Year 1 Executive Summary – CenUSA Bioenergy

CenUSA Bioenergy an ambitious Iowa State University-based, USDA sponsored, research project investigating the creation of a Midwestern sustainable biofuels system. Iowa State University's Ken Moore is the lead investigator for a network of eight institutions— Iowa State University, Purdue University; University of Wisconsin, Madison; University of Minnesota, Twin Cities; University of Nebraska, Lincoln; University of Illinois, Champaign; University of Vermont-Burlington; and the USDA's Agricultural Research Service, investigating a regional system for producing fuels from feedstocks derived from potentially high biomass producing herbaceous perennials using the pyrolytic conversion process.[1]

Each of the nine CenUSA objectives has shown satisfactory progress towards meeting the project's first year timelines and deliverables schedules. A significant part of the first quarter was spent moving the project from start-up to operational including hiring a COO and a financial manager. Given the size and scope of the project we were very pleased to have filled these positions quickly. This allowed us to enter the 2012 planting season in full stride.

Accomplishments – Year 1

Advisory Board. We have a full complement of Advisory Board members representing multiple segments of the agribusiness industry. We have also been able to recruit two producers and a local bio-industry economic development specialist. The Board has been an excellent advisor to our researchers, having participated in our initial kickoff meeting in August 2011 and subsequently offering significant feedback after being introduced to our research plans.

Meetings and Communications. We held an initial kickoff meeting in Ames, Iowa in August 2011. At this well attended meeting each objective was able to share its project plans with ample time for participants to share information. Given that nine objectives need to work collaboratively for the project goals to be realized, we believe that an annual meeting with significant time devoted to inter-objective question and answer periods will serve us well throughout the life of the project. We have also maintained important communications between our multi-state collaborators through monthly project leadership team meetings in a dedicated virtual meeting room. We have established a website, www.cenusa.iastate.edu, which allows us to share project information and education al and outreach materials with the interested public.

Program Highlights

- **Feedstock Development.** Perennial grass yield trials planted at 13 locations (Illinois, Iowa, Michigan, Minnesota, Nebraska, Ohio, Pennsylvania, South Dakota, and Wisconsin).
- **Sustainable Feedstock Production Systems.** Seed factor analysis plots established in Iowa, Illinois, Indiana, Minnesota, and Nebraska.

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- **Feedstock Logistics. Methods of baling grass and straw were assessed.** The bale accumulation method reduced fuel expenditures by 0.04 gal/ton DM.
- **System Performance Metrics, Data Collection, Modeling, Analysis and Tools.** The group acquired and tested the Environmental Policy Impact Climate model to estimate soil erosion losses, nitrogen and phosphorus movement, and soil carbon sequestration.
- **Feedstock Conversion and Refining.** Laboratory research has investigated the chemistry of a diverse group of biochars and has focused on quantifying inorganic and organic sources of alkalinity in fast pyrolysis char (red-oak and corn stover) and cellulose slow pyrolysis char.
- **Markets and Distribution.** The team has started to collect switchgrass trial data for CenUSA relevant state and has submitted a proposal to the USDA to establish an MOU that permits access to micro-level CRP data.
- **Health & Safety.** The major duties and responsibilities of the Managing Risks in Producing Feedstocks task have been preliminarily identified.
- **Education.** Eleven undergraduate students were successfully placed at CenUSA partner institutions from June 13 – July 31, 2012
- **Extension and Outreach.** Extension and outreach activities reached over 3,700 persons. This includes 2426 Master Gardener volunteers reached through face-to face or electronic means; 1056 producers, 257 extension specialists; and 160 members of the public.

Planned Activities – Year 2

Feedstock Development. The focus is on continuing the perennial forage breeding program.

- **Sustainable Feedstock Production Systems.** Monitor growth of newly established perennial system and factor plots and intervene as necessary to aid establishment.
- **Feedstock Logistics.** Continue to study biomass handling and drying rate characteristics.
- **System Performance Metrics, Data Collection, Modeling, Analysis and Tools.** Continue to adapt models to best represent data generated from field trials and other data sources.
- **Feedstock Conversion and Refining.** Continue field plot studies quantifying the impact of biochar on soil quality and carbon sequestration.
- **Markets and Distribution.** Continue to collect and analyze switchgrass trial data.
- **Health & Safety.** Conduct a baseline assessment of expected worker exposures for identified hazardous aerosols.
- **Education.** Iowa State University will host the Native Perennial Grass Bioenergy internship program in the summer of 2013
- **Extension and Outreach.** Continue development of online materials, education modules and educational articles. Complete the establishment of the CenUSA Peer Network.