

Recommend: Approve	
Sound scientific approach	good
Achievable goals/objectives	good
Appropriate scope of activity to accomplish objectives	good
Potential for significant outputs (products) and outcomes and/or impacts	good
Overall technical merit	good
Comments: <p>The proposal is very broad and multidiscipline in nature. Thus, it is difficult to make specific statements on the objectives and outcomes. However, it is based on a previous project and is well founded on that work. In particular, the systems approach proposed here is well suited for a Multistate research project. It will allow the participants to contribute their personal expertise to the larger goals.</p> <p>The justification is well founded. Animal production systems continue to grow larger and more complex. The sustainability of the current methods and long-term impacts deserve additional research.</p> <p>The Previous Research section is brief. It could be strengthened with more peer reviewed references.</p> <p>The Objective are general in nature, but adequate.</p> <p>The Methods section is good and provides good examples of the planned activities.</p> <p>The Measurement of Progress section is good. The Milestones are adequate to both focus activities and measure the progress.</p> <p>The Outreach Plan is weak. More specific plans would be appropriate.</p>	

----- Review 2 of 3 -----	
From: Peer Reviewer	
submitted by:	
Reviewed on: 06-01-2013	
Recommend: Approve	
Sound scientific approach	excellent
Achievable goals/objectives	excellent
Appropriate scope of activity to accomplish objectives	good
Potential for significant outputs (products) and outcomes and/or impacts	excellent
Overall technical merit	excellent
Comments: <p>Statement of Issues and Justification has established the necessity for this research project.</p>	

Related, Current and Previous Work section efficiently summarizes the previous and current studies. While the objectives set by the investigators are reasonable in general, some components in the methodology/tasks have to be elaborated.

1. In the point of view of the reviewer, evaluation of value and use of databases should not be limited only with the Project Chair, but also by an external expert to ensure the quality.

2. In the section that explains the tasks related to Objective 3, the following statements should be elaborated further on how the collaboration stated in the tasks will be established: We will need close collaboration with new partners to guide us (a) in devising the appropriate Jacobian terms and/or (b) in decomposing the relationships until the chain of causality is clearer and more compelling. The specialized capabilities of both our legacy membership and our newly engaged collaborators will be needed.

3. In addition, reference source for Churchman, 1967 should have been provided.

Outcomes, Outputs and Milestones that are provided under Measurement of Progress and Results tangible and achievable.

Over all, this proposal has a need for the agricultural community. It has set the reasonable objectives that can be achieved within the project time frame and resources, provides a logical methodology to achieve the objectives.

As a reviewer, I recommend this project.

----- Review 3 of 3 -----

From: Peer Reviewer

submitted by:

Reviewed on: 05-10-2013

Recommend: Approve with revision

Sound scientific approach	good
Achievable goals/objectives	excellent
Appropriate scope of activity to accomplish objectives	excellent
Potential for significant outputs (products) and outcomes and/or impacts	excellent
Overall technical merit	excellent

Comments:

Overall the proposed project is inspiring and has great potential to succeed.

About objectives and tasks: Objective 1 and 2 are well described. I feel more clarification is needed for Objective 3. Two tasks (task 3.i and task 3.ii) are listed under objective 3 while task 3. iii is mentioned in one sentence but not fully described in the text. The following are some of my thoughts for authors consideration to improve organization of

the tasks under Objective 3. Objective 3: Establish a framework describing the complex dynamics of sustaining agricultural production. Tasks 3.i: Refine a modeling framework with the CLD in Figure 1 as its initial form. Specific tasks may include: modify and add variable nodes and causality arrows, formalize mental models, formulate specific questions concerning the various social, economic, and environmental interactions to address the evolving understanding of the various relationship, identify specific researchable questions, establish specific subcommittees, identify and engage under-represented disciplines. Task 3.ii: Integrate findings into the identified system framework. Specific tasks may include: refine model from conceptual to quantitative and from causality polarity to mechanistic description, summarize current reductionist research and output of S1032 and their connection with SDC354, continue efforts of S1032 by developing process level understanding and descriptive numeric interactions, develop subcommittee models. Task 3.iii: Introduction, evaluation, and adoption of available synthetical tools, or system-level modeling tools. Specific tasks may include: evaluating system integration approaches and system level implications, conduct systematic refinement of the whole-system CLD, system optimization. Task 3.iv: Dynamic simulation. Identify researchable system dynamic topics.

