

APPENDIX A-1

(refer to Multistate Guidelines)

NORTH CENTRAL REGIONAL ASSOCIATION MULTISTATE PRIORITIZATION PROCESS

[PRIORITIZATION PROCESS](#) [CROSS-CUTTING PRIORITIES](#)

INTRODUCTION

The human and natural resources of the north central states are both plentiful and diverse. The human resource base is known for its strong work and stewardship ethics, its initiative, and its varied rural and urban communities. These human resources are complemented by the rich diversity of the region's crop and range lands; natural resources, including its forests and fresh water; glaciated and unglaciated lands; geology; topography; and climate. The region's agricultural enterprises are equally as diverse as its population and environment. Its research priorities are directly influenced by stakeholders during both the critical developmental and the review stages. Stakeholders are true partners in the North Central region and they include a broad constituent and customer base that represents the region's diversity. This complex 12-state area has the capacity to lead the nation in the development of multistate research activities with its human and natural resource bases. The North Central Regional Association (NCRA) of State Agricultural Experiment Stations (SAES) is committed to the development of a strong multistate research program that utilizes the inherent qualities of its human and natural resource bases.

The NCRA research prioritization effort is predicated on the belief that the most accurate research needs for the region should be established at the departmental rather than at the director level. The faculty of our land grant institutions are at the cutting-edge of research and educational activities. They have contributed directly to this research planning and implementation process.

The intent of this exercise is to identify North Central multistate research priorities and to rank them either as they are presented or by developing a matrix that places these priorities into broad programmatic crosscutting areas that are best addressed by multistate projects. There was no intent or attempt to program, correlate, or in any way link this prioritization process to those of Experiment Station Committee on Organization and Policy (ESCOP), Users Advisory Board, Joint Council or other organizations.

PROCEDURE

The NCRA charged the North Central Administrative (NCA) Committees with developing a list of research priorities in September, 1994. The NCA Committees began submitting multistate research priorities in February, 1995.

The NCRA was briefed in March, 1995 on the status of the prioritization process. A brief, but incomplete, outline of the priorities received was distributed. Following this meeting, the NCRA informed the chairs of the NCA Committees that it would prepare a new draft of priorities for discussion at its July, 1995 meeting. The Multistate Research Committee (MRC) met with NCA Committee representatives in September, 1995 to develop a penultimate document for NCRA review in March, 1996.

Priorities and related objectives received from the NCA Committees were listed in rank order (by committee) whenever possible. However, some committees did not prioritize and did not accompany priorities with objectives. If objectives were not presented, where feasible, the Executive Director (ED) of the NCRA added objectives to clarify the intent of the priority. This listing of priorities/objectives was labeled A and was shared with the NCRA in May, 1995.

Most NCA Committees developed disciplinary and interdisciplinary priorities and most priorities had objectives that fit into more than one crosscutting area (crosscut). Each priority/objective was assigned to a crosscut, however placement was purely subjective and on the basis of a decision by the ED. The intent was to be direct, rather than indirect, and to lump rather than split assignments. The number of priorities/objectives in each crosscut is an indication of the breadth of that area and the mechanics of placement. This outline was labeled B and was also shared with the NCRA in May, 1995.

The MRC plus Directors from Iowa and Wisconsin met in June, 1995 to: 1) review an updated version of the B outline of priorities and crosscuts; 2) discuss, review, realign and edit the updated B version; and 3) discuss procedures for development and presentation of the next iteration (C) of the research prioritization process to the NCRA at the July, 1995 meeting.

The MRC prepared guidelines for development of the C iteration. They included: 1) development of a statement that recognizes the importance of and need for research in the fundamental sciences, but clarifies that research of this nature is best funded through other than Multistate Research Funds (MRF); 2) development of a statement that identifies and qualifies multistate research activities; 3) review and refinement of crosscuts and assignment of priorities; 4) use of consistent language across all of the crosscutting areas; and 5) further clarification of each crosscut by development of a set of objectives for each. Iteration C was developed and sent to the NCRA.

