, A. Grunden, **M.S. Chinn**. Gas Stream Cox Adsorption and Ethnaol Synthesis using Latex Immobilized Microbes—CBERD Core Project. 2010. *NSF CBERD Project*, \$25,000, 1 year.
Role: **Co-PI**
Impact: The project will further investigate the methods developed to support the fermentation performance of *C. ljungdahlli* in latex coatings as a high surface area, low volume immobilization method. Novel reactor designs to manage a gaseous substrate and liquid product fermentation systems will be developed for *C. ljungdahlli* immobilized in latex coatings.
12. **M.S. Chinn**, M.W. Veal, G.C. Yench. Use of Industrial Sweetpotatoes for Value-Added Products: Demonstration-Scale Processing and Outreach. *NC Ag Foundation 2010*, \$71,772, 3 years.
Role: **Lead PI**, Chair of PhD student
Impact: The project will further examine the potential of industrial sweetpotato varieties for biobased products through development of NIR composition analysis methods, establishment of processing parameters for scaled hydrolysis and fermentation, evaluation of economics and outreach activities.
13. M.W. Veal, **M.S. Chinn** and L.F. Stikeleather. Optimizing Cultivation and Conversion Parameters for Efficient Sweet Sorghum Bioethanol. *Biofuels Center of North Carolina 2009*, \$183,468, 3 years
Role: **PI**, Chair of PhD student
Impact: The project will identify functional uses of bagasse, develop NIR composition analysis methods from sweet sorghum, examine crop development and difference in varieties and establish parameters for scaled in-field fermentations
14. **M.S. Chinn**, M. Flickinger, A. Grunden, S. Peretti and K. Zering. Production of Biofuels from Waste Gas Streams using Textiles Coated with Microbial Catalysts. *NC Biotechnology Center 2008*, \$243,975, 2 years
Role: **Lead PI**, Supervisor of Ph.D. Research Associate, Committee member of PhD student, Advisor of 2 undergraduate researchers
Impact: The project will define the fundamental knowledge necessary to effectively use autotrophic bacteria in combination with acetoclastic methanogens to produce ethanol and acetate. Improved ethanol yields and selectively, use of nanostructured polymer coatings to enhance system robustness, metabolic pathway modeling and economics are key aspects of the project.
15. **M.S. Chinn**. Examination of Cellulase Enzyme Production and Efficacy. *Gift—Cover Technologies 2007*, \$6775, 6 months
Role: **Lead PI**, Advisor of undergraduate researcher
Impact: Enzymes produced by cellulolytic fungi on paper pulp sludge can contribute to low cost crude enzymes that are effective in the conversion of cellulosic biomass to sugars. The specialty paper-based

substrate from CoverTech has upwards of 95% cellulose yet the crystalline structure may impact extent of hydrolysis by commercial enzymes

16. J.J. Classen, R. Sharma, **M. Chinn** and K. Zering. Opportunities for Biofuel Feedstocks at the Neuse River Wastewater Treatment Plant. *NCSU-WRRI Urban Water Consortium 2007*, \$126,170 18 months.
Role: co-PI
Impact: A report was completed describing the potential of various land-application and crop rotation scenarios, possibilities of using crops for biofuel production and economics of operations at the Neuse River Wastewater Treatment Plant
17. S.W. Peretti, A. Hobbs, S. Kelley, K. Swartzel, K. Creamer, C. Yencho, **M. Chinn**, R. Sharma-Shivappa and H. Jameel. Pilot Plant to Enhance Sustainable Conversion of Biomass to Ethanol Fuels in North Carolina. *Golden Leaf Foundation 2006*, \$1,683,204, multi-year no-cost extension
Role: co-PI, responsible for making unit operation design considerations and running industrial sweetpotato trials in pilot plant facility
Impact: A pilot plant facility has been designed for construction and use by university faculty and interested stakeholders.
18. M.W. Veal, **M. S. Chinn**, L. F. Stikeleather and M.D. Boyette. On-farm Biofuel Production from Sweet Sorghum Juice. *Sustainable Agriculture Research & Education Program/SR USDA 2006*, \$15,000, 1 year.
Role: PI, Advisor of undergraduate researcher (funds supported activities, not personnel)
Impact: A demonstration scale fermentation unit and distillation column were constructed and highlighted at extension field days. Fermentation trials provided useful data for subsequent industrial scale trials and leverage for attracting additional external funds
19. **M. S. Chinn**, L. F. Stikeleather and M.D. Boyette. On-farm Conversion of Sweet Sorghum Juice to Bioethanol. *University Extension, Engagement and Economic Development Grant Program 2006*, \$15,000, 1 year.
Role: Lead PI, Advisor of undergraduate researcher (funds supported activities not personnel)
Impact: Initial field and laboratory fermentation trials were completed for juice stored at different conditions. A demonstration scale fermentation unit and distillation column were constructed and highlighted at extension field days. Fermentation trials provided useful data for subsequent industrial scale trials and leverage for attracting additional external funds.
20. J.J. Classen, R. Sharma, **M. Chinn** and K. Zering. Opportunities for Biofuel Feedstocks at the Neuse River Wastewater Treatment Plant. *City of Raleigh Public Utilities 2006*, \$22,407, 5 months.
Role: co-PI, co-advised PhD student
Impact: Initial data was collected to assess the feasibility of completing an assessment study for the Neuse river facility. The information led to securing additional funds.
21. **M. S. Chinn** and R.R. Sharma. Development of a Marketing Survey for Bioprocess Engineering Distance Education. *BAE Distance Education Grant Program, NCSU 2006*, \$9990, 5 months.
Role: Lead PI, Supervisor of part-time graduate research assistant
Impact: Surveys targeting biotech companies and universities in the Southeast US for their interest in bioprocess engineering distance education topics were constructed and made available online. Responses were solicited by email, phone and in person, yet the response rate was low. DE programming with a general bioprocessing focus was seemingly not significant at the time.
22. **M. Chinn**, R. Sharma, M. Boyette, J. Classen and F. Humenik. Request for a Gas Chromatograph Workstation. *CALS Small Equipment Grants Program 2005*, \$3,650.
Role: Lead PI
Impact: The workstation allowed functional use of a gas chromatograph that has been and continues to be instrumental in providing analytical data for numerous projects in the BAE bioprocessing lab.
23. **M.S. Chinn**. Biological Conversion of synthesis gas to ethanol using resting cells. *NC State University Faculty Research and Professional Development Individual Grants Program 2004*, \$4000, 1 year.
Role: Lead PI, Chair MS graduate student (funds supported activities not personnel)

Impact: The influence of environmental conditions on growth and end product formation of two autotrophic bacteria were studied, and results have led to peer-reviewed publications, expansion of objectives and collaborative arrangements and attraction of additional funds.

24. R. Sharma, **M. Chinn**, M. Boyette. Solvent extraction and composition analysis of capsaicin from different parts of habanero peppers (*Capsicum chinense*) for application in food processing. *NC Specialty Crops Program 2003*, \$15,000, 1 year.
Role: PI, Advisor of undergraduate researcher (funds supported activities not personnel)
Impact: The initial preparation methods and solvent used affect the yield of capsaicin and dihydrocapsacin extracted from habanero peppers. Although majority of the capsaicinoids are in/near the seeds, whole peppers are more cost-effective to process.
25. R. Sharma, **M. Chinn**, J. Cheng, J. Classen, A. Hale. Request for a Spectrophotometer. *CALS Overhead Equipment Grants Program 2003*, \$10,000.
Role: PI
Impact: The spectrophotometer has been and continues to be instrumental in providing analytical data for numerous projects in the BAE bioprocessing lab.

Funded Undergraduate Research Support:

Overall Impact: \$23, 200 have been awarded specifically for undergraduate research projects. Funds have provided scholarly training for students, supported personnel for funded projects, and lead to generation of preliminary data used to secure external funding, submitted manuscripts and quality graduate student researchers.

- ◆ J. Whitham, **M.S. Chinn** (co-Advisor) and A.M. Grunden. Sequential fermentation of C1 Containing Waste Gas Streams by Clostridia and Methanogens for Ethanol and Methane Production. *NC Biotechnology Center Undergraduate Biotechnology Research Fellowship*: \$5000
- ◆ B.G. Schuster and **M.S. Chinn** (Faculty Advisor). Cellulase production from sweet sorghum bagasse using *Clostridium thermocellum*. *NC Biotechnology Center Undergraduate Biotechnology Research Fellowship*: \$5000
- ◆ E.E. Godfrey and M.S. Chinn (Faculty Advisor). Design of an Imbert downdraft gasifier and syngas cooling system. *Undergraduate Research Award Spring 2010*: student stipend \$750
- ◆ A.R. Byrd and **M.S. Chinn** (Faculty Advisor). Production of value-added products from Muscadine grapes and residues. *Undergraduate Research Award Spring 2010*: stipend \$750; materials & supplies \$300
- ◆ A.R. Byrd and **M.S. Chinn** (Faculty Advisor). Production of value-added products from grape waste. *Park Scholarships GRASP*: \$1000
- ◆ V.M. Mbaneme and **M.S. Chinn** (Faculty Advisor). Saccharification of a paper-based substrate for production of fermentable sugars. *Undergraduate Research Award Spring 2009*: student stipend \$750; materials & supplies \$300
- ◆ V.M. Mbaneme and **M.S. Chinn** (Faculty Advisor). Production of low-cost cellulase enzymes in solid substrate fermentation for the conversion of lignocellulosic biomass to ethanol. *Undergraduate Energy Related Research Award Spring/Summer 2008*: student stipend \$3700; materials & supplies \$300
- ◆ E.N. Hill and **M. S. Chinn** (Faculty Advisor). Investigation of fermentation and process conditions for the production of ethanol from sweet sorghum juice. *Undergraduate Research Award Spring 2007*: student stipend \$750; materials & supplies \$300
- ◆ E.N. Hill and **M.S. Chinn** (Faculty Advisor). Design of Processing Conditions for Conversion of the Purple Sweetpotato to Useful Sugars. *NCSU Undergraduate Energy Related Research Award Fall 2007*: student stipend \$1750; materials and supplies \$300
- ◆ L.J. Fleischmann and **M. S. Chinn** (Faculty Advisor). Production of low cost amylase enzymes in solid substrate cultivation. *Undergraduate Research Award Spring 2006*: student stipend \$500; materials & supplies \$500
- ◆ C.E. Nivens and **M. S. Chinn** (Faculty Advisor). Saccharification of sweet potatoes for the production of ethanol. *Undergraduate Research Award Spring 2006*: student stipend \$500; materials & supplies \$500

