Final Report
2006 Food Science Research Fellowship
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Project Title: Validation of SSOPs Used in the Egg Industry and Developing an Online Egg HACCP Training Course

To address the research outlined in Objective 1 of this project, Develop Egg HACCP Training materials a database has been compiled containing the contact individuals for food safety/HACCP from each egg company. Comprehensive HACCP surveys were completed at egg companies. These surveys included information on company demographics, pre-requisite programs and HACCP programs. From the surveys we determined that most companies have implemented HACCP programs in some capacity using the HACCP regulations that currently exist for meat processing facilities. Most larger companies, have successfully implemented HACCP programs, including the necessary pre-requisite programs. However, some of the smaller companies did not have programs that would be considered to be complete under the HACCP regulations as they are currently written. The smaller companies did not have Standard Operating Procedures (SOPs) and Sanitary SOPs (SSOPs) that would be considered complete under regulated HACCP. Smaller companies may not have all the resources that larger companies have and may need some additional help in implementing HACCP and the pre-requisite programs. In addition, our results indicate that further processed egg facilities are better prepared for mandated HACCP than the shell egg processors, many further processors already operate under HACCP programs because it has been requested by a customer. Although, many processors have already implemented HACCP programs, continuing training programs in this area will be important and training for companies that need to add to their HACCP programs will be very important.

To develop the Egg HACCP program, pilot workshops were held at Auburn University; however, traveling away from the plant can be more difficult for smaller companies who have few management employees. By developing an online course, employees will not need to travel away from the plant to complete the HACCP training. The online course can be completed at their own pace while still being able to be in the plant to maintain management responsibilities. In developing the online program it was important to utilize the resources already available through Auburn University because they can provide technical support for the computer issues. The online Egg HACCP course has been designed using the Blackboard Academic Suite, which is an online course system that is utilized by the University to allow faculty to administer online courses. This system allows course participants to log into the system and keep information secure. This will allow participants to discuss and share information on general HACCP issues to help problem solve any issues they maybe having with their HACCP programs. The materials for the course were developed from evaluations obtained from our pilot courses held at the university and with the information we obtained from the plant surveys.

The goal of the online course is to give industry personnel working knowledge of HACCP principles and pre-requisite programs so that you will be able to develop and implement an effective HACCP program based on scientific principles. To achieve this goal, the following objectives have been designed within the course, to develop pre-requisite programs to support the HACCP program, to develop and be able to implement an effective HACCP program and to be able to identify validation procedures to determine the ongoing effectiveness of the HACCP program. The online course is divided into seven individual learning modules that guide participants through the steps necessary to create a HACCP program as well as the supporting programs, such as Good Manufacturing Practices (GMPs) and Sanitary Standard Operating Procedures (SSOPs). The learning modules contain power point presentations with an audio lecture. The power point presentations will also be provided in a handout format with 3 slides per page and an area for notes, participants will be able to print these before listening to each lecture. Each learning module is also followed by an assignment that participants will be able to complete and use in the development of their company's Pre-requisite programs and HACCP plan(s). The learning modules will also include a quiz so that we can monitor a participant's progress and the effectiveness of the course. There is a supplemental learning module that provides participants with many reference materials that they will be able to use in the development of their full HACCP program. Participants will complete a test at the end of the course with a grade of 80% or greater to get a certificate with the International HACCP Alliance seal. As the course evolves, we will continue to add information and materials as needed. After the completion of the course, participants will have the information and resources to implement a successful HACCP program within their processing facility. Currently, the course materials are being sent to International HACCP Alliance for certification and selected individuals are beta-testing the course. Once the International Alliance Certifies the course, it will be offered globally.

