



National Institute of Food and Agriculture
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2017 S-1041 Science and Engineering for a Biobased Industry and Economy

USDA-NIFA Status

Daniel Cassidy

National Institute of Food and Agriculture

National Program Leader – Forest Based Bioenergy





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THANK YOU!



What is NIFA?

- USDA Extramural Fund Arm
- REE Mission Area
- Institute of Bioenergy, Climate, and Environment
- Division of Bioenergy, Biofuels, and Biobased Products (or Division of the Bioeconomy)



B-3 Division Senior Leadership

- Dr. Louie Tupas – Deputy Director
- Dr. Tim Conner – Division Director
- Dr. Toby Ahrens – NPL Ag. Bioproducts
- Dr. Bill Goldner – NPL Feedstock Development and Production Systems
- Dr. Daniel Cassidy – NPL Woody Biomass and the Bioeconomy



B-3 Division Support

- Jillian Worthen – Program Specialist
- Kelly McDonald – Program Specialist
- Megan Rohrer – Summer Intern
- Dr. Rachel Melnick – NPL Agroclimatology
- Dr. Shing Kwok – NPL Biotechnology
- Countless others



Your Programs

- *AFRI – Sustainable Bioenergy Challenge*
- *Biomass Research & Development Initiative*
- Sun Grant Initiative
- Biodiesel Fuel Education
- Critical Agricultural Materials Program
- McIntire-Stennis and RREA
- INFEWS