- ◆ J. Bridges, A. Johnson and **M. Chinn** (Faculty Advisor). Design of a thermophilic anaerobic solid substrate cultivation reactor for growth studies on agricultural residues. *Undergraduate Research Award Spring 2004*: student stipend \$500; materials & supplies \$500.

SCHOLASTIC AND PROFESSIONAL HONORS

- A.W. Farrall Young Educator Award, American Society of Agricultural and Biological Engineers, 2011
- National Science Foundation Graduate Fellowship, 1998 to 2001
- Lyman T. Johnson Graduate Fellowship, 1998 to 2003
- Engineer-In-Training Certificate No. 11328, Awarded June 1999
- Departmental Citation, College of Engineering, UC Davis, 1998
- University-wide Outstanding Senior, UC Davis, 1997-1998
- Howard R. Murphy Scholarship, UC Davis, 1996-97
- Chancellor's Achievement Award, UC Davis, 1994-98
- Sigma Xi, member
- Alpha Epsilon, UK Chapter President, April 2001 to April 2002; President-Elect, April 2000-01; Vice-President, April 1999-00
- Gamma Sigma Delta, member
- Tau Beta Pi, member
- Golden Key National Honor Society, member

PROFESSIONAL MEMBERSHIPS

- American Society of Agricultural and Biological Engineers (ASABE), since 2000
- Institute of Biological Engineering (IBE), since 1999

PUBLICATIONS

1. Mbaneme-Smith⁺, V. and M.S. Chinn. 2015. Consolidated Bioprocessing for Biofuel Production: Recent Advances. *Energy and Emission Control Technologies*
2. Diaz⁺, J.T., **M.S. Chinn** and V.D. Truong. 2014. Simultaneous Saccharification and Fermentation of Industrial Sweetpotatoes for Ethanol Production and Anthocyanin Extraction. *Industrial Crops and Products*. In Press.
3. Caffrey⁺, K. M.W. Veal and **M.S. Chinn**. 2014. The Farm to Biorefinery Continuum: A techno-economic and LCA analysis of ethanol production from sweet sorghum juice. *Agricultural Systems*. [doi:10.1016/j.agry.2014.05.016][§]
4. Shi, J⁺, **M.S. Chinn** and R. Sharma-Shivappa. 2014. Interactions between Fungal Growth, Substrate Utilization and Enzyme Production during Solid State Cultivation of *Phanerochaete chrysosporium* on Cotton Stalks. *Bioprocess and Biosystems Engineering*. [doi:10.1007/s00449-014-1224-3]
5. Diaz⁺, J.T., M.W. Veal and **M.S. Chinn**. 2014. Development of NIRS models to predict composition of enzymatically processed sweetpotato. *Industrial Crops and Products* 59:119-124. [doi: 10.1016/j.indcrop.2014.05.012]
6. Whitified⁺, M.B., **M.S. Chinn** and M.W. Veal. 2014. Recommendations to Mitigate Potential Sources of Error in Preparation of Biomass Sorghum Samples for Compositional Analyses Used in Industrial and Forage Applications. *BioEnergy Research*. [doi: 10.1007/s12155-014-9476-y][§]
7. Sandoval-Espinola⁺, W., S. Makwana⁺, **M.S. Chinn**, M.R. Thon, M.A. Azcárate-Peril and J.M. Bruno-Bárcena. 2013. Comparative phenotypic analysis and genome sequence of *Clostridium beijerinckii* SA-1, an offspring of NCIMB 8052. *Microbiology* 62:2558-2570. [doi:10.1099/mic0.069534-0]
8. Bruno-Barcena, J.M., **M.S. Chinn**, A.M. Grunden. 2013. Genome Sequence of the Autotrophic Acetogen *Clostridium autoethanogenum* JA1-1 Strain DSM 10061, a Producer of Ethanol from Carbon Monoxide. *Genome Announcements* 1(4): e00628-13. [doi: 10.1128/genomeA.00628-13]
9. Duvernay⁺, W.H., **M.S. Chinn** and G.C. Yencho. 2013. Hydrolysis and Fermentation of Sweetpotatoes for Production of Fermentable Sugars and Ethanol. *Industrial Crops and Products* 42(1): 527-537.

10. Gosse, J.L. ⁺, **M.S. Chinn**, A.M. Grunden, O.I. Bernal, J. S. Jenkins, C. Yeager, S. Kosourov, M. Seibert and M.C. Flickinger. 2012. A Versatile Method for Preparation of Hydrated Microbial-Latex Biocatalytic Coatings for Gas Absorption and Gas Evolution. *Journal of Industrial Microbiology and Biotechnology* 39(9): 1269-1278. doi: 10.1007/S10295-012-1135-8.
11. Schuster, B.G. and **M.S. Chinn**. 2012. Consolidated Bioprocessing of Lignocellulosic Feedstocks for Ethanol Fuel Production. *BioEnergy Research* doi:10.1007/s12155-012-9278-z. pp. 1-20.
12. Shi, J. ⁺, R. Sharma-Shivappa, **M. Chinn**. 2012. Interactions between Fungal Growth, Substrate Utilization and Enzyme Production during Shallow Stationary Cultivation of *Phanerochaete chrysosporium* on Cotton Stalks. *Enzyme and Microbial Technology* 51: 1-8.
13. Mbaneme-Smith ⁺, V., P. Kolar, M.D. Boyette, **M.Chinn**, C. Smith, R. Gangadharan and G. Zhang. 2012. Advanced oxidation of toluene using Ni-Olivine Catalysts-Part 1: Synthesis, Characterization and Evaluation of Ni-Olivine Catalysts for Toluene Oxidation. *Transactions of ASABE* 55(3): 1013-1024.
14. Mbaneme-Smith ⁺, V., P. Kolar, M.D. Boyette, **M.Chinn**, C. Smith, R. Gangadharan and G. Zhang. 2012. Advanced oxidation of toluene using Ni-Olivine Catalysts-Part 2: Toluene oxidation kinetics and mechanisms of Ni-Olivine Catalysts Synthesized via electroless deposition and thermal impregnation. *Transactions of ASABE* 55(6): 2273-2283.
15. Whitfield, M.B. ⁺, **M.S. Chinn** and M.W. Veal. 2011. Processing of Materials Derived from Sweet Sorghum for Biobased Products. *Industrial Crop and Products* 37(1): 362-375.
16. Tirado-Acevedo ⁺, O., **M.S. Chinn** and A.M. Grunden. 2011. Influence of carbon source pre-adaptation on *Clostridium ljungdahlii* growth and product formation. *Journal of Bioprocessing and Biotechniques* S2:001 doi:10.4172/2155-9821.S2-001
17. Slivka, R.M. ⁺, **M.S. Chinn** and A.M. Grunden. 2011. Gasification and Synthesis Gas Fermentation: An Alternative Route to Biofuel Production. *Biofuels* 2 (4): 405-419.
18. Bridgers, E.N. ⁺, **M.S. Chinn**, M.W. Veal and L.F. Stikeleather. 2011. Influence of Juice Preparations on the Fermentability of Sweet Sorghum. *Biological Engineering Transactions* 4(2): 57-67.
19. **Chinn, M. S.**, R. R. Sharma-Shivappa and J. L. Cotter. 2011. Solvent Extraction and Quantification of Capsaicinoids from *Capsicum Chinense*. *Food and Bioproducts Processing*. 89(4): 340-345.
20. Bridgers ⁺, E.N., **M.S. Chinn**, V.D. Truong. 2010. Extraction of anthocyanins from industrial purple-fleshed sweetpotatoes and enzymatic hydrolysis of residues for fermentable sugars. *Industrial Crops and Products*. 32:613-620 ^{§(cited 25 times)}
21. Tirado-Acevedo ⁺, O., **M.S. Chinn** and A.M. Grunden. 2009. Production of Biofuels from Synthesis Gas Using Microbial Catalysts. *Advances in Applied Microbiology*. In Press.
22. Cotter ⁺, J. L., **M. S. Chinn** and A.M. Grunden. 2009. Influence of Process Parameters on Growth of *Clostridium ljungdahlii* and *Clostridium autoethanogenum* on Synthesis Gas. *Enzyme and Microbial Technology*. 5: 281-288. ^{§(cited 31 times)}
23. Cotter ⁺, J. L., **M. S. Chinn** and A. M. Grunden. 2009. Ethanol and Acetate Production by *Clostridium ljungdahlii* and *Clostridium autoethanogenum* using Resting Cells. *Bioprocess and Biosystems Engineering*. 3: 369-380.
24. Shi ⁺, J., R. R. Sharma-Shivappa and **M. S. Chinn**. 2009. Microbial Pretreatment of Cotton Stalks by Submerged Cultivation of *Phanerochaete chrysosporium* for Bioethanol Production. *Bioresource Technology*. 100(19):4388-4395.
25. Shi ⁺, J., R. Sharma-Shivappa, **M.S. Chinn**, N. Howell. 2009. Effect of microbial pretreatment on enzymatic hydrolysis and fermentation of cotton stalk for ethanol production. *Biomass and Bioenergy*. 33(1): 88-96.
26. Shi ⁺, J., **M. S. Chinn** and R. R. Sharma-Shivappa. 2008. Microbial Pretreatment of Cotton Stalks by Solid State Cultivation of *Phanerochaete chrysosporium* for Bioethanol Production. *Bioresource Technology*. 99(14): 6556-6564
27. **Chinn, M. S.**, S. E. Nokes and H. J. Strobel. 2008. Influence of Moisture Content and Cultivation Duration on *Clostridium thermocellum* 27405 in Solid Substrate Cultivation on Avicel. *Bioresource Technology*. 99(7): 2664-2671.
28. Shi ⁺, J., R. Sharma-Shivappa, **M.S. Chinn**, R.A. Dean, R.B. Shivappa. 2007. Challenges in quantification of ligninolytic enzymes from *Phanerochaete chrysosporium* cultivation for pretreatment of cotton stalks. *Transactions of ASAE*. 50(6): 2347 – 2354.