The Egg HACCP course syllabus is as follows:

1. Learning Module 1 - Introduction to Egg Processing
    a. Egg Processing and Further Processing Lecture
    b. Writing Assignment
        i. Create a flow diagram of your processing facility. This will be used as a part of your HACCP plan.
    c. Quiz over learning module 1
2. Learning Module 2 - Introduction to HACCP and an Overview of Hazards
    a. Introduction to HACCP Lecture
    b. Biological Hazards Lecture
    c. Physical and Chemical Hazards Lecture
    d. Writing Assignments
        i. Create a HACCP team and define the team member role.
        ii. Create a product category description for your egg product. In creating your product category description you will need to list the name of the product or a description of the product, what the intended use of the product is, type of packaging, shelf-life, storage temperature, labeling instructions and if special

distribution instructions are needed. There is a sample form attached to this assignment that you can use. You may use another format, however all the information needs to be included in an alternate format.

       iii. Create an Ingredient List for your egg product. When creating your Ingredient List, you will need to list your product category again at the top of the page. Then identify the egg ingredients in your product and all the non-egg ingredients used in your product. If your product contains any restricted ingredients you will want to list those separately. Also, you will need to list the packaging materials that are used since these will come in direct contact with the food product.

   e. Quiz over Learning Module 2

3. Learning Module 3 - Pre-requisite Programs
   a. Good Manufacturing Practices (GMPs) Lecture
   b. Recall, Hold and Release Program Lecture
   c. Sanitary Standard Operating Procedures (SSOPs) Lecture
   d. Writing Assignments
       i. Review your current Good Manufacturing Program (GMPs) and update any necessary information in the program. If you don't currently have a GMP program please create one.
       ii. Outline a recall program that includes a mock recall and steps that your company will use to hold and release product.
       iii. Create (or review an existing) Sanitary Standard Operating Procedures (SSOPs).
   e. Quiz over Learning Module 3

4. Learning Module 4 - Hazard Analysis and Critical Control Points
   a. HACCP Principle 1 - Hazard Analysis Lecture
   b. HACCP Principle 2 - Critical Control Points Lecture
   c. Writing Assignment
       i. Conduct a Hazard Analysis to identify all possible biological, physical and chemical hazards that could be found at each production step listed in your flow diagram.
       ii. Determine your Critical Control Points to determine what the final point of control for each biological, physical and chemical hazard is. Note: there may be more than one type of control in a process.
   d. Quiz over Learning Module 4

5. Learning Module 5 - Critical Limits, Monitoring and Corrective Actions
   a. HACCP Principle 3 - Determining Critical Limits Lecture
   b. HACCP Principle 4 - Monitoring Critical Limits Lecture
   c. HACCP Principle 5 - Determining Corrective Actions Lecture
   d. Writing Assignment
       i. Using the templates provided to you or another form that contains all pertinent information, develop a Critical Limit for each one of the critical control points identified in learning

      module 4. For each critical limit identify the appropriate monitoring procedures and what corrective actions would be appropriate when a deviation occurs.
    ii. Identify the source of the information you used in determining your critical limits. We have included resource items in the supplemental information section to help such as USDA regulations, International Egg Pasteurization Manual, scientific articles and other information.
   e. Quiz over Learning Module 5
6. Learning Module 6 - Record Keeping and Verification
   a. HACCP Principle 6 - Record Keeping Activities Lecture
   b. HACCP Principle 7 - Verification Activities Lecture
   c. Writing Assignment
    i. Using the HACCP form templates provided to you or another form that contains all the pertinent information, determine what records will be kept for each critical control point and what procedures will be used in the verifying that you are controlling potential hazards from entering your food system. Example verification procedure will be provided in learning modules.
    ii. Create a HACCP Summary Table to go with your HACCP program
   d. Quiz over Learning Module 5
7. Learning Module 7 - Sanitation and Validation
   a. Sanitation Program Lecture
   b. Validating Your HACCP Program Lecture
   c. Writing Assignment and Activities
    i. Identify steps that you could use to validate the effectiveness of your companies HACCP program.
    ii. Using the checklist provided, audit your HACCP program to determine if you are missing anything that could strengthen your program.
    iii. Review your sanitation program to determine if there is information you could add anything to strengthen this program.
   d. Quiz over Learning Module 7

   If you have any questions or concerns please contact me or my advisor at the information provided below or visit the online course at
http://www.ag.auburn.edu/poul/onlinecourses.html

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