Response to 2/11/13 Review

The Development Committee has provided an excellent response to our concerns. Unfortunately, other than revisions to Objective 3, they failed to incorporate the responses into the revised submission of the proposal. Many of the responses could have been directly incorporated.

> Responses were not incorporated into the body of the proposal due to the page limit. Many responses have now been incorporated, and all tables have been pulled out to be added separately to the Additional Documentation Section. Please see tracked changes in document.

Granted, S1033 has had an impact on the published literature, but it also had impacts for the consumer. Any number of impacts could have been highlighted as justification of the impact of the prior project such as "E. coli O157:H7 is a major foodborne pathogen associated with numerous beef product recalls. In addition, cattle farm runoffs containing E. coli O157:H7 also contaminates vegetables. The gastrointestinal (GI) tract of cattle is the major source of contamination and it is essential to reduce E. coli O157:H7 colonization in the GI tract. Studies to identify mechanisms regulating E. coli O157:H7 colonization in GI tract will provide molecular targets for future efforts to reduce or eliminate E. coli O157:H7 colonization in beef cattle, ensuring the microbiological safety of beef."

> The impacts section has been altered. We strongly believe the current document highlights the complexity of food safety, and justifies our critical need to establish a multi-disciplinary network of scientists that perform comprehensive and integrated risk-based research and outreach to improve the safety of food from farm to fork. Please see tracked changes in the attached document.

The paragraphs on related and current work were excellent, but not incorporated in the proposal.

> The related and current work sections have been altered; please see tracked changes in the attached proposal.

The description of the differences between the various multistate projects was excellent, but not incorporated in the proposal.

> An expanded description outlining the differences between the various multistate projects has been added. Please see tracked changes in the attached text.

The MRC Committee has reviewed the project proposal for SDC346 and has decided to **defer approval** until the following item(s) are addressed:

The Multistate Review Committee (MRC) has completed our initial review of the SDC346 proposal. The writing committee is to be commended for putting together a strong proposal that builds on the previous S1033 project. The new project is a logical extension of work completed in S1033. You may understand that we were disheartened to see that the last Annual Report of record (SAES-422) for S1033 was submitted on 9/2/2010 for the meeting held on 11/12/2009. There are no reports for the authorized meetings on 10/7/2010 or 9/17/2011.

Reports for the S1033 were submitted annually, as is required to hold the subsequent meeting of the group and have subsequently ben resubmitted to Dr. Archer and Donna Pearce. We do not know where these have gone, or why they have not been posted.

The accomplishments and impacts of multistate research projects are important and should be documented. There have certainly been strong collaborations developed as a result of the multistate project. However, the MRC feels that the previous impacts and accomplishments of S1033 are not fully described in the current SDC346 proposal and lacks specificity as to those areas needing further investigation.

Since 2009, member of the SD1033 group have authored over 450 peer reviewed papers on the subject of food safety (see attached SDC 346 4 year publication worksheet). Notably, approximately 20% (85/450) of these papers were co-authored by more two or more members of the multi-state group, providing direct and tangible evidence of effective multi-member collaboration. Moreover, the research which many of these papers describe was supported by funding acquired among group members. The impact of this research is significant. The increased understanding of the ecology, biology, epidemiology, of foodborne pathogens in pre and post- harvest environments, foods and the environment has been used to populate risk models of disease transmission and develop a variety of intervention strategies to control risk. In addition, the data has been incorporated into systematic reviews and meta-analytical studies which are available to inform decision makers in industry and in government positions.

In addition to the minimal description of previous work of S1033, little discussion is given on related and current work in the area particularly given the USDA emphasis on the topic.

Food safety is an important agricultural, public health, and economic concern in the United States and worldwide. As such, there is an emphasis regionally, domestically, and globally, to conduct research to better understand foodborne pathogens, disease transmission and prevention. For example, in 2012 alone, there were over 40,000 research papers published on the topic of the most common foodborne pathogens (10 bacterial, 3 parasitic, and 1 viral) occurring in the US (Attached SDC Table 1). An annotated bibliography of research publications involving two or more members of the previous S1033 project has been included (see attached SDC 346 4 year publication worksheet) with this response to represent the previous work and collaborations of participants.