29. **Chinn, M. S.**, S. E. Nokes and H. J. Strobel. 2006. Influence of Process Conditions on End Product Formation from *Clostridium thermocellum* 27405 in Solid Substrate Cultivation on Paper Pulp Sludge. *Bioresource Technology*. 98: 2184-2193.
30. **Chinn, M. S.**, S. E. Nokes and H. J. Strobel. 2006. Screening of Thermophilic Anaerobic Bacteria for Solid Substrate Cultivation on Lignocellulosic Substrates. *Biotechnology Progress*. 22(1): 53-59. ^{+\$}**Top Ten Most accessed articles of 2006 in Biotechnology Progress (cited 26 times)**
31. **Chinn, M. S.** and S. E. Nokes. 2003. Temperature Control of a Solid Substrate Cultivation Deep Bed Reactor Using an Internal Heat Exchanger. *Transactions of the ASAE* 46(6): 1741-1749.
32. **Chinn, M. S.**, S. E. Nokes and R. S. Gates. 2003. PC Based Data Acquisition for a Solid Substrate Cultivation Deep Bed Reactor. *Applied Engineering in Agriculture* 19(2): 237-245.

Peer Reviewed* Extension Publications[#]

1. K.R. Caffrey⁺ and **M.S. Chinn**. 2014. Life Cycle Assessment: Description and Methodology. *Extension Bulletin AG-XXX*. North Carolina Cooperative Extension. In Press.
2. K.R. Caffrey⁺ and **M.S. Chinn**. 2014. Carbon Accounting: Description and Methodology. *Extension Bulletin AG-XXX*. North Carolina Cooperative Extension. In Press.
3. M.W. Veal, **M.S. Chinn**, and M.B. Whitfield. 2014. Sweet Sorghum Production to Support Energy and Industrial Products. *Extension Bulletin AG-787*. North Carolina Cooperative Extension.
4. M.W. Veal, **M.S. Chinn**, L.F. Stikeleather, and M.B. Whitfield. 2014. Sweet Sorghum Ethanol Production. *Extension Bulletin AG-786*. North Carolina Cooperative Extension.
5. M.W. Veal, **M.S. Chinn**, A.M. Grunden, and K.R. Caffrey. 2013. Algae for Biofuels – Production and Conversion. *Southern Regional Aquaculture Center Factsheet 4309*. U.S. Department of Agriculture. Available at: <https://srac.tamu.edu/index.cfm/event/getFactSheet/whichfactsheet/268/>
6. M.W. Veal, K.R. Caffrey, **M.S. Chinn**, and A.M. Grunden. 2013. Algae for Biofuels – Economic and Environmental Costs. *Southern Regional Aquaculture Center Factsheet 4310*. U.S. Department of Agriculture. Available at: <https://srac.tamu.edu/index.cfm/event/getFactSheet/whichfactsheet/269/>
7. M.W. Veal and **M.S. Chinn**. 2007. Ethanol: A Gasoline Alternative for North Carolina. *Extension Bulletin AG687*. North Carolina Cooperative Extension.
[#]Also listed in Extension and Engagement Section IV

PRESENTATIONS

1. Caffrey⁺. K., M. Veal, **M. Chinn**, M. Poore, M. Kay. 2014. Biomass storage characteristics of bales and ensilage: Switchgrass (*Panicum virgatum*), Miscanthus (*Miscanthus giganteous*), Giant Reed (*Arundo donax*), and Sweet Sorghum (*Sorghum bicolor*). Presented at the 2014 ASABE Annual International Meeting. Montreal, QC, Canada. July 13-16, 2014.
2. Caffrey⁺, K., **M. Chinn**, E. Godfrey III, M. Veal. 2014. Determination of Pellet Quality Parameters from Stored Perennial Grass Bales: Switchgrass (*Panicum virgatum*), Miscanthus (*Miscanthus giganteous*), and Giant Reed (*Arundo donax*). Presented at the 2014 ASABE Annual International Meeting. Montreal, QC, Canada. July 13-16, 2014.
3. Mbaneme⁺, V., **M. Chinn**, M. Veal and J. Bruno-Barcena. 2014. Influence of Synthesis Gas on Cellulose Conversion using *Clostridium Thermocellum* in a Consolidated Bioprocessing System. Presented at the 2014 ASABE Annual International Meeting. Montreal, QC, Canada. July 13-16, 2014.
4. Caffrey⁺, K.R., M.W. Veal and **M.S. Chinn**. 2014. Technoeconomic Evaluation of On-Farm Biodiesel Production from *Camelina sativa* in the Southeastern United States. Presented at the 11th Annual World Congress on Industrial Biotechnology. Philadelphia, PA. May12-15, 2014.
5. Caffrey⁺, K.R., M.W. Veal and **M.S. Chinn**. 2013. Bioenergy from Sweet Sorghum: An Economic, Environmental and Energy Assessment for Evaluating System Configuration (Farm to Biorefinery). Presented at the 2013 ASABE Annual International Meeting. Kansas City, MO. July 21-24, 2013.
6. Caffrey⁺, K.R., M. Whitfield⁺, J. Johnson⁺, M.W. Veal, **M.S. Chinn**, and R. Gehl. 2013. Growing Bioenergy Feedstocks on Hog Effluent Spray Fields: An Economic, Environmental and Energy Assessment. Presented at the 2013 ASABE Annual International Meeting. Kansas City, MO. July 21-24, 2013. *Paper No. 1547529*