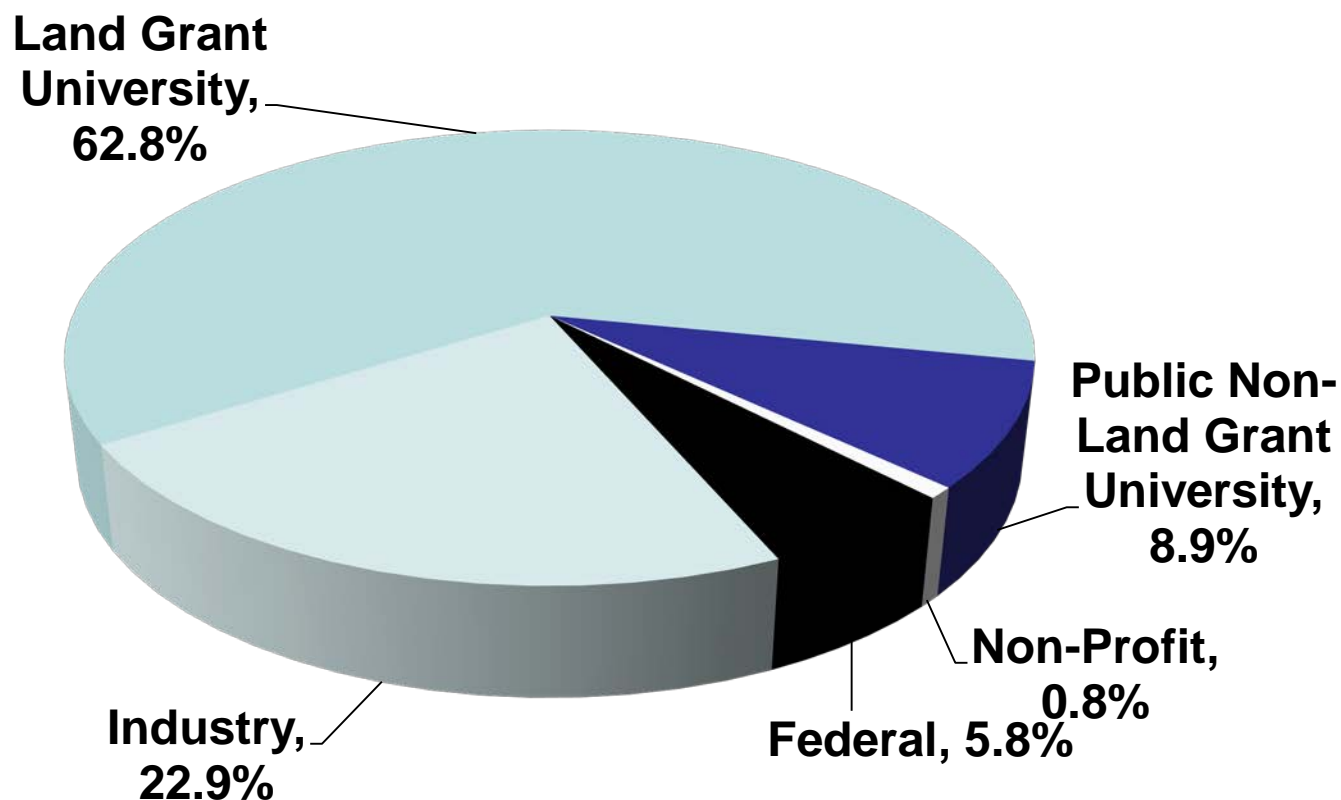
AFRI Regional Bioenergy Systems

– Coordinated Agricultural Projects (CAP)

- Regional partnerships
 - Academic, government, non-government, industry
- Work back from targets to develop entire supply chains
- Build on existing infrastructure and previous investments
- Integrate Research, Education, and Extension/Tech Transfer
- Robust sustainability analysis: Impacts on ...
 - Economics, rural communities, and the environment
- Targeted Feedstocks (perennial grasses, energy cane, sorghum, woody biomass, oil crops)
- 2010, 2012-13: 7 awards totaling ~\$156 M over 5 years

