

# National Agricultural Research, Extension, Education and Economics Advisory Board

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Karen Hunter, Executive Director  
Room 3870 South Building  
REE Advisory Board Office  
U.S. Department of Agriculture  
Washington, DC

Mailing Address:  
STOP 0321  
1400 INDEPENDENCE AVE SW  
WASHINGTON, DC 20250-0321  
Telephone: 202-720-3684  
Fax: 202-720-6199

## Report on Agriculture Research Needs of Commodity Crops

July 6, 2009

### EXECUTIVE SUMMARY

Commodity crops referenced in this report include corn, soybeans, barley, cotton, wheat, rice, sugar cane, sugar beets, and peanuts. Sustainable, efficient production of these staples is critical to the United States food supply and economy. The following report provides a preliminary overview of the research priorities associated with the aforementioned commodity crops and should not be construed as an all-encompassing, inclusive report. Rather, it provides general indicators and guidance as to the currently identified priorities, and could be used as a precursor to more in-depth, specific study.

Production research was identified as a common theme and priority among commodity groups. Efficient production can result in greater yields with fewer inputs. Given the state of the economy, increasing production efficiencies benefits the producer and the consumer. To maintain production of commodity crops in the face of ever changing challenges and to significantly increase production to meet the needs for food, fiber, fuel and other products that a growing US and world population demands will require that productive efficiency be a top priority and be adequately funded.

Similarly, environmental research is critical in a time when fragile ecosystems and watersheds are increasingly becoming protected and agriculture takes center stage in defending carefully-controlled use of pesticides and fertilizers to avoid becoming non-point pollution sources. It is recognized and accepted that conservation practices, efficient use of natural resources, and strategic planning all assist in the sustainability of the food system.

With current national interest and concern focused on nutrition and obesity prevention and renewable energy, it is not surprising that research in nutrition, food safety and energy were also mentioned as key priorities for commodity crops.

The identified research priorities for commodity crops are well-aligned with the current economic, environmental, and political atmosphere. The report covers the broad spectrum of priorities for a number of major commodity crops, but is not designed to be a comprehensive and detailed for each commodity. Addressing the priorities will require more individualized and specific attention than what is provided in this report.

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The Commodity Crop Work Group of the NAREEE Advisory Board was formed in 2008 and charged with studying the scope and priority needs of the commodity crop industry that could be addressed within research, extension, education and economics programs in the USDA Research, Education and Economics (REE) mission area. A preliminary review of commodity crop programs was conducted by the Work Group. Work Group findings were presented and discussed at the full NAREEE Advisory Board meeting held in November 2008 in Washington, DC. The Work Group received additional information from stakeholder input, interviews with subject matter experts and Board member participation in meetings to develop this report.

This paper provides a preliminary overview of agriculture research priorities by selected commodities. Commodity crops as a single focus area are too broad to cover in one all-encompassing session. The findings made available in this document should be viewed as a general indicator to provide some guidance regarding current priorities. The work group summarized agriculture research priorities of a number of commodity crops. Specific references were assessed and tallied to quantify specific research goals or initiatives that were in the background papers or other information sources for that particular commodity. It is certainly not an exhaustive analysis. A more analytical approach such as that recommended above should be taken before any final conclusion can or should be made regarding current agricultural research priorities.

Where readily identifiable, references to specific research priorities contained in background papers or other information sources were noted and highlighted, and included within this report. A more analytical approach is recommended to better identify specific priorities and before assigning them a rank. This could include a detailed survey or questionnaire, and follow up interviews. Another alternative would be to establish an informal round table or panel proceeding, providing an opportunity for representatives of each commodity organization to outline their research needs and prioritization.

Production research was consistently identified as a high priority need by commodity crop producers, followed closely by environmental and value-added research. Research in food safety and nutrition, utilization and marketing, and energy was also deemed important.

## Commodity Specific Research Needs

Corn was produced on 86.2 million acres. All data for acreages were taken from the 2007 Census of Agriculture. The highest priority research areas for the corn industry were identified as production efficiency, improved genetics and genomics, enhanced seed quality, efficient use of nutrients, and bioenergy-related topics such as co-products of ethanol and bio-based fuel production. Further research on the nutritional value of high fructose corn syrup is also needed due to the numerous unanswered questions that persist about its use and perceived relationship to negative health outcomes. Soybeans were produced on 63.9 million acres. Research needs for soybeans mirror those of corn, with additional concern related to control of rust and human nutritional value.

Barley was produced on 3.5 million acres. Research priorities for barley are similar to those of corn and soybeans, but with added emphasis on disease resistance management. Industry leaders recognized the continuing need for environmental research in sustainability, soil management, and water use. Barley growers also expressed interest in research on nutrition, including human health benefits.

Cotton was produced on 10.5 million acres. Among the highest priority research areas identified for cotton are crop protection, pesticide resistance and pest control, particularly for boll weevil, nematode resistance, air quality, and aflatoxin. Consulted industry leaders also indicated a need for new products and marketing.

Wheat accounted for 50.9 million acres. Wheat industry stakeholders felt that research on improved varieties was of the highest priority. Producers also expressed concern about rust control and end-use quality. Rice was planted on 2.8 million acres. Rice growers were most concerned with pesticide resistance.

Sugar cane and sugar beets totaled 2.1 million acres. There were some specific differences in research priorities between sugar cane and sugar beets. The sugar beet industry priorities center around sustainability and soil and water practices. Sugar cane producers expressed interest in potential energy research, propelled most likely by the influence of Brazilian-produced ethanol from sugar cane.

Peanut acreage amounted to 1.2 million acres. The peanut industry identified production efficiency research (including biotechnology but excluding genomics), and improved varieties as high priorities. Other priorities included disease resistance and general environmental concerns.

### What do these priorities mean?

The priorities detailed by the various commodity crops reflect common concerns over current economic and environmental situations. It is apparent that certain commodity crops have had and continue to have significant private sector research support. It is also evident that consumers of food crops have some reluctance to embrace the benefits of biotechnology. This may be in part because biotechnology is often portrayed negatively in the consumer world and the media. The priorities outlined above strongly emphasize the efficient and sustainable production of adequate amounts of high quality food, feed, and fiber. Equally important (but not included in this report) are the research perspectives of the food manufacturers and processors.

## Conclusion

Research priorities differ somewhat based on the individual commodity. Although not examined in this report, the research priorities of food processors, marketers and members of the nutrition and food science communities may be different from those of the commodity producers. Producers are largely driven by consumer demand, growing what can and will sell.

The Work Group recognizes that there are wide differences of opinion surrounding the production and processing of commodity crops. Further, the group suggests that it would be wise to gather additional relevant scientific evidence to make informed decisions regarding diet selection and its impact on human health.

The subject area is so vast that it is difficult to capture all facets in a single report. This paper should be considered a preliminary rather than a definitive report. Further work needs to be completed before concrete conclusions can be drawn. It is critical for the REE Agencies to continue funding high impact research on sustainability, disease and pesticide resistance, genomics and human nutrition along with production practices.

**Members of the NAREEE Advisory Board Commodity Crop Work Group**

Jean-Mari Peltier, Chair  
Charles B. Coley, Coley Gin & Fertilizer Company  
John Salois, Blackfeet Community College  
Bill Hudson, World Food Logistics Organization