7. Sandoval⁺, W., **M.S. Chinn** and J.M. Bruno-Barcena. *Clostridium beijerinckii* SA-1 is a butanol hyper-producing strain. Presented at the 2013 American Society for Microbiology General Meeting. Denver, CO. May 20, 2013.
8. Slivka, R.M.⁺, **M.S. Chinn** and A.M. Grunden. 2013. Influence of Carbon Source Preadaptation on Substrate Utilization by *Clostridium autoethanogenum*. Presented at the 2013 IBE Annual Meeting. Raleigh, NC. March 7-9, 2013.
9. Whitfield, M.B.⁺, **M.S. Chinn** and M.W. Veal. 2013. Advances in the Analysis of Sweet Sorghum Composition for Bioprocess Development. Presented at the 2013 IBE Annual Meeting. Raleigh, NC. March 7-9, 2013.
10. Whitham, J.,⁺ J. Daystar, **M.S. Chinn**, M.C. Flickinger, J. Pawlak and A.M. Grunden. 2012. Development of an Analog Simulation of Syngas Fermentation using Nanoporous Bioactive Coatings. Presented at the 7th Annual NC State University Graduate Student Research Symposium. Raleigh, NC. March 20, 2012.
11. Schulte, M.,⁺ M.C. Flickinger, **M. Chinn**, A. Grunden and S. Peretti. 2012. *Process Intensification (PI) of CO Adsorption and Ethanol Synthesis using Latex-Film Immobilized Cells*. Presented at the 2012 Center for Bioenergy Research and Development (CBERD) Meeting. Raleigh, NC. May 15-16, 2012.
12. Caffrey, K.,⁺ **M.S. Chinn** and M.W. Veal. 2012. Bioenergy from Sweet Sorghum- a techno-economic approach for evaluation of scale issues. Presented at the 2012 ASABE Annual International Meeting. Dallas, TX. July 29-August 1, 2012.
13. Schulte, M.,⁺ M.C. Flickinger, **M. Chinn**, A. Grunden and S. Peretti. 2012. *Process Intensification (PI) of CO Adsorption and Ethanol Synthesis using Immobilized Clostridium ljungdahlii*. Presented at the 2012 Molecular Biotechnology Training Program (MBTP) Annual Symposium. Raleigh, NC. November 8, 2012.
14. Godfrey, E.E.⁺ and **M.S. Chinn**. 2011. *Modified Imbert Downdraft Gasifier*. Presented at the 2011 ASABE Annual International Meeting. Louisville, KY. August 7-10, 2011.
15. Diaz, J.T.⁺ and **M.S. Chinn**. 2011. *Bioprocessing of Industrial Sweetpotatoes for Bio-based Products*. Presented at the 2011 ASABE Annual International Meeting. Louisville, KY. August 7-10, 2011.
16. Whitfield, M.B.⁺, **M.S. Chinn** and M.W. Veal. 2011. Challenges in Analysis of Sweet Sorghum Lignocellulosic Materials. Presented at the 2011 ASABE Annual International Meeting. Louisville, KY. August 7-10, 2011.
17. Slivka, R. M.⁺, **M.S. Chinn** and A.M. Grunden. 2011. *An Examination of Xylose Utilization by Clostridium autoethanogenum*. Presented at the 2011 ASABE Annual International Meeting. Louisville, KY. August 7-10, 2011.
18. Whitham⁺, J., **M.S. Chinn** and A.M. Grunden. 2010. Sequential fermentation of C1 Containing Waste Gas Streams by Clostridia and Methanogens for Ethanol and Methane Production. Presented at the Bioprocessing and Process Development Symposium, Raleigh, NC. October 2010
19. Whitham⁺, J., **M.S. Chinn** and A.M. Grunden. 2010. Sequential fermentation of C1 Containing Waste Gas Streams by Clostridia and Methanogens for Ethanol and Methane Production. Graduate Research Symposium. Raleigh, NC, April 20, 2010.
20. Flickinger, M.C., S. Peretti, A. Grunden and **M. Chinn**. 2010. Stability analysis of gas stream CO_x adsorption and ethanol synthesis using latex film immobilized microbes. Clearwater, FL. April 2010.
21. Flickinger, M.C., J.L. Gosse, A. Grunden and **M. Chinn**. 2010. Engineering Microbial Coatings for Reactive Biofilter Applications: Photoreactive/Non-Photoreactive Latex Coatings for Recycling Carbon into Fuels. Duke-UAM Conference on Biofiltration for Air Pollution Control. Washington, DC. October 28-29, 2010.
22. Flickinger, M.C., S. Peretti, A. Grunden and **M. Chinn**. 2010. Stability analysis of gas stream CO_x adsorption and ethanol synthesis using latex film immobilized microbes. Stonybrook, NY. November 2010.
23. Byrd⁺, A.R. and **M.S. Chinn**. 2010. *Production of Value-added Products from Muscadine Grapes and Residues*. Presented at the NC State University Undergraduate Research Symposium. April 22, 2010.
24. Godfrey⁺, E.E. and **M.S. Chinn**. 2010. *Design and Testing of a Downdraft Modified Decagon Imbert Gasifier*. Presented at the NC State University Undergraduate Research Symposium. April 22, 2010.
25. Tirado-Acevedo⁺, O., **M.S. Chinn**, A.M. Grunden. 2010. Metabolic Response of *Clostridium ljungdahlii* Strains to Oxygen Exposure. Graduate Research Symposium. Raleigh, NC, April 20, 2011.
26. Tirado-Acevedo⁺, O., **M.S. Chinn**, A.M. Grunden. 2010. Metabolic response of *Clostridium ljungdahlii* strains to oxygen exposure. 110th General Meeting of the American Society for Microbiology, San Diego CA, May 25, 2010.

27. Tirado-Acevedo⁺, O., **M.S. Chinn**, A.M. Grunden. 2010. Metabolic response of *Clostridium ljungdahlii* strains to oxygen exposure. Bioprocessing & Process Development (BPD) Symposium, Raleigh, NC, October 2010.
28. Classen, J., **M. Chinn**, R. Sharma, K. Zering and A. Atkinson. 2009. WWTP Operations, Biosolids and Biofuel Feedstock. Presented to City of Raleigh Environmental Advisory Board, May 14, 2009.
29. Mbaneme⁺, V. and **M.S. Chinn**. 2009. *Enzymatic Conversion of a Paper-Based Cellulosic Substrate to Fermentable Sugars*. Presented at the NC State University Undergraduate Research Symposium. April 16, 2009.
30. Tirado-Acevedo⁺, O., **M.S. Chinn**, A.M. Grunden. 2009. Improving Ethanol Yields in Acetogenic *Clostridium* Using Oxygen Exposure Treatments. Microbiology Graduate Research Symposium. Raleigh, NC, March 27, 2009.
31. Tirado-Acevedo⁺, O., **M.S. Chinn**, A.M. Grunden. 2009. Biological Catalysts for Conversion of Gas to Ethanol and Methane. American Society for Microbiology 109th General Meeting. Philadelphia, PA, U.S.A. May 17-21, 2009.
32. Tirado-Acevedo⁺, O., **M.S. Chinn**, A.M. Grunden. 2009. Co-culturing a Bacterium and an Archaeon for Biofuels Production from Synthesis Gas. Bioprocessing & Process Development (BPD) Symposium, Raleigh, NC, September 2009.
33. Tirado-Acevedo⁺, O., **M.S. Chinn**, A.M. Grunden. 2009. Biological Catalysts for Conversion of Gas to Ethanol and Methane. North Carolina American Society for Microbiology 2009 Meeting. Durham, NC, Oct. 3, 2009
34. Winkler⁺, J., R. Sharma-Shivappa, **M. Chinn**. 2008. Production of poly 3-pydroxybutyric acid from waste sweetpotato starch. Poster no. 141230. AIChE annual meeting, Philadelphia, PA. November 16 – 21, 2008. This poster was awarded 3rd place (out of 61 posters) in the Undergraduate Poster Competition's Food, Pharmaceutical and Biotechnology-1 division.
35. Classen, J., R. Sharma-Shivappa, **M. Chinn**, K. Zering, A. Atkinson. 2008. Biofuel Feedstock production at municipal wastewater treatment plants. 2008 WRRRI Annual Conference & NCWRA Symposium, Jane S. McKimmon Center, NCSU, Raleigh, NC. October 8 – 9, 2008.
36. Winkler⁺, J., R. Sharma-Shivappa, **M. Chinn**. 2008. Poly 3-hydroxybutyric acid production from sweetpotato starch. 2008 Sweetpotato Field Day, Clinton, NC. October 8, 2008.
37. Wood⁺, S.M. and **M.S. Chinn**. 2008. *Scaled Up Biocatalytic Conversion of Industrial Sweetpotatoes to Useful Sugars*. Presented at the NC State University Undergraduate Summer Research Symposium. July 31, 2008.
38. Mbaneme⁺, V. and **M.S. Chinn**. 2008. *Enzymatic Conversion of a Paper-Based Cellulosic Substrate to Fermentable Sugars*. Presented at the NC State University Undergraduate Summer Research Symposium. July 31, 2008.
39. Scrivner⁺, K.A. and **M.S. Chinn**. 2008. *Simultaneous Saccharification and Fermentation of Industrial Sweetpotatoes for the Production of Ethanol*. Presented at the NC State University Undergraduate Summer Research Symposium. July 31, 2008.
40. Winkler⁺, J., R. Sharma-Shivappa and **M.S. Chinn**. 2008. *Production of Poly 3-Hydroxybutyric Acid from Waste Sweet Potato Starch*. Presented at the NC State University Undergraduate Summer Research Symposium. July 31, 2008.
41. Duvernay⁺, W.H. and **M.S. Chinn**. 2008. *Saccharification of Industrial Sweetpotatoes for the Production of Ethanol*. Presented at the ASABE International Meeting. Providence, RI. June 29-July 2, 2008.
42. Hill⁺, E.N., **M.S. Chinn**, C.G. Yencho and V.D. Truong. 2008. *Design of Processing Conditions for Conversion of the Purple Sweet Potato to Useful Sugars*. Presented at the ASABE International Meeting. Providence, RI. June 29-July 2, 2008.
43. Veal, M.W., **M.S. Chinn**, L.F. Stikeleather, and E.N. Hill. 2008. *Development of an On-Farm Ethanol Production System for Sugar Crops*. Presented at the ASABE International Meeting. Providence, RI. June 29-July 2, 2008.
44. Hill⁺, E.N., **M.S. Chinn** and M.W. Veal. 2008. *Sweet Sorghum as an Alternative Farm-Produced Biomass for North Carolina Biofuel Production*. Presented at the ASABE International Meeting. Providence, RI. June 29-July 2, 2008
45. Duvernay⁺, W.H. and **M.S. Chinn**. 2008. *Saccharification of Industrial Sweetpotatoes for the Production of Ethanol*. Presented at the IBE Annual Meeting. Chapel Hill, NC. March 6-8, 2008.

