

**Testimony of Joan L. Pellegrino, President  
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ON BIOENERGY RESEARCH**

**USDA Fiscal Year 2010 Budget Appropriation  
Submitted to the Senate Committee on Appropriations  
Subcommittee on Interior and Related Agencies**

**May 15, 2009**

This testimony pertains to the Biomass Energy Research Association's (BERA) recommendations for fiscal year 2010 (FY10) in support of appropriations for the US Department of Agriculture (USDA) that are related to bioenergy. This includes the conduct of bioenergy-related research by the **Agricultural Research Service (ARS)** and the **National Agricultural Statistics Service (NASS)** under Research, Education and Economics programs of the USDA. Also covered are programs under **USDA Rural Development** and the **USDAFS Forest Products Laboratory**. **In total, BERA recommends that \$157,000,000 be appropriated in FY 2010 for the specified efforts below.** Specific line items are as follows:

**USDA Research, Education and Economics**

- **\$25,000,000 to support Agricultural Research Service (ARS) New Products/Product Quality/Value Added** to maximize production, harvesting and storage of plants for bioenergy purposes. The current budget proposes \$11 million for bioenergy plant R&D, with too little on high yield energy crop development.
- **\$20,000,000 to support Environmental Stewardship and facilitate sustainable agricultural practices**, particularly for the production of crops and plants for the use of biofuels. This is an increase of \$11 million over the request of \$9 million.
- **\$5,000,000 to support Agricultural Estimates/Bioenergy Statistics by the National Agricultural Statistics Service (NASS)**, specifically related to bioenergy crop production and use. This is an increase of \$3.15 million over the current budget, which includes only \$1.85 million to establish data related to bioenergy production and utilization.
- **\$7,000,000 for the NASS Agricultural Chemical Use Program** and its restoration to enable support for sustainable production of crops and plants for bioenergy.

**USDA Forest Service Forest Products Laboratory**

- **\$20,000,000 to expand and continue microbial and biochemical research at the USDAFS Forest Products Laboratories** to enable the application of biotechnology in wood conversions, and to develop improved fermentation and other technologies to convert low-grade wood cellulose into fuels and chemicals.

**USDA Rural Development**

- **\$80,000,000 to further support the Rural Energy for America Program (REAP)**, specifically to include an additional \$20 million for loan guarantees under the Biorefinery Assistance Program (BAP).

## **BACKGROUND**

On behalf of BERA's members, we would like to thank you, Mr. Chairman, for the opportunity to present the recommendations of BERA's Board of Directors for the high-priority programs that we strongly urge be continued or started. BERA is a non-profit association based in the Washington, DC area. It was founded in 1982 by researchers and private organizations conducting biomass research. Our objectives are to promote education and research, development and demonstration (RD&D) of the economic production of energy and fuels from freshly harvested and waste biomass, and to serve as a source of information on biomass RD&D policies and programs. BERA does not solicit or accept federal funding for its efforts.

There is a growing urgency to diversify our energy supply, develop technologies to utilize indigenous and renewable resources, reduce U.S. reliance on imported oil, and mitigate the impacts of energy on climate and the environment. The benefits will be many – support for economic growth, new American jobs, enhanced environmental quality, and fewer energy-related contributions to climate change. Economic growth is fueled and sustained in large part by the availability of reliable, cost-effective energy supplies. The import of oil and other fuels into the United States is growing steadily, despite increased volatility in supply and prices, especially petroleum and natural gas. This creates an economic burden on industry and consumers alike, and adversely impacts our quality of life. A diversified, sustainable energy supply is critical to meeting our energy challenges and maintaining a healthy economy with a competitive edge in global markets. Biomass can diversify U.S. energy supply in several ways:

- Biomass is the single renewable resource with the ability to **directly replace liquid transportation fuels.**
- Biomass can be used as a feedstock to **supplement the production of chemicals, plastics, and materials now produced from crude oil.**
- Gasification of biomass produces a syngas that can be utilized to **supplement the natural gas supply, generate electricity, or produce fuels and chemicals.**

While biomass will not solve all our energy challenges, it can certainly contribute to the diversity of our supply, and do so in a sustainable way, while minimizing impacts to the environment or climate. The Energy Independence and Security Act (EISA) of 2007 mandates increased use of alternative fuels, with a substantial portion to come from cellulosic biomass. To meet the ambitious EISA goals will require aggressive support for RD&D to move technology forward and reduce technical and economic risk. We also support the energy provisions of the American Reinvestment and Recovery Act of 2009 (ARRA), particularly those that provide loan guarantees for new plants and research for renewable energy.