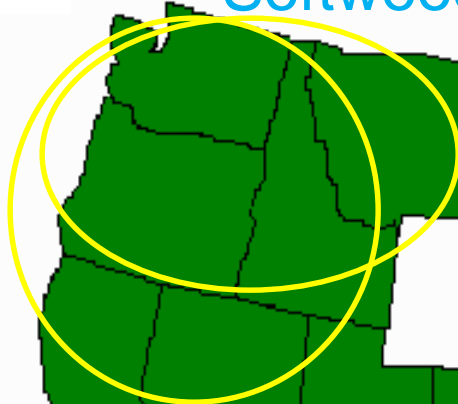


AFRI Bioenergy CAP Funding by Institution-Type





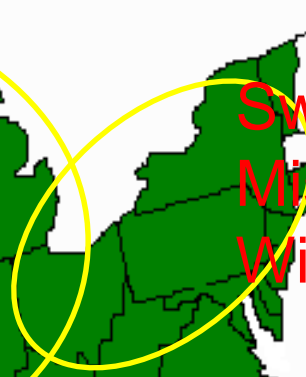
Softwood Residues



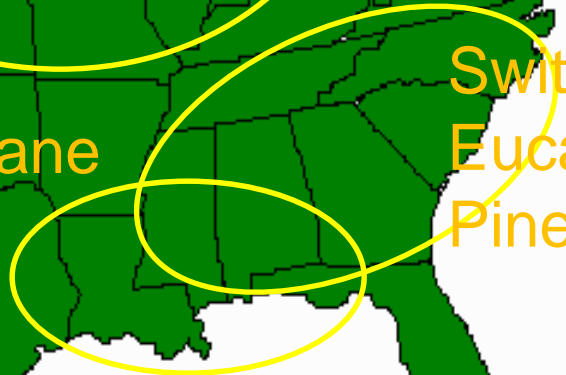
Switchgrass



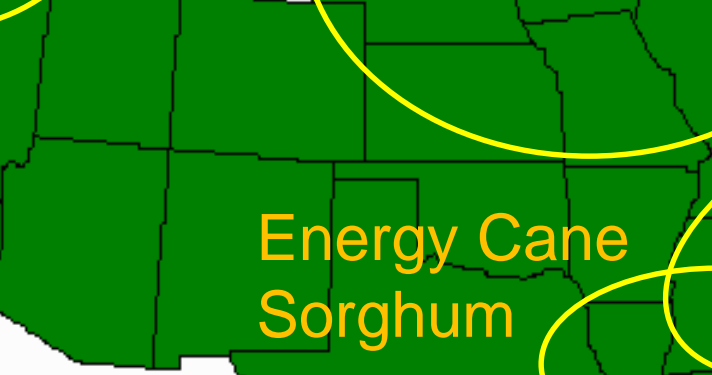
Switchgrass
Miscanthus
Willow



Switchgrass
Eucalyptus
Pine



Energy Cane
Sorghum

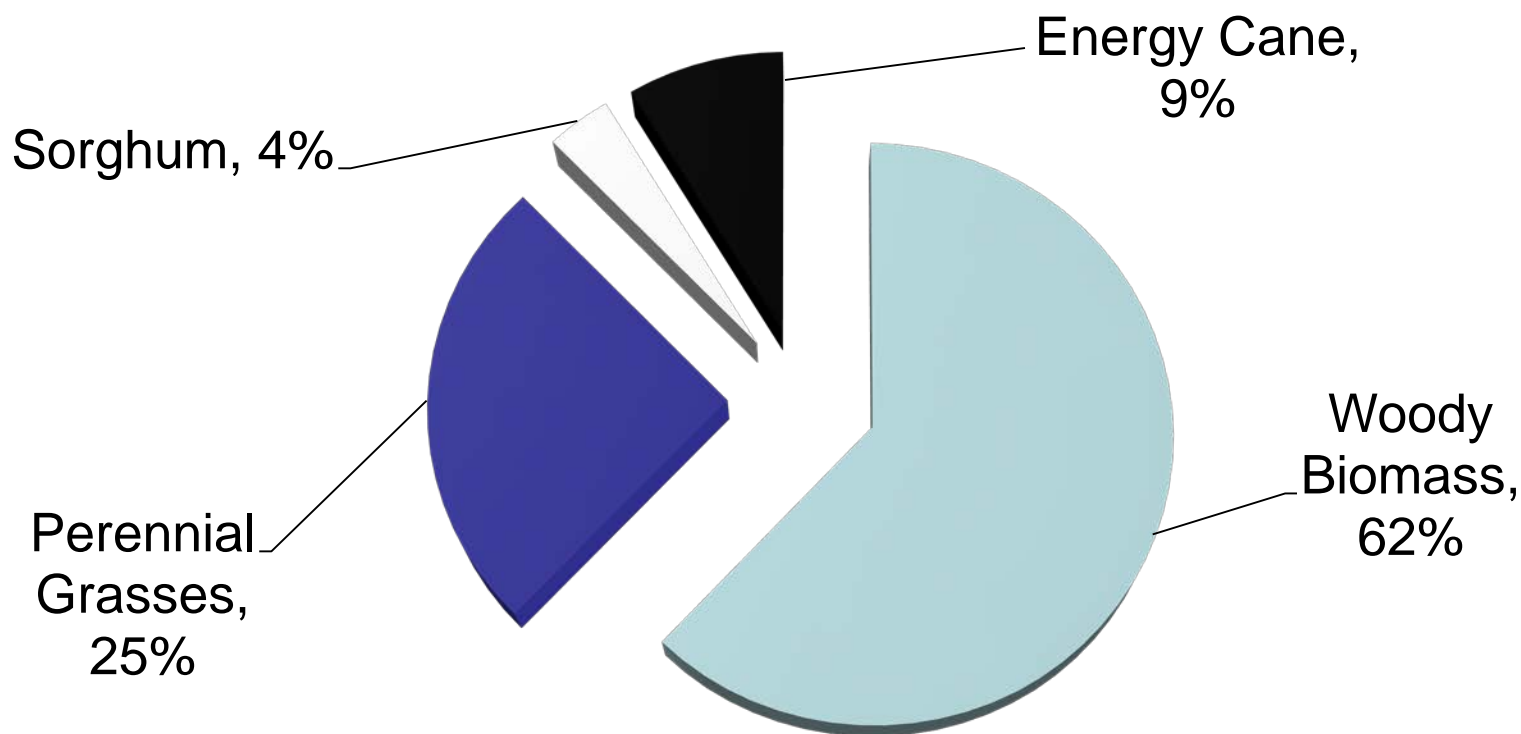


Purpose-grown
Hardwoods





AFRI Bioenergy CAP Funding by Feedstock-Type





AFRI Bioeconomy Education

- 5 years at \$1M per year; Cornell and Wisconsin
- New awards 3 years at \$1M per year
 - NCSU, OKSTU, Ohio St