46. Hill⁺, E.N., **M.S. Chinn**, C.G. Yencho and V.D. Truong. 2008. *Design of Processing Conditions for Conversion of the Purple Sweet Potato to Fermentable Sugars*. Presented at the IBE Annual Meeting. Chapel Hill, NC. March 6-8, 2008.
47. Duvernay⁺, W.H. and **M.S. Chinn**. 2008. *Saccharification of Industrial Sweetpotatoes for the Production of Ethanol*. Presented at the NC State University Graduate Student Research Symposium. March 19, 2008.
48. **Chinn, M.S.**, R. R. Sharma and M.W. Veal. 2007. *Bioprocessing Explorations in Biological and Agricultural Engineering*. Presented by Matt Veal. Research Triangle Energy Consortium (RTEC) Sustainable Energy Symposium, Hilton Raleigh-Durham Airport at Research Triangle Park, NC. Nov 14-15, 2007.
49. Hill⁺, E.N. and **M. S. Chinn**. 2007. *Sweet sorghum as an alternative farm-produced biomass for North Carolina biofuel production*. Presented at the NC State University Undergraduate Summer Research Symposium. August 2, 2007.
50. Hill⁺, E.N., **M.S. Chinn**, C.G. Yencho and V.D. Truong. 2007. *Design of Processing Conditions for Conversion of the Purple Sweet Potato to Useful Sugars*. Presented at the NC State University Undergraduate Summer Research Symposium. August 2, 2007.
51. Dowty⁺, R., **M.S. Chinn** and B. Sosinski. 2007. *In-vitro conversion of sweetpotatoes using thermotolerant α -amylase from transgenic Escherichia coli and Nicotiana tabacum (NT1) cell lines*. Presented at the NC State University Undergraduate Summer Research Symposium. August 2, 2007.
52. Cotter⁺, J.L. and **M.S. Chinn**. 2007. *Influence of pH, flow rate on synthesis gas fermentation by Clostridium ljungdahlii and Clostridium autoethanogenum*. Presented at the ASABE International Meeting. Minneapolis, MN. June 17 -20, 2007.
53. **Chinn, M.S.**, L.F. Stikeleather, M.W. Veal, M.D. Boyette and E.N. Hill. 2007. *On Farm Conversion of Sweet Sorghum Juice to Bioethanol*. Presented at the ASABE International Meeting. Minneapolis, MN. June 17-20, 2007.
54. Shi⁺, J., R. Sharma-Shivappa, **M. Chinn**, N. Howell. 2007. *Effect of microbial pretreatment on enzymatic hydrolysis and fermentation of cotton stalk for ethanol production*. Poster no. 077038. Presented at the ASABE International Meeting. Minneapolis, MN. June 17-20, 2007. Awarded 4th place - Graduate Student Paper Competition Award by Association of Overseas Chinese Agricultural, Biological and Food Engineers (AOCABFE).
55. Sharma-Shivappa, R. and **M. Chinn**. 2007. *Biofuels research and development at BAE*. Ag, Dairy and Tobacco Foundations Joint Research and Extension Committee Meeting. University Club, NCSU, Raleigh, NC. April 11, 2007.
56. Cotter⁺, J.L. and **M.S. Chinn**. 2007. *Influence of pH, flow rate on synthesis gas fermentation by Clostridium ljungdahlii and Clostridium autoethanogenum*. Presented at the Incredible Anaerobes Symposium . Athens, GA. March 2-3, 2007.
57. **Chinn, M.S.** and R. R. Sharma. 2006. *Bioprocessing Explorations in Biological and Agricultural Engineering*. Presented at the Bioseparations and Bioprocessing Development Symposium. North Carolina Biotechnology Center. Oct 25-26, 2006.
58. Nivens⁺, C.E. and **M. S. Chinn**. 2006. *Saccharification of Sweetpotatoes for the Production of Ethanol*. Presented at the Bioseparations and Bioprocessing Development Symposium. North Carolina Biotechnology Center. Oct 25-26, 2006.
59. **Chinn, M.S.** and S.W. Peretti. 2006. *Mixed Cultures for the Conversion of Synthesis Gas to Solvent*. Presented at the Bioseparations and Bioprocessing Development Symposium. North Carolina Biotechnology Center. Oct 25-26, 2006.
60. **Chinn, M.S.** and S.W. Peretti. 2006. *Analysis of Regulatory Mechanisms of Synthesis Gas Conversion to Solvent by Autotrophic Bacteria*. Presented at the Bioseparations and Bioprocessing Development Symposium. North Carolina Biotechnology Center. Oct 25-26, 2006.
61. Kubinski⁺, S. R., **M. S. Chinn** and H. Jameel. 2006. *Conversion of Hardwood Paper Pulp into Ethanol by Separate Enzymatic Hydrolysis/Fermentation and Simultaneous Saccharification and Fermentation*. Presented at the NC State University Undergraduate Summer Research Symposium. August 3, 2006.
62. Nivens⁺, C. E. and **M. S. Chinn**. 2006. *Saccharification of Sweetpotatoes for the Production of Ethanol*. Presented at the ASABE International Meeting. Portland, Oregon. July 9-12, 2006.
63. Fleischmann⁺, L. J., E.N. Hill⁺ and **M. S. Chinn**. 2006. *Amylase Production on Sweetpotatoes in Solid Substrate and Submerged Liquid Cultivation*. Presented at the ASABE International Meeting. Portland, Oregon. July 9-12, 2006.

64. Cotter⁺, J. L. and **M. S. Chinn**. 2006. *Biological Conversion of Synthesis Gas to Ethanol using Resting Cells*. Presented at the ASABE International Meeting. Portland, Oregon. July 9-12, 2006.
65. Earle⁺, A. B., **M. S. Chinn** and M.D. Boyette. 2006. *Design and Instrumentation of a Dual-Stage Downdraft Gasifier for Specific Synthesis Gas Composition*. Presented at the ASABE International Meeting. Portland, Oregon. July 9-12, 2006.
66. Shi⁺, J., R.Sharma-Shivappa and M. Chinn. 2006. *Studying the Kinetics of Microbial Pretreatment of Cotton Stalks by Phanerochaete chrysosporium*. Presented at the ASABE International Meeting. Portland, Oregon. July 9-12, 2006.
67. Fleischmann⁺, L., K. Maddox⁺, C. Nivens⁺, I. Thompson⁺, A. Caronna⁺, S. Ferree⁺, K. Joyner⁺ B. Miatke⁺, **M. Chinn** and S. Peretti. 2006. *Immobilized Cell Bioreactor for the Conversion of Synthesis Gas to Ethanol*. Presented at the NC State University Undergraduate Research Symposium. April 18, 2006.
68. Nivens⁺, C. E. and **M. S. Chinn**. 2006. *Saccharification of Sweetpotatoes for the Production of Ethanol*. Presented at the NC State University Undergraduate Research Symposium. April 18, 2006.
69. Fleischmann⁺, L. J. and **M. S. Chinn**. 2006. *Amylase Production on Sweetpotatoes in Solid Substrate Cultivation*. Presented at the NC State University Undergraduate Research Symposium. April 18, 2006.
70. Cotter⁺, J. L., **M. S. Chinn** and R. R. Sharma. 2005. *Solvent Extraction and Quantification of Capsaicin from Capsicum Chinense*. Presented at the ASAE International Meeting. Tampa, FL. July 17-20, 2005.
71. Shi⁺, J., R.R. Sharma and **M. Chinn**. 2005. *Microbial pretreatment of cotton stalks for bioethanol production*. Presented at the ASAE International Meeting. Tampa, FL. July 17-20, 2005.
72. **Chinn, M. S.** 2005. *Integrating writing and speaking into a biological engineering course*. Pathways to the Scholarship of Teaching and Learning. Faculty Center for Teaching and Learning. NC State University. September 21, 2005.
73. Shi⁺, J., R.R. Sharma and **M. Chinn**. 2005. *Microbial pretreatment of cotton stalks for bioethanol production*. ASAE Joint State Section Meeting South Carolina, Georgia, and North Carolina. Charleston, SC. June 2–3, 2005.
74. Shi⁺, J., R.R. Sharma and **M. Chinn**. 2004. *Microbial pretreatment of cotton stalks for bioethanol production*. Association of State Energy Research and Technology Transfer Institutions (ASERTTI) Fall Meeting. Southern Pines and Raleigh, NC. October 25 – 28, 2004.
75. **Chinn, M. S.**, S.E. Nokes and H.J. Strobel. 2004. *Saccharification of Avicel and Paper Pulp Sludge using Cellulolytic Enzymes Produced by Clostridium thermocellum in Solid Substrate Cultivation*. Presented at the ASAE International Meeting. Ottawa, ON, Canada. August 1-4, 2004.
76. Bridges⁺, J.L., A.N. Johnson, **M. S. Chinn** and M.D. Boyette. 2004. *Design and Construction of a Solid Substrate Cultivation Deep Bed Reactor for Enzyme Production by Anaerobic Bacteria*. Presented at the Undergraduate Research Symposium, NC State University. April 22, 2004.
77. Cotter⁺, J.L., J.A. McDonald, **M. S. Chinn** and R. Sharma. 2004. *Solvent Extraction and HPLC Quantification of Capsaicin from Habañero Peppers*. Presented at the Undergraduate Research Symposium, NC State University. April 22, 2004.
78. **Chinn, M. S.**, S. E. Nokes, H. J. Strobel. 2003. *Production of Cellulosic Enzymes Using Thermophilic Anaerobic Bacteria in Solid Substrate Cultivation*. Presented at the ASAE International Meeting. Las Vegas, Nevada. July 27-30, 2003.
79. **Chinn, M. S.** and S. E. Nokes. 1999. *PC Based Data Acquisition for a Deep Bed Bioreactor*. Presented at the Institute of Biological Engineering annual meeting. Charlotte, North Carolina. June 18-20, 1999.
80. **Chinn, M. S.**, J. S. Vandergheynst, B. Lavin. 1998. *Cultivation of Lagenidium giganteum in Semi-Solid Fermentation*. Presented at the Institute of Biological Engineering annual meeting. Orlando, Florida. July 10-11, 1998.
81. **Chinn, M. S.**, J. S. Vandergheynst, B. Lavin. 1998. *Cultivation of Lagenidium giganteum in Semi-Solid Fermentation*. Presented at the Undergraduate Research Conference, UC Davis.

