

**Ceres Written Testimony to the Committee on Agriculture, Nutrition and Forestry  
of the United States Senate Field Hearing in Sioux City, Iowa:**

**“The Expanding Role of Biofuels for America”**

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Good morning, Mr. Chairman and Members of the Committee. Thank you for inviting me to testify. My name is Anna Rath, and I am here representing Ceres. Ceres is a leading dedicated energy crop seed company. We develop and market crops such as switchgrass and high-biomass sorghum for biofuels and biopower under our Blade Energy Crop brand.

**Where We Are In Biofuels Today**

With more than 9 billion gallons of ethanol produced from starch in the United States in 2008, the first generation of the biofuels industry is a mature business successfully operating at scale and making a significant contribution to our transport fuel needs. Set backs have been encountered over the past year, but recovery is taking place, and signs point to biofuels playing a permanent and ever-increasing role in the U.S. fuel supply.

In cellulosic and advanced biofuels, significant technology advancements have been made over the past few years and further innovations are coming along every day. Industry leaders now believe the bottleneck is no longer conversion technology development but rather obtaining the necessary financing to build the first commercial-scale projects, having the opportunity to come down the technology cost curve associated with building the second, third and fourth facilities, figuring out how to deal with biomass supply logistics at scale and obtaining a reliable commercial-scale source of feedstock.

With Ceres’ launch of Blade Energy Crops in the fall of 2008, the industry can now count on commercial-scale availability of high-quality seed for dedicated energy crops. Further work will be required, though, to move from a reliable supply of seed to a reliable supply of biomass that facilities can depend on and know how to handle.

**What We Want To Achieve In Biofuels**

The role of biofuels in the United States is to help us reach the combined goals of improving national security, through use of domestic resources for fuel production, reducing our greenhouse gas emissions, through displacement of fossil fuels, and providing agricultural producers new and expanded revenue opportunities. Biofuels helps us meet these goals while at the same time enabling us to supply the ever-

increasing demand for transportation fuels. With this role in mind, we should have two major objectives for the continued development of the U.S. biofuels industry:

- 1) Continued improvement of the starch ethanol industry's environmental profile and amount of fossil fuel displacement
- 2) Facilitation of the commercial scale-up of cellulosic and advanced biofuels

### **Improvement of Starch Ethanol through Re-Powering**

The starch ethanol industry has already taken steps to improve its environmental profile. Many facilities have transitioned from coal to natural gas as a source of heat and power to reduce greenhouse gas emissions. Lower temperature fermentation is increasingly employed to reduce energy usage. Advances in corn breeding have helped reduce greenhouse gas productions through decreasing the amount of fertilizer used per bushel of corn produced. Nitrogen use efficiency traits currently in development pipelines will offer further improvement.

More can be done. A simple, relatively low-cost opportunity using available technology exists today to help starch ethanol facilities further improve their environmental profile and increase their displacement of fossil fuels. This is the opportunity to transition from natural gas or coal to biomass as their on-site source of heat and power. Existing coal boilers can be used as-is or can be retrofitted or replaced; small-scale gasifiers can be used to create a biomass-based syngas that will work in natural gas boilers. Several facilities are either already using or have at least experimented with use of biomass in their boilers. The combination of the Repowering Assistance Program and the Biomass Crop Assistance Program, both included in the Food, Conservation and Energy Act of 2008, provide good support for this transition.

### **Scale-up of Cellulosic and Advanced Biofuels**

Adoption of biomass as a heat and power source by the starch ethanol industry will provide additional benefits in helping the commercial scale-up of the cellulosic biofuels industry. Two critical elements of the cellulosic biofuels industry achieving scale are growers gaining experience with growing dedicated energy crops and facilities gaining experience dealing with the logistics of biomass harvest, transport and storage at large scale. Use of dedicated energy crops for re-powering would provide the necessary market for growers to begin growing dedicated energy crops. The experience gained with biomass handling by the companies using this biomass would provide useful knowledge and serve as a stepping stone to commercial-scale handling of biomass for cellulosic biofuels production.