Biomass energy plantations that provide feedstocks for forest biorefineries producing paper products as well as fuels and biopower could make an important contribution to our energy supply while providing a boost for rural economies. Wood also can be used instead of petroleum and natural gas to produce many high-value products such as plastics and chemicals. However, targeted research is needed to make this a reality. Other cellulosic feedstocks, such as agricultural residues and dedicated energy crops (short rotation poplar, switchgrass) are expected to be a primary resource for bioenergy in the future. However, research will be needed to overcome issues of recalcitrance, low yields, cost effective harvesting and storage, and other

challenges to ensure these resources are viable as future bioenergy feedstocks. Some of this research is ongoing at the US Department of Energy; however, there is a strong role for R&D in this area at USDA as well, particularly in harvesting and storage, and basic plant science and breeding. Without additional targeted research with significant Federal investment, the ambitious goals set by the RFS will not likely be met, nor will the real promise of a bioindustry be realized.

### **OVERALL BERA RECOMMENDATIONS FOR USDA BIOENERGY R&D**

BERA's recommendations support key areas that will contribute to sustainable forestry and agriculture, as well as the creation of viable renewable resources as part of a diversified energy supply. Specific recommendations are:

**Support and Expand Bioenergy Energy Research by the Agricultural Research Service (ARS) and Forest Products Laboratories:** This important research is needed to maximize production, harvesting and storage of plants for bioenergy purposes. While the focus is on R&D to effectively use energy crops and residues and maximize their conversion to biofuels and bioenergy, there is also the need to develop the production equipment and practices needed to ensure a viable supply infrastructure at the large volumes necessary for an expanded bioindustry. In addition to the existing program, we are recommending research be initiated, in collaboration with programs at the US Department of Energy, on harvesting and other production equipment as well as storage and transportation. This research should include demonstration and validation of systems at the appropriate scale needed to support the large volumes of biomass feedstock needed meet the new RFS.

R&D is needed to enhance the use of energy crops and crop residues as viable energy resources. We recommend that the major thrust be on increased energy crop yields per acre, for both woody and herbaceous crops. This effort should include research, development and some large-scale (~500-acre units) plantings of species/genomes selected through R&D and assessment.

**Support Sustainability in Agriculture and Forestry for Bioenergy.** We recommend that research and development activities include a focus on the ecological and environmental sustainability of using energy crops and residues for bioenergy, including impacts to water, soil and the carbon balance. Definitive and long term research is needed, and should be initiated now, to understand the true impacts of removing agricultural residues from the soil, increased burdens on the water use and aquifers, and the potential environmental issues of increasing use of fertilizers, pesticides and other agricultural chemicals that may result from residue removal. This research should go beyond models and simulations to real world testing and monitoring of soil and water conditions under residue removal scenarios. ARS is developing crops that can thrive in variable and extreme environments to expand the options for ensuring that food, feed, fiber and biofuels production can meet market demands despite the risks of climate change, and this important focus should be maintained. Research should also focus on developing mitigation strategies due to climate driven pest outbreaks as well as ensuring the adequate availability of water quantity and quality under changing climatic conditions.

**NASS Bioenergy Data Collection:** BERA requests that USDA increase its support for new data collection activities related to bioenergy crop production by the National Agricultural Research

Service (NASS). Creating a baseline now will be critical to understanding our progress in using bioenergy, the impacts on soil and water, and the impacts on rural economies. It will also help us to more accurately predict the future potential of biomass as an energy resource, and the related impacts on crops for food and feed production. It will enable farmers to judge the feasibility of energy crops and have data available to select crops and operations based on experience. Specific areas to be researched should include: data on the production, stocks, and utilization of biomass materials and annual maps of county-level crop production with overlays of major transportation corridors, as well as current and proposed ethanol plants.

**Continue Rural Development Programs to Support Bioenergy.** The 2010 budget requests \$68 million in discretionary funding for the Rural Energy for America Program (REAP) that will support a program level of \$246 million for loan guarantees and \$34 million in grants, a substantial increase over 2009. This program is highly successful and historically over-subscribed, requiring additional investments. We advocate a substantial increase in funding to support the active interest in this program and renewable energy sources, including biofuels. This includes funding for biofuels under both REAP and the Biorefinery Assistance Program (BAP), above the mandatory funding provided by the 2008 Farm Bill.

## **CONCLUSIONS**

Expansion of the USDA programs as recommended by BERA enables a considerably higher probability of significantly increasing the contribution of biomass to primary U.S. energy demand through energy crops, encouraging sustainable energy crop production, improving the cost effectiveness and diversity of biomass resources for bioenergy, and providing opportunities for rural development.

BERA recommends that all aspects of the feedstock infrastructure – from sustainable production of high yield crops to cost-effective delivery of those crops to the bioenergy customer – be developed with support from USDA, as outlined above. While grain crops are a viable solution for the near term for bioenergy, they do not provide a sustainable solution at the large volumes needed to really impact our energy use. Thus, BERA includes R&D recommendations to ensure the availability of a wide diversity of non-food cellulosic feedstocks for bioenergy, such as dedicated energy crops and agricultural residues, while considering the challenges of environmental and societal sustainability and maintaining the economic vitality of America's farmers.