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## National Barley Improvement Committee Priorities

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The National Barley Improvement Committee (NBIC) represents the entire US barley industry - growers, researchers, and end-users (e.g. malting, brewing, food industries). Federal investment in barley research is needed because barley is primarily a public sector crop. Most barley variety development and research is conducted at state universities and USDA Agricultural Research Service (ARS) facilities. Private seed companies are not investing in barley variety development because of low seed sale potential, since barley is a non-hybrid crop with limited acreage.

Barley production and the manufacture and sale of value-added barley products (malt, beer, food, livestock) have a significant impact on the US economy, supporting millions of jobs and generating billions of dollars in business activity and tax revenue for the US and state governments. Enhanced barley research efforts are needed to keep barley a crop option for US growers and to maintain and enhance value-added job generating enterprises including livestock, malting, brewing, food, and ethanol production. US barley acreage has declined significantly in recent years due to a variety of factors, including those that can be addressed through research to develop improved barley varieties that are more tolerant to biotic and abiotic stress and that have expanded uses due to improved malting, food or feed quality. We should not concede domestic and world markets for barley and its value-added products to our competitors in Australia, Canada, and Europe. This will have a substantial negative impact on the US economy and federal, state, and local tax revenue.

Currently, the primary use of barley in the US is for malt production for beer and other products. Malting barley provides the highest economic return to growers and represents a complicated genetic package providing required agronomic and quality traits. Enhanced research, including utilization of the latest genomic tools, is needed to characterize important traits and develop the malting barley varieties of the future so as to keep it a competitive US crop.

Barley that is unsuitable for malting is utilized in secondary markets for other uses or is grown specifically for those markets. A primary use is as feed, which provides a lower return since prices are driven by other feed crops, primarily corn. Research to characterize and enhance feed quality traits to develop varieties with unique attributes may provide greater returns to growers. With only two percent of barley utilized in food products, growers and the food industry see potential for growth in this market. Barley has unique nutritional and health beneficial attributes (e.g. cholesterol reduction), with additional research needed to discover and enhance other traits. Research is also needed to increase utilization of barley for ethanol production or for new value-added products.

Reversing the decline in barley acreage and increasing its value-added utilization requires research directed at improving its competitiveness and to address production sustainability and risk management issues. The later include biotic threats, such as *Fusarium* head blight, which is a significant contributing factor to the decline of barley acreage and US malting barley production capacity in the Midwest due to its impact on quality, including the production of mycotoxins. Other biotic threats include barley stripe rust, net blotch, *Septoria*, the potential threat of a new African stem rust, other fungal and viral diseases, as well as insect pests such as the Russian Wheat Aphid. Abiotic threats include heat and drought stress, that not only impact yield but have a substantial impact on quality. For malting barley, wet conditions near harvest may have a significant negative impact on quality due to field sprouting. Research is needed to develop transient dormancy that reduces field sprouting but allows subsequent germination for malting.