In July, 1995, the NCRA suggested minor changes in the C iteration and approved distribution of the new document (D) to the NCA Committees. The NCA representatives and the MRC met in September, 1995. The purpose of the meeting was to: 1) brief the departmental administrators on the status of the prioritization program; and 2) seek their wisdom, counsel, and input on the development of the penultimate document for NCRA review at its March, 1996 meeting. The discussions with the NCA Committee representatives resulted in an improved document (E).

Following the September, 1995 meeting the NCRA began the process of identifying the 1996 NCRA commitment to the support of the priority programs (levels of FTE, \$ and their source, site of activity, etc.). This information is critical to further decisions about resource delegation to priority areas.

The NCA and NCRA agree that the seven crosscuts are of equal priority. The NCA Committees reviewed the E iteration and prioritized the objectives under each of the seven crosscutting areas at their annual meetings and most sent (11 of 14) their comments to the ED's office in February, 1996. The NCRA (21 directors representing 11 SAESs) also ranked the objectives for each crosscut. The penultimate document (iteration F) was presented to the NCRA in March, 1996. The NCRA approved the recommendation of the MRC to accept iteration F with minor changes. These minor changes were incorporated and approved at the July, 1996 NCRA meeting (iteration G). It was agreed that iteration G, along with an appendix, should be published and distributed.

Premises and Guidelines

In 1998, congress passed the Agricultural Research, Extension and Education Reform Act (AREERA) which reconfirms the mandate for multistate research. The overriding philosophy of multistate research is that problems are effectively solved by combining the resources and expertise of two or more states. The funds that support multistate research are unique and are set aside to undertake these specific activities. Thus, within the North Central Region, multistate research funds will be used to support research that addresses the region's priorities.

Multistate research is targeted to address problems that bring together a team of scientists with the appropriate mix of disciplines. A combination of fundamental, applied, adaptive and developmental research may be necessary to solve problems. Multistate research must be of the highest quality science and result in measurable impact.

The following guidelines/criteria must be met for all multistate research projects:

- **High Priority Research.** Multistate funds support research that addresses a multistate problem within a high priority research area. Fundamental, applied, adaptive and developmental research in combination or separately may be needed to address the problem. The research program should identify measures for documentable progress within a five-year time frame. Thus, the progress must be clearly defined and specific goals relative to solution of the problem must be explicitly identified.

The North Central Regional Association (NCRA) has identified high priorities from within the crosscutting research areas.

- **Quality of Science.** In order to solve problems it is essential that multistate projects represent the highest quality science. A well-conceived research plan is required to support each proposal.
- **Multidisciplinary.** Research programs should be multidisciplinary. The NCRA realizes that the essential prerequisite for multidisciplinary research is a strong disciplinary base. Therefore, discipline-oriented research can be a component of the research effort. The NCRA recognizes that multiple representatives from the same station may be required for multidisciplinary projects. In addition to the biological and physical sciences, projects should consider, as appropriate, economic, social and policy dimensions.

- **Multistate.** The multistate research program builds on the specific research strengths of individual states and blends these strengths into cooperative and complementary research programs, thus capitalizing on the unique characteristics of science and scientists at participating stations.
- **Impact and Benefits to Society.** Projects must show how proposed research may contribute to society. The research project must identify potential milestones or indicators of progress within a five-year time frame. (Timely annual reports of research accomplishments are required and should include impacts when measurable.)
- **Resource Development.** Multistate research proposals must consider internal and outside funding in the proposed research and the likelihood of future external support. The opportunities to leverage support from federal or state agencies, as well as from private sources (including in kind donations), can be greatly expanded by successful multistate research programs. Proposals should address internal leveraging developed by bringing researchers from different institutions together.
- **Information and Technology Transfer.** Every multistate project must demonstrate how its results will be delivered to the user (community, extension specialist agents, families, farmers, 4-H and FFA programs, industry, researchers, secondary and post-secondary students, suburban residents, etc.). Projects should include representatives from industry, extension, producer groups, communities, etc., to enhance technology transfer.

