

Proposal No. \_\_\_\_\_

## The Andersons Research Grant Program

**Project Title: Scale-up of a Nitrogen-based Stored Product Pest Treatment System for Container Shipment of Specialty Grains and their Products**

### Principal Investigator(s)

Name	Institution/Agency/Other
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(Attach an additional sheet if more space is needed.)

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

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### Period of Proposed Project Dates:

Beginning: \_\_\_\_ January 1, 2008 \_\_\_\_\_ Ending: \_\_\_\_ December 31, 2009 \_\_\_\_\_

### Amount Requested (maximum \$25,000 per year for two years):

Year 1: \$ 25,000                      Year 2: \$ 25,000

## **Problem Identification and Related Research**

This project will focus on the scale-up of a nitrogen-based modified atmosphere treatment system for the control of stored product pests in container shipments of bagged specialty grains and grain-based products grown in NC-213 states and designated for sale in domestic and overseas markets. Few technically feasible and economically viable non-chemical alternatives exist for the rapid disinfestation of organic and other specialty grains and their processed products. Recent advancements in the development of nitrogen generators, plastic liners and gas monitoring equipment are making the utilization of nitrogen-based modified atmosphere an attractive alternative treatment technology. Purdue University's Stored Product Protection Team has partnered with the leading Indiana alternative pest control company (Insects Limited, Indianapolis, IN; see letter of support) and with a major U.S. engineering firm (Innoventor, Marilyn Heights, MO; see letter of support) to ***address an important food quality protection issue for value-added specialty grains and their products.***

To maintain our agricultural competitiveness, emerging value-added opportunities such as organic grains and grain-based products need to be supported through applied research and demonstration. *Organic crop production is one diversification strategy to enhance the viability of U.S. producers and organic crops are an innovative source to meet the demand for nutritious and healthy foods.* The U.S. organic farming system has expanded rapidly since the 1990's in response to a demand increase from local and national markets. As of 2001 (latest data), Indiana has at least 5,000 certified organic acres with 82% planted with field crops and hay. About 1000 acres each are utilized for corn and soybeans and almost another thousand for wheat and oats. Additionally, acres are dedicated to organic popcorn and tofu soybeans for overseas export primarily Japan (Reding, 2006). One key challenge facing producers and processors of organic grains is pest control during post-harvest handling to ensure quality and avoid costly rejection at the point of sale/receipt. Frito-Lay's largest snack food manufacturing plant located in Frankfort, IN is faced with this challenge since it began receiving organic food corn from an Illinois supplier (Riley, 2006). Interestingly, much opportunity exists for the shipment of specialty grain and grain-based products in containers. As a result, a technically feasible, biologically effective, and economically viable pest control treatment technology for container shipment is needed.