Proposal No. _____

The Anderson Research Grant Program
2001 – 2003

Project Title:

Implementation of Carbon Dioxide Monitoring for Early Detection of Grain Spoilage

Principal Investigator(s)

Name	Institution/Agency/Other
Dr. Dirk E. Maier	Agricultural & Biological Engineering
Dr. Charles P. Woloshuk	Botany & Plant Pathology
Dr. Linda J. Mason	Entomology
	Purdue University

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

Project Contact:

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Period of Proposed Project Dates:

Beginning: 1. October 2001 Ending: 30. September 2002

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

Year 1: $20,000 Year 2: n/a

Project Continuation Request Explanation

This proposed project details a one-year continuation request of our previous Anderson Research Grant Program project entitled *Carbon Dioxide Monitoring for early Detection of Grain Spoilage*. Although we have made significant progress during the first two project years, our original objectives and schedule have proven more challenging to meet than anticipated. Nevertheless, we have made significant progress (especially on Objectives 1 and 2), and remain convinced of the value and importance of this particular project. In this proposal, we will summarize our progress and detail the challenges we have experienced. We will also outline how we envision completing all of our previously proposed objectives as well as a revised fourth objective, which includes a new but necessary scale-up phase during this third year. In addition, we were able to generate the matching industry support we had originally budgeted, and expect to do so again during this third project year. We have also received numerous grain industry inquiries that have expressed great interest in the technology once available.

Problem Identification and Related Research

[Note: This entire section is unchanged from our original proposal!]

In the United States more than 15 billion bushels of grain are stored every year. Insects and fungi create numerous quality problems in these stored grains. Total annual storage losses are estimated at more than $1 billion. It is essential for the grain storage industry to have effective pest management programs to protect against economic loss due to contamination from insects, fungi and mycotoxins. A major contributor to the spoilage of grain is the growth of various fungal species, including several that produce mycotoxins. Although quality of harvested grains can never be improved with storage time, the rate of deterioration can be slowed with an integrated systems approach that combines engineering, biological and economic principles. Our Purdue University Post-Harvest Grain Quality Team consists of an entomologist, plant pathologist and agricultural engineer investigating alternative strategies for managing grain. The focus of our research program is to test new technologies and management practices that will permit grain producers, handlers, and processors to maintain high quality grain, free of toxic fungal contaminants.