CROSCUTTING RESEARCH AREAS AND OBJECTIVES

Agricultural Production, Processing and Distribution

Agriculture is the system that produces processes and distributes food, fiber and other products and services from the farm to the consumer. It encompasses aquaculture, forestry and a diversity of natural resource elements, such as soils, surface water, groundwater, wildlife and the atmosphere. In addition, human resources, financial capital and community infrastructure are integral components of agricultural systems.

Priority Research Objectives:

- Develop alternative agricultural production systems to enhance economic competitiveness in the rural landscape.
- Develop improved animal, plant and microbial production, processing and marketing systems that are competitive, profitable and environmentally sound over the long term.
- Develop alternative systems for storage, processing and application of waste products to the land so as to efficiently preserve and utilize nutrients.

- Design economically and environmentally sound methods to convert biomass and secondary products into food and nonfood uses.
- Construct an information base and methodologies to help form sound public policy that minimizes conflicts resulting from divergent viewpoints of citizens, both urban and rural.
- Assemble and maintain regional, national and international data bases on production systems and use them for modeling and decision support.

Genetic Resources Development and Manipulation (Genomics and Germplasm)

Includes the management of genetic resources (animals, aquatic, insects, microbes and plants) and encompasses both germplasm and genome research activities.

Priority Research Objectives:

- Develop new genotypes that increase product value, enhance global competitiveness, improve human nutrition, nurture environmental quality and foster rural development, i.e., new animal/crop/microbial products, alternatives to fossil fuels and value added commodities, added or altered chemical fractions in foods and pest resistant strains that reduce use of agricultural chemicals.
- Broaden and enrich the knowledge base about genomics. Includes the utilization of molecular techniques (gene mapping, est sequencing, functional genomics, etc.) to characterize, mediate, manage and evaluate germplasm, as well as the bioinformatics, the development of data bases and computerized management systems to store and transfer knowledge.
- Collect, preserve, share, enhance and evaluate germplasm at the molecular, cellular and/or organismal levels.
- Develop strategies that broaden the genetic base and reduce genetic vulnerability (i.e., maintaining genetic diversity).
- Develop increased knowledge of the interactions and interrelationships of the various life forms.

Integrated Pest Management

Integrated Pest Management (IPM) focuses on developing systems that combine the use of biological, cultural, physical and chemical pest control tactics to minimize economic, health and environmental risks. IPM practices have the potential to simultaneously reduce environmental, food and fiber safety risks associated with pesticide use, to increase the profitability of agriculture, to enhance the sustainability of natural resources, to enhance the quality of life and to open new export markets for U.S. goods.

Priority Research Objectives:

- Develop alternative controls based on biological control and cultural practices.

- Investigate the genetics of pests and hosts to identify new and different vulnerabilities that can be exploited in pest control strategies.
- Develop and evaluate systems and technology for IPM implementation.
- Refine and develop rapid and positive pest detection and identification techniques to enhance the capability to predict the occurrence and magnitude of pest populations/infestations/infection.
- Reduce reliance on pesticides and the risk of human, animal and environmental exposure to pesticides.
- Identify the economic and social impact of IPM on users, the environment, human health and safety and public appearance of food.

Natural Resources and the Environment

Includes an understanding of the ecological processes defining air, water and soil that influence the natural resource base upon which primary production activities such as agriculture, forestry, wildlife management, fisheries management and mineral management depend. The understanding of ecological processes operating in human, plant and animal communities in their own right is essential. Similarly, the maximization of utilization efficiency is crucial to minimizing impact on natural resources. The interaction of human, plant and animal communities offers potential insights into sustainability of large landscape scale human-resource systems.

Priority Research Objectives:

- Understand the ecological processes of operating in human, plant and animal communities.
- Develop methodology to measure and model air, water and soil quality.
- Identify and apply ecosystem management principles and practices for the utilization and protection of resources, restoration of natural systems and management of rural landscapes.
- Define sustainable principles for resource management, utilization and land use.
- Assess the relationship of agricultural/forestry practices (primary production) upon soil and water systems and biodiversity.
- Understand and identify factors that influence the ecological relationships among production agriculture, wildlife management and human health.
- Develop remediation systems to reduce agricultural, non-agricultural and chemical waste contamination of soil, water and air.
- Develop guidelines for optimal economic, social and environmental management of non cropped farm and natural ecosystems and for restoration of damaged ecosystems.