Selected Outcomes

- 394 STEM Teachers participated in week-long workshops
 - Male: 32% Female: 68%
 - 33% Minority
 - 38% teach in schools where “free/reduced lunch rates” exceed 50%
 - 30 states served by the program



Education

- Over 3,000 educators and students attended mini-workshops (1 day events)
- 30,240 hours of Professional Development Credit awarded
- Transitioned to Wings of Eagles Discovery Center; Producing income to support continued education



- After attending a workshop and touring an Anaerobic Digester Facility, New York science teacher Tammy Morgan applied and received \$1.6 Million from NYSERDA to build a digester that converts her school's waste to energy.
- Paul Heasley, from Pennsylvania, left the BBEP program and applied and received grants for a hammer mill and pelletizer. His students have started their own business making tomato mulch-mats making in excess of \$1,200.



Biomass Research and Development Initiative (2009-2012)

- \$118 M supporting 25 projects
 - Advanced Biofuels
 - Bioproducts
 - Biobased chemicals
- Technical Areas
 - Feedstock Development
 - Fuels/Product Development
 - Development Analysis (LCA)



Evolution of BRDI

- Total Program: \$188M Federal Investment
 - FY 2005: USDA \$12M (average \$1.1M)
 - FY 2012: USDA \$40M (average \$6.2M)
 - Leveraged \$78M from private sources
- FY 2009 required all projects address LCA
- FY 2010 required integration of all three technical areas



Nuts and Bolts

- Broad eligibility
- Pre-application Review overseen by DOE
- Full Application Review overseen by USDA
- Awards made by each Department
 - No comingling of funds between Departments
 - No comingling of R&D and Demonstration



Program Objectives

- Development of:
 - Technologies and processes
 - High-value biobased products
 - Diversity of economically and environmentally sustainable sources of biomass



Past Solicitation

- 386 LOI/Pre-applications
 - DOE Merit Reviewed
- 44 Full Proposals
 - 58 Encouraged
- \$67.72 Million ask
 - USDA Combined year budget ~\$6 Million



Topical Areas

- Conversion: 36
- Feedstock: 4
- Life Cycle/Sustainability: 2
- Logistics/Modeling: 2



Review Committee

- 14 Members plus a Panel Manager
 - 3 Federal
 - 3 Industry
 - 6 University
 - 2 Consultants



Committee Diversity

- 6 Females
- 5 Minority
- 12 States Represented
- 8 Former BRDI Panelists
- 5 Members of the TAC involved



Output Metrics Reviewed

- Defined in the 2008 Farm Bill
 - Business and Economic Development
 - Workforce Development
 - Outreach
 - Productive RD&D
 - Quality RD&D



Program Outputs (28 projects)

- New Patents: 21
- Genetic Products Developed: 15
- Equipment/Processes: 11
- Materials/Chemicals: 14
- Evaluation Tools/Models: 9



Outputs continued

- Peer Reviewed Publications: 257
- Students Educated: 193 (14 new courses)
- Learners Reached: 17,665 (289 events)
- Workforce Trained: 125
- Jobs Created: 100
- Post-BRDI Funds Leveraged: \$128M



Program Administration

- Technical Area Distribution
- Cost-sharing
- Consortium-based, multi-disciplinary awards
- Geographic Diversity



Technical Area Distribution (FY 2003-2012)

Technical Area	Distribution	% Distribution
Feedstock Development	\$55,180,006	29%
Biofuels and Bioproduct Development	\$99,918,168	53%
Development Analysis	\$33,504,689	18%



Project Lead and Collaborator Type (2002-2012)

	Project Lead Type	Collaborator Type
NGO	8%	17%
Academia	43%	38%
Small Business	26%	37%
Industry	10%	14%
Federal	12%	16%
State	1%	3%