The other critical element of the cellulosic and advanced biofuels industries achieving scale is scale-up of the conversion technology. This scale-up requires that significant capital investments be made. The first commercial-scale facilities need to be over-

engineered to allow for technology improvement and optimization at scale. The result is that these facilities are expensive to construct and will not be able to produce fuel at mature, competitive prices. It was because of the need to progress down a technology cost-reduction curve that the Cellulosic Biofuels Production Incentive program was included in the Energy Policy Act of 2005. The reverse auctions contemplated by this program together with the grants and loan guarantees to assist with facility construction provide appropriate incentives and support to help these facilities be built.

## **How We Get There From Here: Policy Priorities**

### **Improvement of Starch Ethanol through Re-powering**

Expanded funding of Repowering Assistance Program: When used in conjunction with BCAP, the Repowering Assistance Program provides an attractive opportunity for starch ethanol facilities to transition from coal and natural gas to dedicated energy crops as their source of heat and power. Now that both programs are in place there will be increasing demand for the Repowering Assistance Program. Given the benefits of establishing a market for dedicated energy crops - allowing growers to gain experience growing them and allowing companies the opportunity to work through biomass supply logistics - the program should be expanded to accommodate this increasing demand.

Planning appropriately for funding requirements of BCAP: Because the Repowering Assistance Program creates an immediate market opportunity for biomass it could lead to considerable early demand for the BCAP program. BCAP is authorized to be funded with “such sums as are necessary” to achieve its intent. The level of interest we are seeing from starch ethanol refineries in repowering suggests that the BCAP program may require larger amounts of funding sooner than some may be anticipating. We encourage the Committee to work with USDA and the Office of Management and Budget on such matters to ensure FY 2010 success.

Extension of BCAP matching payments for collection, harvest, transport and storage: The original intent of BCAP was to provide transitional assistance to help the industry get started. In the case of cellulosic and advanced biofuels it is clearly taking longer than anticipated for the industry to get started. More broadly, with the price of carbon still unclear, it is presently uncertain whether current climate change legislation will be enough to make the economics of using biomass for on-site heat and power competitive with the use of coal or natural gas. In order to help ensure that facilities have the right incentives to make this transition, it is important that the two-year time limit on matching payments for collection, harvest, transport and storage costs under BCAP be extended.

Inclusion of high biomass sorghums under BCAP: High biomass sorghum is the only one of the primary dedicated energy crops that is an annual and the only one that will achieve a full yield in its first harvest. Having an annual dedicated energy crop will be critical for allowing rotation with other crops and for enabling immediate implementation of biomass as an alternative to coal and natural gas. Questions exist about whether high

biomass sorghum will be allowed to qualify for BCAP in all parts of the country because of pre-existing rules that allow certain forage sorghums to qualify for Title I payments in certain parts of the country. We need to ensure that there is a clear differentiation between crops designed to be used for feed and those designed to be used for biomass production. Those designed for biomass production must be encompassed by BCAP so that they are able to serve their desired role in helping these industries develop.

Expansion of Repowering Assistance Program beyond biorefineries: While the topic of today's meeting is biofuels, it has come to our attention that there are actually many types of facilities that would have interest in using the Repowering Assistance Program to help them transition from coal or natural gas to biomass for on-site heat and power generation. These facilities range from campuses such as schools, hospitals and prisons to manufacturing and refining facilities. Utilities aiming to displace coal with biomass for power generation also have interest. If the Congress has interest in promoting the transition from fossil fuels to biomass beyond the biofuel industry, expansion of this program could be a powerful tool in helping to accomplish this.

### **Scale-up of Cellulosic and Advanced Biofuels**

Implementation of BCAP establishment assistance: We strongly support present efforts to implement the second phase of BCAP that will provide support for establishment of dedicated energy crops. Perennial dedicated energy crops have the potential to enable carbon negative biofuels through their below-ground carbon sequestration. Because of the time they spend generating these root systems they typically do not produce economically harvestable yields in their first year. Establishment assistance is therefore critical to helping farmers overcome this first year opportunity cost of growing dedicated energy crops.