The following are some of my thoughts for authors consideration for Outputs and Outcomes.

Outputs: (1) A communication system for researchers and stakeholders (Annual meeting and quarterly virtual meeting, shared data, subcommittee, &) (2) A collaborate network, or cooperative framework (3) Refined models, verified system-level tools for holistic evaluation. (4) Cooperative Proposals. (5) Papers, progress reports. (6) Curriculum (7) Outreach activities

Outcomes: (1) Improved professional development, from output(1) and (2) (2) Enhanced grantsmanship and competitiveness in proposal, from output (1), (2), and (3). (3) Improved ability to tackle complex problem, from output (2), (3) and (4). (4) Inspired new research topics, clearer future directions in research, from output (2), (3), (4) and (5). (5) Enhanced understanding of various relationships, standard reporting measures and units to quantify impacts, from output (3), (5) and (6). (6) Greater visibility, from output (5), (6), and (7).

It would be ideal to identify specific subcommittees and potential system level tools and provide more discussions and justifications on them in the proposed project. Or they should be listed as two major milestones at the beginning of the project.

More discussion is expected on how the commensurable and incommensurable variables in different dimensions of sustainability will be addressed in the proposed study.

Reviewer	Comment	Response
1	It could be strengthened with more peer reviewed references.	A couple of citations have been added, including a specific reference raised by Reviewer 2.
1	The Outreach Plan is weak. More specific plans would be appropriate.	Added in additional info that is consistent with reviewer 3 suggestions for outputs/outcomes and specific to the Outreach plan.
2	The following statements should be elaborated further on how the collaboration stated in the tasks will be established: We will need close collaboration with new partners to guide us (a) in devising the appropriate Jacobian terms and/or (b) in decomposing the relationships until the chain of causality is clearer and more compelling. The specialized capabilities of both our legacy membership and our newly engaged collaborators will be needed.	The following sentence was added to help clarify our meaning: We will need new collaborations to help us describe the impact of one variable on another and/or help us to expand that part of the CLD to include additional nodes and until the cause and effect relationships are clearer.
2	Reference source for Churchman, 1967 should have been provided	Churchman, C. W. 1967. Guest editorial: wicked problems. Management Science 14(4):B141-B142.
2	Evaluation of value and use of databases should not be limited only with the Project Chair, but also by an external expert to ensure the quality.	Implementation would require that we add an advisory board to our project, which does not seem appropriate for this organization. Although the project chair is responsible for reporting on the status of these databases, the entire membership will contribute records to the database and will provide formative feedback as they use the databases. The document has been modified to read: With input from committee membership and as a consequence of the annual station reports, the project chair will track the range of data types and the number of

		entries in the databases as a means of assessment and include the results in the annual report.
3	More clarification is needed for Objective 3. Two tasks (task 3.i and task 3.ii) are listed under objective 3 while task 3. iii is mentioned in one sentence but not fully described in the text	Objective 3 has been considerably expanded with fleshing out of Task 3.iii and addition of Task 3.iv.
3	<p>The following are some of my thoughts for authors' consideration for Outputs and Outcomes.</p> <p>Outputs: (1) A communication system for researchers and stakeholders (Annual meeting and quarterly virtual meeting, shared data, subcommittee, &) (2) A collaborate network, or cooperative framework (3) Refined models, verified system-level tools for holistic evaluation. (4) Cooperative Proposals. (5) Papers, progress reports. (6) Curriculum (7) Outreach activities</p> <p>Outcomes: (1) Improved professional development, from output(1) and (2) (2) Enhanced grantsmanship and competitiveness in proposal, from output (1), (2), and (3). (3) Improved ability to tackle complex problem, from output (2), (3) and (4). (4) Inspired new research topics, clearer future directions in research, from output (2), (3), (4) and (5). (5) Enhanced understanding of various relationships, standard reporting measures and units to quantify impacts, from output (3), (5) and (6). (6) Greater visibility, from output (5), (6), and (7).</p>	A logic model has been added to convey these outputs and outcomes.
3	It would be ideal to identify specific subcommittees and potential system level tools and provide more discussions and justifications on them in the proposed project. Or they should be listed as two major milestones at the beginning of the project.	This recommendation has been incorporated into the project plan (milestones) for the initial year of the project.
3	More discussion is expected on how the commensurable and incommensurable variables in different dimensions of sustainability will be addressed in the proposed study.	The modifications made to the proposal, primarily related to Objective 3, enhance the discussion suggested by this reviewer.