Conference Papers

1. **Chinn, M. S.**, S. E. Nokes, H. J. Strobel. 2001. *Bacterial Cellulase Production and Extraction: A Review*. Paper No. 017017. Presented at the ASAE International Meeting. Sacramento, California. July 29-Aug 1, 2001.

2. **Chinn, M. S.** and S. E. Nokes. 2000. *Temperature Control of a Solid State Cultivation Deep Bed Reactor*. Paper No. 008002. Presented at the ASAE International Meeting. Milwaukee, Wisconsin. July 9-12, 2000.
3. **Chinn, M. S.**, J. S. Vanderghenst, and J. Miles. 1998. *Design and Construction of a Semi-Continuous Reactor for Solid State Cultivation*. Paper No. 987039. Presented at the ASAE International Meeting. Orlando, Florida. July 11-16, 1998.

Patents/Invention Disclosures

1. Godfrey⁺, E.E. and **M.S. Chinn**. 2011. *Gas-Insulated Decagonal Downdraft Gasifier*. Invention Disclosure File No. 12-065. NC State University Office of Technology Transfer. December 2011.
2. Gosse, J.L.⁺, M.C. Flickinger, A.M. Grunden and **M.S. Chinn**. 2010. Method for Immobilizing Desiccation Intolerant Microorganisms. Invention Disclosure No. 10-075. NC State University Office of Technology Transfer. May 2010.

GRADUATE STUDENTS

◆ *Doctorate of Philosophy*

- Rachel Slivka. Expected August 2016. *Gasification and synthesis gas fermentation for biofuel production*. Ph.D. dissertation. NC State University. Biological and Agricultural Engineering.
- Veronica Mbaneme. Expected August 2016. *Influence of synthesis gas on fermentation activity in an on-farm biomass processing system*. Ph.D. dissertation. NC State University. Biological and Agricultural Engineering. (NSF Graduate Research Fellowship)
- Kevin Caffrey. Dec 2014. *Life Cycle Analysis of North Carolina Bioenergy Crops*. Ph.D. dissertation. NC State University. Biological and Agricultural Engineering. (co-Chair)
- Matthew Whitfield. April 2014. *Total utilization of sweet sorghum for biofuels and value-added products*. Ph.D dissertation. NC State University. Biological and Agricultural Engineering. (co-Chair)
- Joscelin Diaz. August 2013. *Scale up conversion and economics for production of bio-based products from industrial-type sweetpotatoes*. Ph.D dissertation. NC State University. Biological and Agricultural Engineering.

◆ *Master of Science (thesis)*

- Brantly B. Braswell. Expected Dec. 2014. *Conversion of sweet sorghum to ethanol using solid substrate fermentation technology*. M.S. thesis. NC State University. Biological and Agricultural Engineering.
- Marshall M. Newton. July 2014. *Evaluation of soil compaction associated with mechanized harvest operations and multi-species cover crops*. M.S. thesis. NC State University. Biological and Agricultural Engineering. (adopted-Chair; previous Chair—Veal)
- Edward E. Godfrey. 2012. *Syngas production using an Imbert downdraft gasification system*. M.S. thesis. NC State University. Biological and Agricultural Engineering.
- E. Nicole Hill. 2010. *Conversion of sugar and starch crops for value added products*. M.S. thesis. NC State University. Biological and Agricultural Engineering.
- William H. Duvernay. 2008. *Conversion of Industrial Sweetpotatoes for the Production of Ethanol*. M.S. thesis. NC State University. Biological and Agricultural Engineering.
- Jacqueline L. Cotter. 2006. *Ethanol and Acetate Production from Synthesis Gas using Microbial Catalysts*. M.S. thesis. NC State University. Biological and Agricultural Engineering.

◆ *Master of Biological and Agricultural Engineering (non-thesis)*

- Robert Shull, Automation of demo-scale unit operations for production of biomass-derived ethanol. Biological and Agricultural Engineering, Dec. 2012
- Alexander Earle, Biological and Agricultural Engineering, May 2008.

◆ *Graduate Committees*

- Zan Wang, Ph.D., Soil Science, expected 2016
- Walter Sandoval, Ph.D., Microbiology, expected summer 2016
- Jason Whitham, Ph.D., Microbiology, expected May 2015
- Qiang Han, Ph.D., forest Biomaterials, May 2014
- Steven Todd, Ph.D., Horticulture Sciences, 2013
- Walter Sandoval, M.S., Microbiology, 2013 (*Fulbright Scholar*)
- Veronica Mbaneme, M.S., Biological and Agricultural Engineering, 2011
- Blake Bowen, M.S., Horticulture Sciences, 2010.
- Oscar Tirado-Acevedo, Ph.D., Microbiology, 2010.
- Jian Shi, Ph.D., Biological and Agricultural Engineering, 2007.

UNDERGRADUATE AND GRADUATE ADVISING ACTIVITIES

- ◆ Undergraduate Academic Advising: 10 BEP, 2 BEE, 3 BEA, 1 AET (2011); 5 BEP, 1BEE, 2 BEA (2009, 2010); 4 BEP students, 1 BEE (2008, 2007); 6 BEP students, 1 BEE, 1 BE, 1 AET (2006); 5 BEP students (2005); 4 BEP students (2004)

- ◆ Undergraduate Research:

2012

- 1 student, Composition Analysis of Bioenergy Crops grown on Sprayfields
 - 1 student, Cellulase production from sweet sorghum bagasse using *Clostridium thermocellum*
- Senior Design Group (5 students): Automated Brewing System (Fall Semester)

2011

- 1 student, Composition Analysis of Bioenergy Crops grown on Sprayfields
- 1 student, Sequential fermentation of C1 Containing Waste Gas Streams by Clostridia and Methanogens
- 1 student, Cellulase production from sweet sorghum bagasse using *Clostridium thermocellum*
- Senior Design Group (5 students): Automated Brewing System (Fall Semester)

2010

- 1 student, Production of value-added products from grape waste
- 1 student, Design of an Imbert downdraft gasifier and syngas cooling system
- 1 student, Sequential fermentation of C1 Containing Waste Gas Streams by Clostridia and Methanogens
- 1 student, Cellulase production from sweet sorghum bagasse using *Clostridium thermocellum*

2009

- 1 student, Production of value-added products from grape waste
- 1 student, Design of an Imbert downdraft gasifier and syngas cooling system
- 1 student, Growth of *Clostridium autoethanogenum* on various carbon sources

2008

- 1 student, Conversion of purple sweetpotatoes to useful sugars and anthocyanins
- 1 student (NSF REU program), Scale-up of industrial sweetpotato enzyme conversion
- 1 student (NSF REU program), Simultaneous saccharification and fermentation of industrial sweetpotatoes for ethanol production
- 1 student (NSF REU program), Production of poly 3-hydroxybutyric acid from sweetpotato starch
- 1 student, Solid substrate cultivation of a paper-based cellulosic substrate using select fungi for cellulases
- 1 student, Design of a demonstration scale fermentation systems for sugar crops

2007

- 3 senior design groups
 - Group 1—4 students, Design and Instrumentation of a Downdraft Gasifier, Spring
 - Group 2—3 students, Modification of a Small Scale Synthesis Gas Cleanup System, Spring

- Group 3—3 students, Design of a Pilot Scale Biorefinery Sweetpotato Conversion Process, Spring
- 1 student, Fermentation of sweet sorghum juice for ethanol production
- 1 student (NSF REU program), Conversion of purple sweetpotatoes to useful sugars and anthocyanins
- 1 student (NSF REU program), In-vitro conversion of sweetpotatoes using thermotolerant α -amylase from transgenic cell lines

2006

- 6 senior design groups
 - Group 1—4 students, Design of a Laboratory Scale Cell Immobilization Reactor, Spring
 - Group 2—4 students, Design of a Methodology to Effectively Immobilize Autotrophic Cells, Spring
 - Group 3—4 students, Design of a Small Scale Secondary Catalytic Combustion Reactor for Synthesis Gas Cleanup, Spring
 - Group 4—4 students, Design and Instrumentation of a Downdraft Gasifier, Fall
 - Group 5—3 students, Modification of a Small Scale Synthesis Gas Cleanup System, Fall
 - Group 6—8 students, Design of a Pilot Scale Biorefinery Sweetpotato Conversion Process, Fall
- 1 student, Fermentation of Sweet Sorghum Juice for Ethanol Production
- 2 students, Amylase Production on Sweetpotato in Solid Substrate and Submerged Liquid Cultivation
- 1 student, Saccharification of Sweetpotatoes for the Production of Ethanol
- 1 student (NSF REU program), Saccharification and Fermentation of Hardwood Paper Pulp for Ethanol

