Project: Barley for Rural Development

Brief Description: Montana State University, the University of Idaho and North Dakota State University's Institute of Barley and Malt Sciences (IBMS) request $600,000 to develop improved malt, feed, fructanosic ethanol and food barley varieties for our regional barley growers. These new varieties will enable rainfed regional barley producers to improve our rural economy and to produce high value barley and barley straw for the malt, feed, fuel, and food industries.

Executive Summary: Today's malting barley varieties often fail to produce malting quality barley when grown without irrigation. Regional irrigation resources are limited, but demand for malting barley is expanding as malthouses in the West expand production. *Barley for Rural Development* (BFRD) focuses on the use of new technologies that improve rainfed malt barley performance. With prior support, our programs released two winter and two spring malting barley varieties that have been recommended by the American Malting Barley Association for use in malt production. These will improve both grain yield and the frequency with which Montana and Idaho growers meet the quality specifications of malt barley buyers.

Project Description: Fuel ethanol production presents a growing opportunity to America's barley growers. BFRD scientists recently demonstrated that some barley genotypes store large quantities of the water-soluble carbohydrate, fructan, in their straw. Fructan has high market value, in 2007 more than $450 million, and can be easily degraded and fermented to produce ethanol. In addition to grain, barley growers will be able to harvest straw from these varieties to produce fuel. We estimate that an average dryland barley grower could produce 45 gallons of ethanol per acre from the straw of these lines, adding to farm profitability, local bioenergy production and displacing gasoline imports. Genes have been identified for this trait and are being moved into our best adapted, highest yielding varieties. Converting wasted barley straw into ethanol using straw fructans could generate $250 million per year in ethanol sales and would displace 125 million gallons of liquid fuel imports.

This project will continue the collaborative MSU/UI/IBMS release of high quality dryland malt, feed, food and ethanol barley varieties that will support American industry. New, more reliable varieties will keep Canadian malting barley north of our borders and enhance our competitive edge.

It's long been known that barley is a healthy grain. MSU, University of Idaho and Idaho-based USDA-ARS scientists are collaborating to produce high fiber barley varieties with improved food and feed value. These barley varieties provide increased fiber for breakfast cereals and improved mineral nutrition for swine and poultry producers.

Congressional Action Required: An appropriation of $600,000 is requested. Montana State University and the University of Idaho will each receive $275,000 and North Dakota State University's Institute of Barley and Malt Sciences will receive $50,000.

Importance to Montana: Barley for Rural Development will lead to a doubling of Montana's barley crop value and to a dramatic expansion of acreage devoted to barley. The potential barley straw fructan-based ethanol industry will utilize as much as 2 million tons of barley straw to produce 125 million gallons of ethanol, generating a new farm income source.

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