In the past few years, federal funding for agricultural research has not kept pace with increasing demands, but resources for food safety food safety research have been somewhat prioritized. The availability of resources for food safety research has attracted a large number of investigators not traditional trained in or previously involved in this field. This influx of new researchers brings exciting new ideas and approaches and the opportunity for novel interdisciplinary strategies to address some of the most pressing food safety challenges. However, the competition for available resources in increased, and the new cohort of food safety researchers may not be fully aware of past food safety efforts and advances from a practical and applied perspective.

We recognize the vast amount of food safety research currently conducted in laboratories around the world. It is the purpose of this multi-state project to contribute to the coordination of food safety efforts performed at land grant institutions in the United States. The networking capability of this group permits the formation multi-state, regional, or other appropriate teams that build on the strengths of different individuals to develop innovative approaches to food safety that limits the redundancy in research focus. At the same time, this multi-state project provides investigators new to the field mentoring opportunities to better understand stakeholders needs and challenges involved with the conduct of applied research.

A list of related multistate projects is given, but no description of how these either relate to S1033 or augment S1033 is presented. The writing committee states that the primary difference between S1033 and the other multistate projects is that food safety is the paramount goal . Food and Safety are in the titles of 5 of the 7 other multistate projects. The committee needs to describe the differences between the various projects.

A systematic search of electronic databases, including the USDA CRIS and NIMSS databases yielded a larger number of past and active projects that address a wide variety of food safety topics. Of 243 active AFRI, Animal Health, NRI, and HATCH projects identified by the search term FOOD SAFETY, 72% are conducted by investigators at institutions involved in this project and are partially an outcome of previous involvement with this group. In addition, several ARS units are also involved in food safety research. The following seven other multi-state projects identified in the NIMSS search included some mention of food safety objectives:

NC1023: Engineering for Food Safety and Quality.
NC1041: Enteric Diseases of Swine and Cattle: Prevention, Control and Food Safety.
NE1028: Mastitis Resistance to Enhance Dairy Food Safety.
NC1183: Mycotoxins: Biosecurity, Food Safety and Biofuels Byproducts.
S_TEMP2882: Fly Management in Animal Agriculture Systems and Impacts on Animal Health and Food Safety
S294: Quality and Safety of Fresh-cut Vegetables and Fruits
W3122: Beneficial and Adverse Effects of Natural Chemicals on Human Health and Food Safety

The major difference between the proposed multistate project, and other projects, that have in their title a reference to food safety, is the fact that these projects include the topic of food

safety because it is often on the periphery of many non-food safety topics related to agriculture and production of food. In contrast, members of SD346 conduct food safety research as a primary focus. Other differences include the fact that most other projects focus on a single commodity, while SDC346 will conduct research related to the safety of multiple food commodities.

Below is a table listing food safety related projects, their differences, and how the projects differ from SD346 can be found below.

Project Title	Project Objectives	Relationship to SD346
NC1023: Engineering for Food Safety and Quality.	Advancing the study of thermal and non-thermal processing technologies.	Focuses solely on food processing technologies: SD346 focuses on all aspects of microbial food safety including microbial ecology, microbial epidemiology, disease prevention, detection of pathogens, and risk analysis. Our team studies food safety, including processing technologies, studies the issue holistically in the context of how individual interventions may complement each other and result in synergistic effects on food safety.
NC1041: Enteric Diseases of Swine and Cattle: Prevention, Control and Food Safety.	Understanding how zoonotic pathogens cause illness in swine and cattle.	Focuses on diseases related to food producing animals. SD346 focuses on foodborne diseases related to food producing animals as well as fresh fruits and vegetables, and dairy products.
NE1028: Mastitis Resistance to Enhance Dairy Food Safety.	Coordination of multidisciplinary research efforts on mastitis that are being conducted at various laboratories throughout the United States.	Focuses solely on mastitis prevention. SDC 346 focuses on foodborne diseases related to food producing animals as well as fresh fruits and vegetables, and dairy. Only a very few mastitis – causing pathogens are of food safety concern.
NC1183: Mycotoxins: Biosecurity, Food Safety and Biofuels Byproducts	Research related to the biosecurity, economy, and toxicity of mycotoxins.	Focus is on mycotoxins, a chemical contaminant of grains. SDC346 is not focusing on chemical and

