

The Anderson Research Grant Program 2001 – 2003

Project Title: Storability Measurement of Shelled Corn as a Means of Improving Stored Grain Management Practices and Preventing Losses.

Principal Investigator(s)

Name	Institution/Agency/Other
Richard Stroshine	Purdue Univ., Dept. of Agric. & Biol. Engr.
Note: Although there are no other principle investigators, there several collaborators as described in the section on collaboration.	

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

Project Contact:

Name:	Richard Stroshine
Address:	Purdue University
	Dept. of Agricultural and Biological Engr.
	1146 Agricultural and Biol. Engr. 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:

Beginnining June 1, 2002 Ending: May 31, 2004

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

Fungal growth reduces the nutrient value of grain, consumes dry matter, and produces potentially harmful mycotoxins. The majority of grain bought and sold in the United States is co-mingled. As a result, elevator managers usually have little information on factors that affect propensity for invasion by storage fungi, such as how long and under what conditions the grain was stored prior to arrival at their facility. They have no good method of measuring or predicting the likelihood of spoilage and rely on experience and the moisture content when assessing risk. Then they monitor the grain condition using visual inspection, probe sampling, and temperature sensors that detect heating associated with spoilage. This research will develop tests that will permit better management of stored shelled corn by assessing its storability. For purposes of this proposal, storability will be defined as the likelihood that fungal growth will not occur during subsequent storage or shipment if the shelled corn is subjected to conditions conducive to fungal growth. Although this project involves only shelled corn, for which fungal deterioration is a major concern, the techniques developed could be adapted for use on other grains.

A test that could quantify the storability of shelled corn would help the manager of a grain storage facility to determine whether corn presently in storage can remain in storage or withstand stress during shipment to distant markets. Shelled corn that is found to be low in storability could be utilized before it deteriorates. Processors could use the storability test to help them decide whether they can safely hold the corn in storage for processing at a later date. When shelled corn is shipped overseas, particularly to tropical climates, it can be subjected to warm, high humidity environments conducive to fungal growth. In such situations, a test of storability would be particularly beneficial. If rapid tests (<15 min) for storability could be developed, they could be utilized by exporters and the Grain Inspection, Packers and Stockyards Association (GIPSA) to monitor the condition of grain intended for shipment overseas.