The Anderson Research Grant Program

Project Title:

Physical and Chemical Properties of Shelled Corn Related to Conditioning and Processing.

Principal Investigator(s)

Name	Institution/Agency/Other
Richard Stroshine	Purdue University, Dept. of Agric. & Biol. Engr.
Paul Armstrong	USDA Grain Marketing Production & Research Center.

(Attach an additional sheet is more space if needed.)

Project Contact (list one person to act as the primary contact):

Name:	Richard Stroshine
Address:	Purdue University
	Dept. of Agricultural and Biological Engineering
	1146 Agricultural and Biol. Engineering Bldg.
	West Lafayette, IN 47907-1146
Phone:	765-494-1192
Fax:	765-496-1115
E-mail:	strosh@ecn.purdue.edu

Period of Proposed Project Dates:

Beginning June 1, 2006 Ending: May 31, 2008

Amount Requested (maximum $20,000 per year for two years):

Year 1: $20,000. Year 2: $20,000.

ANDERSON RESEARCH FUND - RESEARCH PROPOSAL BUDGET

Problem Identification and Related Research

During the past 20 years there has been a significant shift in the grain industry's view of corn hybrids. Although growers continue to be concerned with yield and test weight, there is a greater awareness that some hybrids have traits suited to specific uses. These include, but are not limited to, white, high-oil, waxy (containing 100% amylopectin), high (>50%) amylose, and high-lysine hybrids. Recently "highly fermentable" hybrids have been developed for the ethanol fuel industry. Processors that contract with growers often specify the hybrids that can be grown and they may also set quality standards for the corn arriving at their facilities. One important quality trait is endosperm hardness. Hard-endosperm corn, which contains a higher proportion of translucent endosperm, is considered desirable for dry milling (Paulsen et al., 2003a; Duensing, 2003) while softer hybrids tend to give better starch extractability during wet milling (Eckhoff, 2005). In general, there are differences in composition among hybrid groups as well as differences in physical characteristics such as color, kernel volume, size and shape. These differences, along with as yet to be quantified differences such as pericarp thickness and water absorption rate, could influence processing characteristics. *One of the premises behind this proposal is that the differences should be quantified so that the industry can avoid problems they may cause while taking full advantage of opportunities they present. It will help ensure continued availability of hybrids with desirable traits, improve processing efficiencies, and serve as a basis for continued improvement of corn hybrids. A second premise is that quality control would be facilitated if some of these attributes can be measured rapidly using Near Infrared Reflectance (NIR) instruments.*

As more hybrids with unique traits are developed, it seems likely that variations in