Limitation of BCAP establishment assistance: While we are supportive of rapid implementation of establishment assistance, we would suggest caution regarding the magnitude of support that would be offered on a per acre basis. There are vast differences between the establishment costs of seed propagated crops like switchgrass and those of vegetatively propagated crops like miscanthus, arundo donax and elephant grass as well as most of the woody energy crops. The result of these differences is that vegetatively propagated crops often need to be left in the ground for more than a decade to be able to amortize this cost and give the grower an adequate return on their investment. With the current pace of improvement in energy crop development we believe growers will want to be able to replace their stands every five to seven years to maximize their productivity and their returns. If the United States wishes to encourage energy crop production on the largest number of acres, it may want to carefully consider the high establishment costs associated with vegetatively propagated crops and avoid the experiences of the United Kingdom, wherein that government may have hampered biofuels expansion by dedicating too many resources to support more costly crops that cannot stand on their own without the support program. We would therefore suggest that a cap on establishment costs per acre be used to ensure that growers have the correct incentives to select the most economically attractive crops.

Carbon offsets for below ground biomass: Biomass is the only source of renewable transportation fuels or power that has the potential to be not just carbon neutral but actually carbon negative. This is because of the massive root systems created by perennial energy crops. As long as no-till practices are used to keep these root systems intact, stands of perennial energy crops replaced at regular intervals have the potential to serve as nearly perpetual carbon sinks. It is the growers producing these crops who will be responsible for generating this carbon sink. This contribution should be recognized by allowing them to generate carbon offsets with these crops that could be sold to carbon emitters. Doing this would help to encourage use of energy crops that are more efficient in their carbon sequestration as well as optimal management practices to reduce emissions and maximize sequestration. If farmers are to profit in a carbon-constrained world, the Committee should encourage USDA to pursue public-private research to measure how much carbon is sequestered in the roots of dedicated energy crops over time.

Crop insurance pilot program: As the cellulosic biofuels industry develops, we believe it is of critical importance that dedicated energy crops not be disadvantaged relative to other crops in terms of the safety net that the government provides for these crops. This safety net could come in a form similar to existing crop programs or could be substantially different. The goal must be to allow growers to make decisions about which crops to grow based on market forces, not based on which crops are or aren't supported by government programs. Toward this goal, we suggest a pilot program to begin collecting the data that will be necessary to enable a program like crop insurance. The objective of this pilot program would be to collect the necessary data to enable the roll-out of a crop insurance program for dedicated energy crops in time for the rapid scale-up of the industry.

Biorefinery grants and loan guarantees: We are supportive of the cost-sharing grant programs and loan guarantee programs that the government has created to help foster the construction of the first commercial scale biorefineries. We would hope that these programs are successful in getting needed support into the hands of leading companies as quickly and efficiently as possible to help hasten the growth of this industry. Generally, we are hopeful the loan guarantee effort for leading-edge biofuel projects is not as firmly stuck in place as it seemed in 2007 and 2008. Congress was wise to make these projects eligible under DOE loan guarantee programs authorized under the Recovery Act. Like you, we look forward to agency support for worthy efforts that can begin construction prior to September 30, 2011.

Reverse auction: The first commercial scale cellulosic biofuels facilities must be over-engineered to enable process improvements at scale. Because of this, these facilities will not be able to produce fuel at a cost that is competitive with mature technologies and, as a result, are not attractive opportunities for project finance. Implementing the reverse auction called for by the Cellulosic Biofuels Incentive Program would help target exactly this problem. Those taking the risk to create these first facilities would be assured that, within the reverse auctions, their competition for improving price points would be with

other pioneering facilities rather than with established technologies. This should help encourage private sources of capital to provide project finance for these facilities.

## **Conclusion**

Together, we believe these policy priorities will help achieve the dual objectives of continuing to improve the environmental profile and fossil fuel displacement of the starch ethanol industry and facilitating the commercial scale-up of cellulosic and advanced biofuels. Thank you again for providing me with the opportunity to discuss our efforts and policy priorities. We look forward to working with you to help continue the rapid and successful development of this industry.