2005

- 5 senior design groups
 - Group 1—5 students, Process Control and Operation of a Single Unit Yeast Fermentation System, Spring
 - Group 2—3 students, Design of a Laboratory Scale Oyster Mushroom Growth Chamber, Spring
 - Group 3—4 students, Design of a Laboratory Scale Cell Immobilization Reactor, Fall
 - Group 4—4 students, Design of a Methodology to Effectively Immobilize Autotrophic Cells, Fall
 - Group 5—4 students, Design of a Small Scale Secondary Catalytic Combustion Reactor for Synthesis Gas Cleanup, Fall
- 1 student, Amylase Production on Sweetpotato in Solid Substrate Cultivation
- 1 student, Saccharification of Sweetpotatoes for the Production of Ethanol

2004

- 3 senior design groups
 - Group 1—2 students, Design of a solid substrate cultivation reactor for the growth of anaerobic thermophiles, Spring
 - Group 2—5 students, Process Control and Operation of a Single Unit Yeast Fermentation System, Fall
 - Group 3—3 students, Design of a Laboratory Scale Oyster Mushroom Growth Chamber, Fall
- 1 student, Development of Solvent Extraction Methods for Capsaicin Removal from Habañero Peppers
- 1 student, Transfer and Maintenance of *Pleurotus* sp. on Potato Dextrose Agar

◆ **Park Scholar Mentor:** 1 student (2009-2010); 1 student (2011-2013)

◆ **Teaching Assistant Supervising:** 2 students (S2011); 2 students (S2010); 1 student (S2009); 1 student (S2008); 1 student (S2007); 1 student (S2006); 2 students (S2004)

◆ **Student Organization Advising:**

- Co-advisor, American Society of Agricultural and Biological Engineers (ASABE) Student Branch (NCSU, BAE); 2004 to 2010; Out-going advisor (2011)
The officers meet every 3 weeks and the branch meets once a month to host invited speakers from industry or academia, have a social event, or assemble discussion panels. The branch also participates in community service, fund-raising, recruitment events and regional pre-professional conferences.
- Co-advisor, ASAE ¼ Scale Tractor Pulling Team (Wolfpack Pullers); 2005 to 2007

The team meets every 3 weeks and as necessary for completion of the project (design, construction, report, presentation) and fund-raising activities (>\$10K).

- Fund-raising advisor role, ASAE ¼ Scale Tractor Pulling Team (Pack-Pullers); 2005 to 2012
The team meets every 3 weeks and as necessary for completion of the project (design, construction, report, presentation) and fund-raising activities (>\$10K).
- Advisor, BAE Graduate Student Association; 2004 to present
The officers meet once a month and students host professional development seminars, participate in social and sporting activities community service, fund-raising, and recruitment events.

◆ **High School Students:**

- 2 students, Potential of tobacco processing residues for value-added products (2005-06)
- 1 student, general research assistance (2004)

◆ **Post-doctoral Research Associates and Visiting Scientists**

- Research Associate (MS): On Farm Biomass Processing Towards an Integrated High Solids Bioenergy Production System (2013-present)
- Post-doctoral Researcher (PhD): Rapid Quantification of Natural Products by NIR Methods and Characterization of Marketable Co-Products: Applications in Clary Sage (2014--)
- Research Associate (PhD): On Farm Biomass Processing Towards an Integrated High Solids Bioenergy Production System (2013-Feb 2014)
- Research Associate (PhD): Production of Biofuels from Waste Gas Streams using Textiles Coated with Microbial Catalysts (2008 to 2010)
- Visiting Scientist (PhD): (2008, 3 months)

◆ **Research Assistants (bi-weekly), Engineers and Technicians (SPA) Supervised**

- Research Technician (2014--)
- Research Engineer (2014--)
- Research Asst., On Farm Biomass Processing Towards an Integrated High Solids Bioenergy Production System (2013--)
- Research Asst., Instrumentation and control of demo-scale biomass conversion system (2011--)
- Research Asst., Conversion of sweet sorghum to ethanol using SSF technology (2012--)
- Research Technician (2008)
- Research Asst., Growth of autotrophic bacteria on mixed substrates for ethanol production (2007)
- Research Asst., Marketing Survey for Bioprocess Engineering Distance Education (2006)

RECRUITMENT ACTIVITIES

- ◆ *College of Engineering Summer Camp, North Carolina State University.* Designed and organized a week long interdisciplinary research project (biological engineering and animal science) for selected high school sophomores, juniors and seniors. The students were provided hands-on lab experiences in the bioprocessing area as well as introduced to other academic and research activities in the Biological and Agricultural Engineering Department. This activity would require 3 weeks of preparation and at least 35 hours of faculty time during the camp.
 - June 19-24, 2005; June 25-30, 2006; June 10-15, 2007; June 15-20, 2008. . In 2009 and 2010, I assisted other faculty organizers with their camps and delivered presentations and chaperoned students to an aquarium tour.
- ◆ *Graduate Student Recruitment Weekend.* Hosted potential bioprocessing graduate students. (2005-06, 2011-13)
- ◆ *BAE Career Fair.* Organized and coordinated the BAE Career Fair for departmental undergraduates. Companies representing the machinery, bioprocessing, environmental and technology areas attended the event. March 25, 2008.
- ◆ *Engineering Open House.* BAE department representative. Prepared poster and displays representing current research activities in BAE for the all concentration areas. (2003-09)

- ◆ *IFAL workshops*. Presented information on the BAE department and bioprocess engineering concentration area. Conducted a small experiment to demonstrate the usefulness of enzymes and the significance of an engineer (2004). Presented information on the BAE department, the biological engineering degree and concentrations of study and the agricultural & environmental technology program (2005). Presented information on bioprocessing concentration (2006-07)
- ◆ *COE Spend a Day*. Introduce potential students and parents to the BAE department. (1 day, 2007-08)
- ◆ *COE Passport to Engineering for Women in Engineering*. BAE department representative. Jan 27, 2009.
- ◆ *COE Women in Engineering Escape Camp*. Women Faculty Panel, BAE representative. July 29, 2009.
- ◆ *Park Scholars Finalist Parent Presentation*. BAE department representative. Feb 22, 2008; Feb 18, 2011; Feb 22, 2013
- ◆ *Park Scholars Finalist COE Luncheon*. BAE representative. 2009 to 2012
- ◆ *Park Scholars Finalist Dinner*—Faculty representative. 2010 and 2011, 2013
- ◆ *High School student workshop, Goldsboro, NC*. Presented information on the BAE department and bioprocess engineering concentration area (70 Students, 2005)
- ◆ *CALS Student Club Fair*. BAE department and ASAE student club advisor representative. (2004-07)
- ◆ *CALS Tailgate*. BAE department representative and assisted in the development of public relations brochures. (2004-10)
- ◆ *University Open House*. CALS and COE. Assisted in the development of the new departmental engineering display, brochures and handouts; planned and conducted demonstrations. (2003-04, 2006-08)
- ◆ *State Fair*. Represented the department and the BAE ¼ Scale Tractor Team at a display in the Antique Farm Machinery Building. Efforts were intended to provide service to this event and highlight the department and advances in machinery design. October 13, 14 and 19, 2006.
- ◆ *First Year College (FYC) Open House*. BAE department representative. September 30, 2003.

PROFESSIONAL DEVELOPMENT ACTIVITIES

- ◆ Attended Industry/Academic Partnership Seminar, CALS, NC State University. January 5, 2007.
- ◆ Attended Symposium for the Engaged University, NC State University. January 26, 2007.
- ◆ Attended Incredible Anaerobes Symposium, Athens, Georgia, March 2-3, 2007
- ◆ Participated in the Connecting in North Carolina Tour. May 14-18, 2007.
- ◆ EPA-RTP Panel on Renewable Energy, session moderator. July 19, 2007.
- ◆ Attended USDA/CSREES Grantsmanship Workshop, Washington, DC (September 6-7, 2006)
- ◆ Attended a faculty seminar hosted by the NCSU Campus Writing and Speaking Program. The objective of the biweekly semester long seminar was to provide information and resources to allow faculty to enhance writing and speaking activities in undergraduate courses. (2005)
- ◆ Attended a biotechnology course BIT 810: Core Technologies in Molecular and Cellular Biology
- ◆ Attended the IBE Annual Conference, Biology Inspired Engineering Frontiers, Athens, GA (March 4-6, 2005)
- ◆ Attended NSF CAREER Award workshop, Extended Program of the New Faculty Workshop, Mar. 25, 2004.
- ◆ Attended The World Congress on Industrial Biotechnology and Bioprocessing Conference, BIO: Biotechnology Industry Organization, Orlando FL (April 20-22, 2005)
- ◆ Attended ASABE Annual International Meetings, 2003-2008
- ◆ Attended American Society of Agricultural Engineers (ASAE) NC Section Meeting. 2004, 2007.
- ◆ Attended the New Faculty Workshop sponsored by the College of Engineering, Aug. 4-8, 2003.
- ◆ Attended the Biomass Resource Conference sponsored by the NC State Energy Office, Oct. 20, 2003
- ◆ Award to participate in the invitational Procter and Gamble Research and Technical Careers in Industry technology management conference, June 1-4, 2002