- Assess the implications of alternative public policies and management practices on our natural resource base/environment within an economic framework.
- Document the link between animal welfare/behavior, care and management and their environment.

Economic Development and Policy

Includes focus on improving economic and social development in the North Central Region related to profitability, domestic market development, global competitiveness, new management decision-making models and non-market evaluation.

Priority Research Objectives:

- Develop profitable technologies and systems. Determine the potential profitability of production, processing and distribution technologies (innovations, i.e., agricultural information, technology, precision agriculture) that are environmentally sound and socially acceptable.
- Enhance U.S. global competitiveness. Enhance international market development by analyzing factors including the increasing adoption of agricultural biotechnology that determine U.S. competitiveness in global markets and analyze alternative policies to modify these factors to the advantage of U.S. agriculture.
- Create new management decision-making models. Design optimal management systems for cropping systems, forest systems, non-cropped ecosystems, animal systems, whole farm and watershed systems, fishery and wildlife and data needs of agricultural businesses, research organizations and consumer groups.
- Improve community and rural economic development, including home-based business and small businesses. Design strategies to develop social and human capital.
- Improve domestic market development potential including assessments of the role of alliances, cooperatives and partnerships. Determine the potential within traditional and emerging markets for U.S. food and fiber products and develop policy options to enhance this potential.
- Determine rural and urban interface issues and compatibility.
- Determine non-market valuation of landscapes, wildlife, trees, etc.
- Measure and assess structural change and industrialization of agriculture.
- Interpret and evaluate North Central regional implications of public policy.
- Develop improved systems for rural economic development which include leisure/tourism of agricultural enterprise.

Social Change and Development

Includes an emphasis on social processes as they work in rural areas, the extent to which they (social processes) are changing and their relationships to urban issues: understanding the relationships and interactions among individuals, families, organizations and communities; creation of community systems that can improve the quality of life of residents.

Priority Research Objectives:

- Improve communities by assessing support services for citizens in education, health, job creation, housing, recreational opportunities, communication, conflict resolutions and other avenues needed to ensure rural vitality.
- Extend communication strategies and technologies that insure opportunities for lifelong learning among all rural and urban residents.
- Determine barriers to use of appropriate technologies and increase the adoption of environmentally, socially and sustainable agricultural and community practices; evaluate social impacts of technological changes on rural residents.
- Identify factors affecting consumer demand for items that would improve human well being, i.e., food choices, nutritional status, housing, support services, health, recreational opportunities, education and quality of life.
- Enhance civic participation in governance structures by increasing contributions from diverse stakeholders in the assessment of social and economic opportunities in organizations and communities.
- Establish new linkages among key interest groups, including those representing family businesses, agricultural and commodity organizations, counties and communities and broad social interests.
- Design successful family survival and adaptability strategies: enhance an understanding of the differences across families in managing stressful events.

Food and Nutrition

Includes the development, production, processing, procurement, handling, safety, preservation and consumption of food products; the functional, nutritional, mechanical and sensory properties of food components; nutrient metabolism and relationship to health and disease; and factors that influence dietary intake

Priority Research Objectives:

- Emphasize research that expands our understanding of the relationship between diet, health and disease prevention with particular focus on antioxidants, dietary lipids, functional

foods/nutraceuticals, nutrient bioavailability, nutrient regulation of gene expression and nutrition and physical activity.

- Develop new and improved methods and technologies for processing, handling and storage of foods and food ingredients to provide a safe, nutritious, affordable and environmentally sound and consumer acceptable food supply.
- Enhance food safety by expanding research efforts to identify and control food borne pathogens at all stages of the food system from producer to consumer and to develop and evaluate effective food safety programs for both producers and consumers.
- Elucidate unique aspects of food components including mechanical, structural and functional properties of foods or food systems to enhance processing, storage, food safety and nutritional quality of foods.
- Elucidate health benefits associated with functional or phytochemical properties of food constituents.
- Design effective nutrition education programs and delivery methods that modify human behavior such that individuals including those most at risk (pregnant women, infants, adolescents and the elderly) choose healthier diets.

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