		biological toxicants.
S_TEMP2882: Fly Management in Animal Agriculture Systems and Impacts on Animal Health and Food Safety	The project will provide quantitative data to analyze fly-borne spread of pathogens from animal production systems into the urban environment and the ability to assess the risk of fly-borne illness associated with different production techniques and distances from production facilities. The project will also develop new control technologies for biting and nuisance flies.	Focus is exclusively on flies and the role they play is dissemination of disease among animals used to produce food. SDC346 focuses the safety of plant derived foods, as well as those produced from animals.
S294: Quality and Safety of Fresh-cut Vegetables and Fruits	Studies related to the survival and persistence of viable or infectious human pathogens under environmental conditions occurring in produce handling and processing facilities, on harvested crops, and on intact or fresh-cut products.	The SDC346 proposal focuses on the safety of foods produced from animals, seafood, complex food products and dry foods as well as fresh-cut products produced from plants.
W3122: Beneficial and Adverse Effects of Natural Chemicals on Human Health and Food Safety	Examination of the role that natural foodborne toxicants, cancer chemopreventives, botanical estrogens, dietary fiber, immune modulators and antimicrobials play in human health and disease.	The SD346 proposal does not focus on chemical aspects of food safety.

Food systems are extremely complex and various aspects of production, quality, and animal and plant health may impact food safety. The primary difference among the abovementioned projects and the current proposal is that in this project, food safety is the paramount goal. Impacts on quality, productivity, economics and marketing are all secondary benefits. Moreover, this project is unique in that it cuts across all food commodities, and is holistic in its risk analysis approach. Notwithstanding, several of the participants of this project are also members of the other abovementioned groups, an activity that even further strengthens the outputs of this proposal and builds complementarity among efforts.

Clearly, the S1033 participation list is extensive. The proposal does not describe the research responsibilities of the participants or institutions related to each objective.

The roles and responsibilities of the participants are outlined in Appendix E as requested.

Objective 3 describes an extensive outreach plan, but nothing is given related to the

desire to tie these together in a collaborative manner on a regional basis.

Revisions to the outreach plan are included in the attached document (SDC 346 rework of objective 3), and highlighted in track changes, and has been incorporated into the revised attached document. It has been noted that due to the complex nature of food production and processing, coordination based on a geographic basis may or may not be appropriate

The milestones are primarily related to enhancing participation rather than describing how objectives and sub-objectives will be completed. Milestones are intended to be time-linked accomplishments that must be completed before subsequent activities can begin or can be completed, so revision is needed in this regard. This may relate to the deficiency of not identifying the research responsibilities related to each objective.

As outlined in the proposal narrative, the "The long-term goal of this project is the establishment of a multi-disciplinary network of scientists that performs comprehensive and integrated risk-based research and outreach to improve the safety of food from farm to fork." The milestones described are those which are under the control of the conference participants. The completion depth and scope of the specific sub-objects that will be accomplished is dependent upon participants acquiring additional external resources to perform laboratory and field research and develop, deliver, and evaluate novel outreach materials. Given the large degree of uncertainty in the availability of additional funding, our proposal was designed in such a way that the objectives are not co-dependent and if some of the early objective cannot be met for one reason or another, the project does not fail completely. In contrast, other aims can be addressed and while attempts are made to find alternative strategies to circumvent project roadblocks and challenges.

The MRC is deferring approval at this time because of deficiencies described herein. I would like to request that you as the Administrative Advisor see that any concerns or comments listed above are addressed in the revision of SDC346 A revised version of the project should be uploaded to NIMSS that takes into account the comments of the MRC. When submitting your revised project please also submit a document to me which gives a point by point response to each of the comments made by the MRC and indicates the precise changes made to the project in response to these comments. Once I receive notification via email that the revisions to SDC346 have been made with an attached document describing changes to the project, I will resubmit your proposal to the MRC Chair.

Please feel free to contact me if you have questions, concerns or need help entering your revisions in NIMSS.

Thanks,
Donna