

IMPROVING INTEGRATION of RESEARCH, EXTENSION and EDUCATION

- 1. Are we asking the right questions?**
- 2. What are essential characteristics of integrated research, teaching and extension programs on climate, natural resources, and agriculture? Should we consider integration issues related to other dimensions?**
 - What is the user profile? There is not a close enough linkage between researchers and users.
 - Extension has changed in the last 10 years. We don't have answers to questions currently being raised.
 - Ensure that research is relevant to user needs. Researchers are a long ways from decision-makers. Clientele has changed. Fewer farmers, more environmentally related stakeholders.
 - Stakeholders may have many interests – agriculture, environment, water
 - Not all state expertise (in climate) resides in the land-grant school and in close connection with the extension service.
 - Private sector will be playing an increasingly larger role in climate change. How can extension more actively partner with the private sector?
 - Be relevant
 - Need to find common features
 - Need to have a clear understanding of demand
 - Establish an information chain from researchers to user, but there is a need for feedback loop to get information back from the users to the researchers
 - Challenge of issues at the grass roots level versus issues at the policy level; need a mechanism to obtain information from the grass roots to the policy level; focus groups, field days, etc.
 - Scale of the data we work with; downscaling of regional models versus scaling up from local data to the regional level.
 - Some groups do not have access to the typical channels for assistance; try to work with NGOs who work closely with these communities
 - Bring together agencies and organizations that have common interest
 - Problem – oriented versus problem-driven programs. The program should address the needs of stakeholders, and the stakeholders help define the priorities (research questions addressed by the integrated program)
 - Effective ways to deliver and communicate information – use different means / forms, target a variety of stakeholder groups (in different languages?). Sometimes, “promotion” or “advertising” of research / educational programs and the data and research results generated
 - Willingness to go outside the academia and outside the boundaries of specific discipline. We need “coordinated disciplinary programs”, which include both strong disciplinary scientists (representing a variety of discipline – engineering, social science, etc.), as well as specialists with

multi-disciplinary focus (to keep the group together, keep the communication between disciplines going)

- Incentives and administrative support to work in integrated programs

- Summary:
 - Communication (know what others are doing)
 - Develop common work areas or platforms
 - Need a self-selected group to form a grass-roots effort to take leadership.

3. What are the barriers to effective integrated programs and how can they be overcome? Examples of successful programs.

- Issues are so complex that it is hard to get arms around the issue
- Lack of leadership
- Disbelievers, belief that it will be solved by science or engineering
- University barriers and lack of reward system
- Not recognizing *benefits* from climate change, at least in the short run; strategies for adapting, taking advantage of opportunities
- Users not recognizing probability distributions
- Identifying early adopters
- Administration wants *transformational* research but extension needs *translational* research
- Lack of appropriate learning/support/visual materials to support specific messages (GIS, maps, analog events vs. tables, narrative)
- Can learn from the international development strategy for research on how to effectively engage the target audience
- Budget uncertainty
- Multiple scales; farm, community, region, etc.
- Access to information; information chain, do people know their individual roles, and need for feedback
- Communication; different communication needs at different levels; know what each agency is doing.
- Need to foster a translational role; strong disciplinary people in a multidisciplinary team with a need for one or two people in a translation role.
- Delineation of responsibilities between academia and private sector
- Lack of incentives for faculty (need to change the system of faculty evaluation)
- Lack of administrative support and need for an institutional commitment
- Transaction costs of building a team that goes across disciplines
- Difficulty of keeping the group together for an extended period of time required for climate-related research
- Difficulties in defining criteria for evaluation of integrated programs (e.g., how to measure impact of policy-related research?)
- Lack of political will to fund research that stretches beyond the election period
- Lack of funding for long-term research
- Larger funding needs and longer time frame required for long-term research that involves specialists from multiple disciplines

4. How might stakeholders for integrated programs differ from those for ordinary research programs? What are the information needs of stakeholders that might benefit from integrated programs?

- Sometimes interviewing groups provides different information than interviewing individuals. Rather, get users to think ahead as individuals. Get some adopters to try practices as examples.
- Need for rapid change calls for different modes of soliciting needs and developing deliverables than in the past
- Take some key stakeholders along to higher-level meetings more fully engage them in the issue. Get the innovators involved.
- Use demonstration plots or examples
- Expand the stakeholder pool, bring in new people.
- Different funding agencies might have a different target audience and priorities
- Need to focus on integration; identify and establish the right partnerships
- Need to communicate effectively with the target audience, as they might be able to provide assistance with obtaining funding
- Need strong disciplinary people in a multi-disciplinary team and one or two people who are interdisciplinary to help with the translation between disciplines.
- Traditional programs: focused on delivering results to scientific community and funding agencies (hence, forms of communication used: publications and reports)
- Integrated programs: problem-driven, multi-disciplinary, target a variety of stakeholder groups (hence – different ways / forms to communicate results). Also – integration of research, education, and extension components.

5. What are the priorities for integrated programs to meet these information needs?

- Effective translation of science and technology
- Need to define roles
- Recognize traditional research activities
- Identify the problem (stakeholder-driven process)
- Data generation
- Allow for enough time for the program to deliver results