

Background and Questions for “What If” New NRI Systems Program

CSREES is considering a potential new program that would build upon the former NRI Agricultural Systems program and expand our efforts to address critical sustainability issues in the areas of farm income and rural economic, business, and community development. Here are some thoughts about the likely characteristics of such a program, and some questions. Please send your thoughts on these questions and other key issues of program design and focus to: Alexandra Raver, araver@csrees.usda.gov, with “Systems Program” in the subject line.

The program would employ systems science principles and methods to address important agricultural, forestry, and environmental and economic problems, where the system may be at the whole-farm, community, watershed, regional or larger level. By systems science, we mean that most of the effort would focus on interactions among components/subsystems, and on emergent and novel properties of systems that cannot be predicted from the study of components or subsystems alone. By implication, the program would support interdisciplinary work conducted by multidisciplinary teams. It would bring state-of-the-art knowledge and methods from systems science to bear on our understanding of agricultural systems and the natural and human resources upon which agriculture and rural communities depend.

Given the current tight budget environment the program would likely be of modest size, and would need to focus on one or a small number of issues (or types of systems), although those foci could shift over time in a strategic fashion. The program would complement rather than duplicate other CSREES programs that address farming systems and rural development and should leverage the research, education, and extension being supported by other CSREES programs.

The program could include fundamental and/or applied research. Fundamental research would aim to better understand the structure and functioning of systems of interest and how systems science principles and methods can improve our understanding of those systems. Applied research, education and extension would employ a systems approach to develop innovative solutions to important agricultural problems.

Questions (refer to lists below):

1. What are the key characteristics that you would expect in an effective systems program?
2. What are the highest-priority issues that this program could address in the near term, and in the long term?
3. What mix of fundamental and applied activities is most needed, and what are the implications for program structure? (e.g. two types of projects, or aspects of both fundamental and applied in all or most projects?)

Possible Characteristics for Fundable Projects:

- Systems science approach to agricultural issues – emphasis on interactions among elements and emergent properties and functionality (or dysfunction) of the system
- Activities that promote and increase sustainability of system studied
- Interdisciplinary – work includes multidisciplinary collaborative teams
- Multi-connected – includes ecological/environmental, economic, and social aspects within the system

- Preference for projects that include a significant social science component that addresses rural or community issues
- Leads to applied, integrated (research, extension, educational) activities
- Project scope – farm/community level to watershed to regional to national to international

Possible Issue Areas:

- Increased quality of agricultural productivity
- Enhanced economic prosperity
- Rural community stability
- Improved quality of environment
- Opportunities for small, mid-sized, and minority farmers
- Multi-issue combinations

Possible Characteristics for Program Structure:

- Large-scale, multi-year funding to support systems level projects
- Seed grants for collaborative development or issues development
- Impact-development grants to apply previously funded fundamental studies to on-the-ground problems
- An appropriate mix of fundamental and applied projects
- Periodic rotation of specific focus issues over time