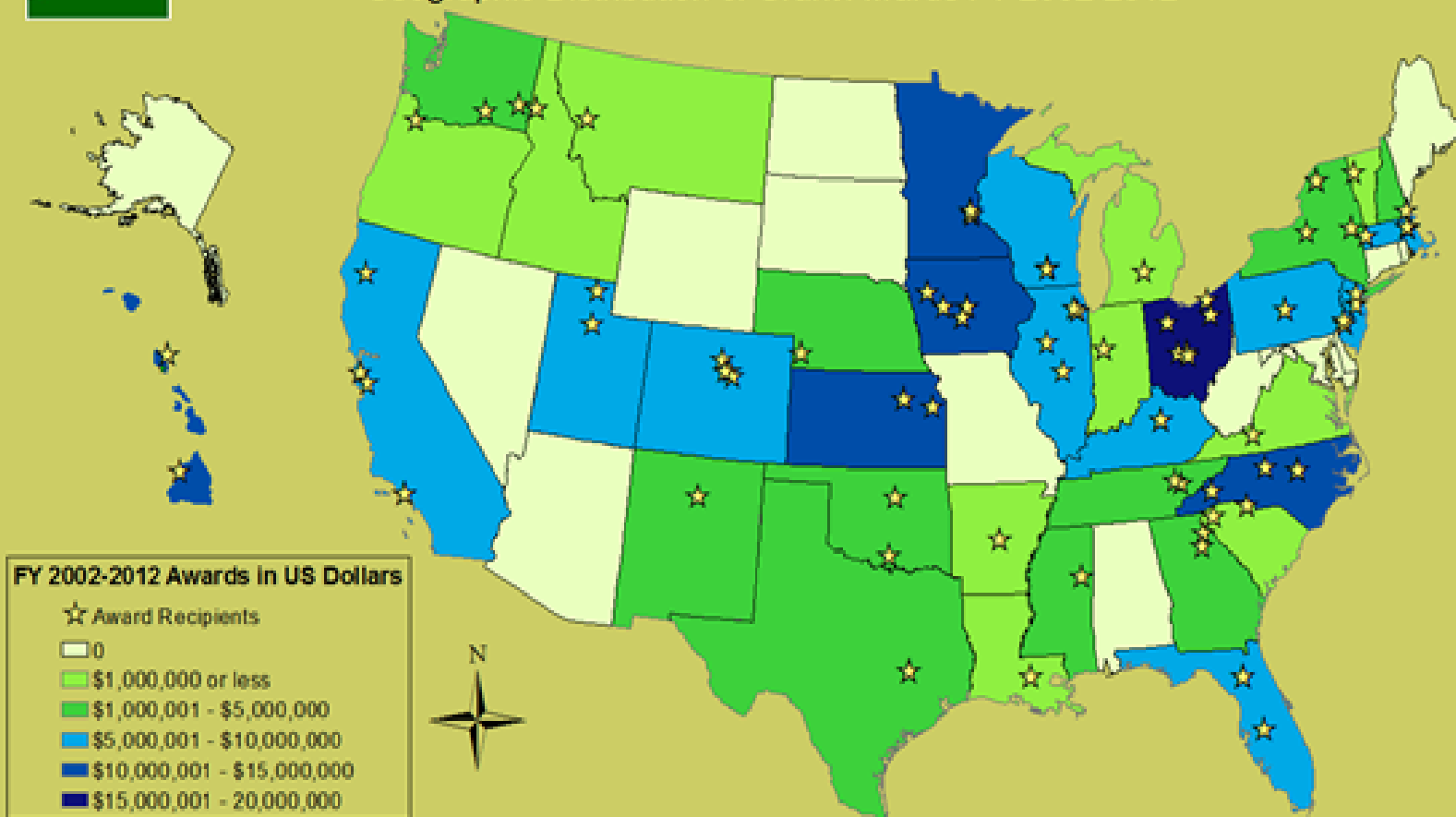


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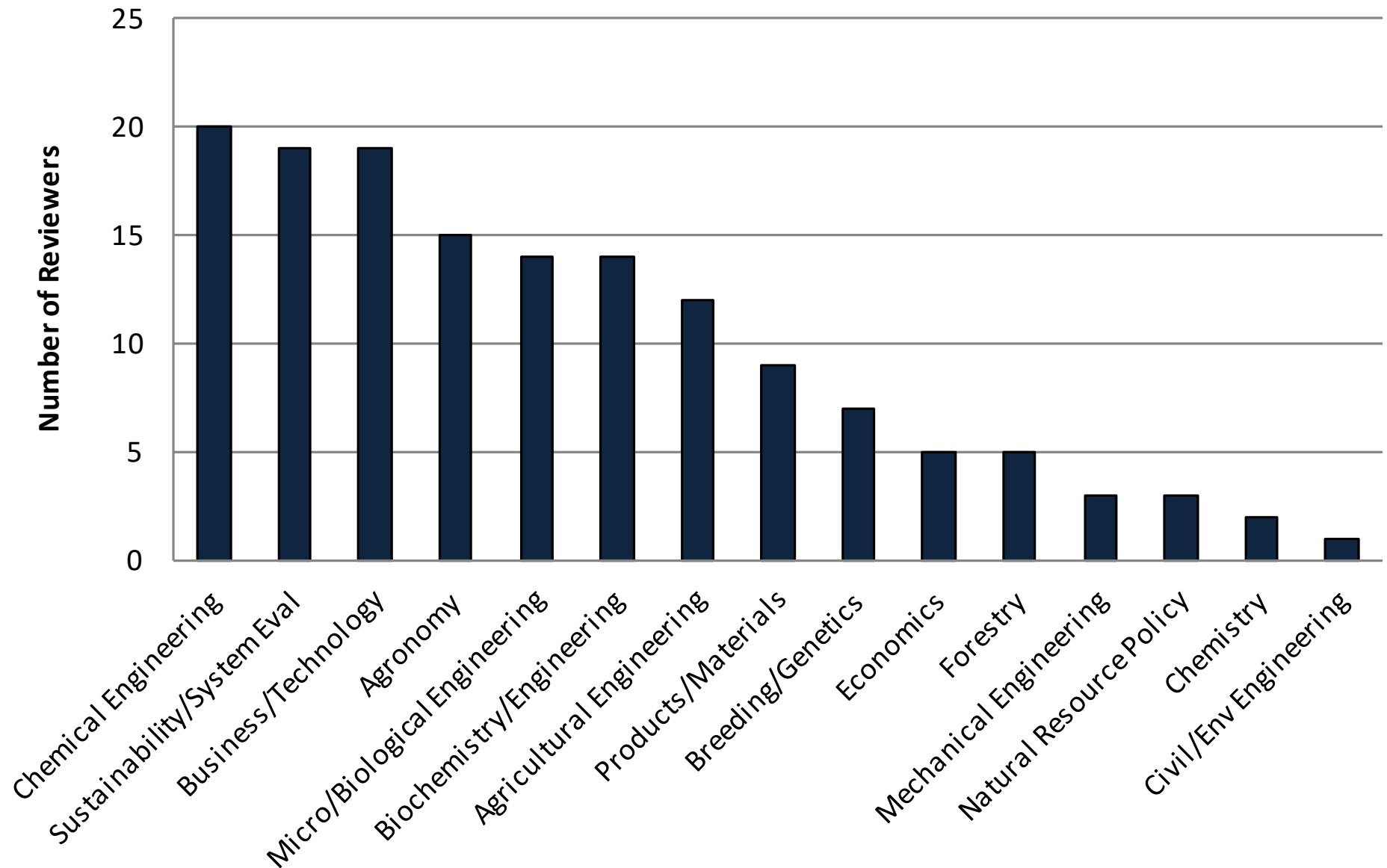
Biomass Research and Development Initiative

Geographic Distribution of Grant Awards FY 2002-2012



BRDI Panelist Expertise

FY 2010-2012





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FEDERAL ACTIVITIES REPORT ON THE BIOECONOMY

February 2016



Your turn.
Want talk budget?
Direction?
Suggest future activities?
Continued support?
Good places to eat?