EXTENSION AND ENGAGEMENT

Peer Reviewed Publications

1. K.R. Caffrey⁺ and **M.S. Chinn**. 2014. Life Cycle Assessment: Description and Methodology. *Extension Bulletin AG-XXX*. North Carolina Cooperative Extension.
2. K.R. Caffrey⁺ and **M.S. Chinn**. 2014. Carbon Accounting: Description and Methodology. *Extension Bulletin AG-XXX*. North Carolina Cooperative Extension.
3. M.W. Veal, **M.S. Chinn**, and M.B. Whitfield. 2013. Sweet Sorghum Production to Support Energy and Industrial Products. *Extension Bulletin AG-787*. North Carolina Cooperative Extension.
4. M.W. Veal, **M.S. Chinn**, L.F. Stikeleather, and M.B. Whitfield. 2013. Sweet Sorghum Ethanol Production. *Extension Bulletin AG-786*. North Carolina Cooperative Extension.
5. M.W. Veal, **M.S. Chinn**, A.M. Grunden, and K.R. Caffrey. 2013. Algae for Biofuels – Production and Conversion. *Southern Regional Aquaculture Center Factsheet 4309*. U.S. Department of Agriculture. Available at: <https://srac.tamu.edu/index.cfm/event/getFactSheet/whichfactsheet/268/>
6. M.W. Veal, K.R. Caffrey, **M.S. Chinn**, and A.M. Grunden. 2013. Algae for Biofuels – Economic and Environmental Costs. *Southern Regional Aquaculture Center Factsheet 4310*. U.S. Department of Agriculture. Available at: <https://srac.tamu.edu/index.cfm/event/getFactSheet/whichfactsheet/269/>
7. M.W. Veal and **M.S. Chinn**. 2007. Ethanol: A Gasoline Alternative for North Carolina. *Extension Bulletin AG-687*. North Carolina Cooperative Extension.

Formal Industry/Stakeholder Campus Visits and Meetings

International Audience

- ◆ USDA Cochran Fellowship Program, Moldova Stakeholders. Presentation on Biomass Conversion and Integrated Processing. April 30, 2013.
- ◆ USDA Cochran Fellowship Program, Moldova Stakeholders. Assisted lead hosts with tours of local attractions. April 28-May 4, 2013.
- ◆ University of Adelaide, Food and Health Workshop Bioenergy Session—April 23-24, 2013. (presentation given; proposal partnership discussions)
- ◆ Novozymes for Industrial Sweetpotato Research Programming—April 7, 2009
- ◆ Bioex Ethanol, Brazil—September 9, 2008
- ◆ BASF—October 29-30, 2007 (presentation given)
- ◆ Canadian Biosciences, New Brunswick—September 20, 2007

National/Regional Audience

- ◆ Congressional Staff Visit, May 29, 2009 (tour and presentations given)
- ◆ Great Plains Biofuels—February 20, 2009 (presentation given)
- ◆ CALS Research Conference, *Invited speaker*, Jan 22, 2009
- ◆ Lord Baltimore Investment Group—November 18, 2008 (organized 2 sessions, presentations given)
- ◆ CALS Donor Recognition and Campaign Gala—November 2, 2008. Assisted with preparing and staffing an exhibit on Biofuels and the Williamsdale Farm
- ◆ USDA Bio Energy Awareness Days (BEAD) II—June 21-23 2008. Assisted Dr. Matthew Veal in design and content of displays representing bioenergy efforts at NC State University
- ◆ EPA-RTP Panel on Renewable Energy, session moderator, *Invited speaker*. July 19, 2007
- ◆ Georgia Pacific—July 12, 2007 (presentation given)
- ◆ Con Agra—May 1, 2007
- ◆ Congressional Tour of Biological and Agricultural Engineering’s Biofuels Program—March 12, 2007 (co-lead and organized tour, developed displays and written documents)
- ◆ Broin—Jan 17, 2007 (poster given)

Popular Press

- ◆ “Sweet potatoes enter biofuels arena” in *Southeast Farm Press*, November 2008.

- ◆ “The Sweet (Potato) Science” in *Perspectives: The Magazine of the College of Agriculture and Life Sciences*, Fall 2008. <http://www.cals.ncsu.edu/agcomm/magazine/fall08/science.html>.
- ◆ “Researchers Find Fuel in Odd Places” in *Results: Research and Graduate Studies at North Carolina State University*, Summer 2008.
- ◆ Appeared on *OPEN/net*: Panel discussion—“Biofuel Potential in NC” May 8, 2007, 8-9 PM
- ◆ “Bio Bonanza” in *Nature* Vol. 444. 30 November 2006
- ◆ “NCSU researchers help carryout man’s vision” in *The Nashville Graphic*, Vol. 111(43), Oct. 25, 2006.
- ◆ “Pullers’ Progress” in *Perspectives: The Magazine of the College of Agriculture and Life Sciences*, Fall 2006.
- ◆ “Chatting with Dr. Mari Chinn”. *Member Spotlight, Institute of Biological Engineering*, Spring 2006, <http://www.ibeweb.org/spotlight/index.cgi>.
- ◆ “Alternative Energy: Harvesting Fuel from Agricultural Bounty” in *Results: Research and Graduate Studies at North Carolina State University*, Winter 2006
- ◆ “New Faculty Members Focus on Bioprocessing” in *Perspectives: The Magazine of the College of Agriculture and Life Sciences*, Winter 2004.

Field Day Demonstrations and Presentations

- ◆ Beef Cattle Field Day, Presentation (K. Caffrey⁺, **M.S, Chinn**, and M. Poore)—“Sorghum Silage Production in North Carolina” Butner Beef Cattle Field Lab, Bahama, NC. August 23, 2014.
- ◆ Sprayfield Educational Tour, Presentation (K. Caffrey⁺ and **M.S, Chinn**)—“Bioenergy Crop Production on Hog Effluent Sprayfields in North Carolina” Goldsboro, NC. August 21, 2014.
- ◆ Bioenergy Field Day, Presentation (K. Caffrey⁺, M.W. Veal and **M.S, Chinn**)—“The Farm to Biorefinery Continuum: Value Added Farm Processing for Bioethanol from Sweet Sorghum”, Mountain Horticultural Crops Research Station, Mills River, NC. September 4, 2013.
- ◆ Biofuels Field Day, Demonstration (M.B. Whitfield⁺ and **M.S. Chinn**)—“Sorghum: Biofuels and Value-added Products”, Mountain Horticultural Crops Research Station, Mills River, NC. September 14, 2011.
- ◆ Biofuels Field Day, Demonstration (M.B. Whitfield⁺ and **M. S. Chinn**)—“Sorghum: Biofuels and Value-added Products”, Oxford Tobacco Research Station and Biofuels Center, Oxford, NC. October 26, 2011.
- ◆ Biofuels Field Day, Demonstration Leader—“Sugar Crop Production and Conversion” and “Industrial Sweetpotato Fermentation Pathways for Starch Crops”, Oxford Tobacco Research Station and Biofuels Center, Oxford, NC. September 30, 2010.
- ◆ Poster Presentation/Display—“ISP starch conversion”, CALS Research Conference, NCSU McKimmon Center. Jan 22, 2009
- ◆ Biofuels Field Day, Demonstration Leader—“Industrial Sweetpotato Conversion Processes”, Williamsdale Farm Agricultural Extension and Research Facility, Duplin County, NC. Oct. 2, 2008.
- ◆ Attended and presented Departmental Bioprocess Engineering Research posters at the Bioenergy Forum at NC State, Biotechnology Training and Education Center, NCSU, Raleigh, NC. May 8, 2008.
- ◆ Biofuels Field Day, Demonstration Leader—“Sugar biomass: conversion of sweet sorghum juice to ethanol”, Williamsdale Farm Agricultural Extension and Research Facility, Duplin County, NC. Sept. 27, 2007.
- ◆ Sweetpotato Field Day, Invited Speaker—“Biofuels and value added products from industrial sweetpotatoes: opportunities and challenges”, Cunningham Research Station, Kinston, NC. October 4, 2007.
- ◆ Poster Presentation: **Chinn, M. S.**, M. D. Boyette, L.J. Fleischmann and C. E. Nivens. *Sweetpotato: an ideal substrate for the production of enzymes used in starch conversion*. Sweet Potato Field Day, Horticultural Crops Research Station, Clinton, NC. October 12, 2005
- ◆ Poster Presentation: Cotter, J.L., J.A. McDonald, **M.S. Chinn** and R. Sharma. *Solvent Extraction and HPLC Quantification of Capsaicin from Habañero Peppers*. Specialty Crops Field Day, Kinston, NC. July 13, 2004.

Demonstration Project(s)

- ◆ Successfully conducted Scaled-up Sweet Sorghum Demonstration Project at Avoca Inc. with Drs. Matt Veal and Larry Stikeleather, 600 gallon fermentation. Merry Hill, NC. October 2008.