

ADMINISTRATIVE RECOMMENDATIONS
FOR THE
ORGANIC AGRICULTURE RESEARCH AND EXTENSION INITIATIVE
SECTION 7218



from the
Organic Farming Research Foundation
and the
Scientific Congress on Organic Agricultural Research

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CONTEXT

The Farm Security and Rural Investment Act of 2002, section 7218, establishes the *Organic Agriculture Research and Extension Initiative*, a program that will spend \$3 million per year in each of the next five years (FY 2004-2008) to fund organic farming and marketing research. The organic research and extension funds will be disbursed through a competitive grants program.

The Organic Farming Research Foundation (OFRF) has been funding organic research and surveying organic farmers about their research needs for over 10 years. OFRF's Scientific Congress on Organic Agricultural Research (SCOAR) was established explicitly to set forth a national organic research agenda. SCOAR is a collaboration of over 900 producers, scientists, and others from across the country whose mission is to plan and promote research and information-exchange for understanding and improving organic agricultural systems. OFRF is currently compiling a National Organic Research Agenda that will include research questions, multi-disciplinary systems research designs, and mechanisms for building the capacity for systems research.

The administrative recommendations presented in this document are based on our experience with organic farming research and policy issues. OFRF views the new research funds as a remarkable opportunity to provide practical support to the growing organic industry, and to complement institutionalization of organic standards under the National Organic Program. At the same time, we feel that organic production systems are inherently different from conventionally managed systems. Simply replicating traditional research and extension approaches using organic practices will not address organic research and information needs.

In order that the *Organic Agriculture Research and Extension Initiative* be of maximum practical value, we recommend that it have the following characteristics:

- ✓ Strong farmer involvement in identifying research priorities, evaluating proposed studies as members of evaluation panels, and assessing project results in follow-up evaluations of the Initiative's impact;

- ✓ Emphasis on funding on-farm research complementary to station-based work. Farms that have been managed organically for a long period of time are ideal settings in which to measure the effects of organic management on all elements of the system. Farms also provide excellent opportunities for farmer-to-farmer extension of findings;
- ✓ A systems approach to organic farming research that acknowledges the dynamic relationship between multiple elements of the farm, in contrast to a reductionist approach that studies each component in isolation;
- ✓ Sensitivity to scale of production and how current policy affects the economic viability of different sized enterprises. Small-scale organic farms may be the most biologically diverse and productive, and provide more social benefits than larger-scale farms, yet may experience institutionalized challenges in accessing markets.

We also strongly endorse the establishment of long-term organic farming studies in order to fully document the functioning of biologically managed systems over time. We realize that the level of funding established by the new legislation is quite small in comparison to the great amount of funding required to adequately meet the organic industry's multitude of research needs; however, the new organic research funding is an excellent beginning.

Addressing the current reality of \$3 million funding per year, we recommend that half of the annual budget (\$1.5 million) be targeted at long-term systems work, funding a few multi-year interdisciplinary studies each year, and that the other half be targeted at smaller component-type studies, funding 7-10 projects annually at a level of \$150,000-200,000 per year.

Based generally on the outline of the FY 2002 Request for Applications for USDA's Integrated Research, Education, and Extension Competitive Grants Program-Pest Management, we suggest that the following elements be incorporated into the request for proposals and/or be used in administering the *Organic Agriculture Research and Extension Initiative*.



RECOMMENDATIONS

A. PURPOSE AND PRIORITIES

Approximately 2% of U.S. vegetable and fruit production are certified organic, and overall, about 2% of the total U.S. retail food sales is certified organic. Over the past decade, sales of organic products have shown an annual increase of at least 20%. In 2001, retail sales of organic food in the U.S. were estimated to be \$9.3 billion.

The purpose of this program is to fund research that will enhance organic producers' and processors' ability to grow and market high quality organic food, feed, and fiber. These funds shall be allocated for high priority aspects of organic agricultural systems research, education, and extension. Priority concerns encompass biological, physical, and social sciences (including economics).

B. ELIGIBILITY

To be eligible to receive a grant under this subsection, the recipient shall be a State, tribal, local, or regionally based entity, which may include:

- (1) A State cooperative extension service;
- (2) A Federal, State, or tribal agency;
- (3) A private non-profit;
- (4) A community-based nongovernmental organization;
- (5) A college or university (including an institution awarding an associate's degree) or foundation maintained by a college or university; or
- (6) Any other appropriate partner, as determined by the Secretary.

C. PRIORITIES WITHIN EACH RESEARCH AREA

Legislative language in the *Organic Agriculture Research and Extension Initiative* sets forth six general areas in which research may be conducted. Here we provide justification for each research area and present top research priorities for each of them. Other research topics that have been identified by organic farmers and researchers at meetings of the Scientific Congress on Organic Agricultural Research (SCOAR) are included in an appendix to this report.

1 Facilitating the development of organic agriculture production, breeding, and processing methods.

Organic agricultural systems are unique ecosystems that exhibit traits distinct from those of conventional agroecosystems. Organic farming management relies on developing biological diversity in the field to disrupt life cycles and habitat for pest organisms, and the purposeful maintenance and replenishment of soil fertility. Detailed information on the performance of organically managed agronomic systems is lacking for many regions of the country. Because of the biological complexity found in organic production systems, crop and livestock development through breeding must be done under organic conditions in order to identify those species and varieties that perform best under organic management. Specific high priority research topics addressing these broad concerns include:

- ✓ Functionally identifying soil microbial communities and ways to manage microbial dynamics to enhance nutrient cycling and disease suppression;
- ✓ Systemic approaches to weed and pest management;
- ✓ Prevention, control, and treatment for internal and external parasites for various livestock species;
- ✓ Breeding crops for disease and insect resistance, good yield in a biologically diverse system, compatibility with intercrops, good response to organic fertility sources, horizontal resistance (traits determined by multiple genes).

2 Evaluating the potential economic benefits to producers and processors who use organic methods.

The organic marketplace exhibits many qualities of the conventional, industrialized food system, yet also holds potential to establish new economic relationships among producers, processors, and retailers, and new social relationships between producers and consumers. Highest research priorities include:

- ✓ Using environmental valuation tools to quantify externalities of producing food, and compare externalities of producing organic and conventional food;

RECOMMENDATIONS (CONT'D)

- ✓ Price and market structure analyses, including ability of small-, medium-, and large-scale growers to access different markets, in order to frame policies that minimize concentration within the industry;
- ✓ Marketing channel analysis to document how organic food is distributed, what share of the organic food dollar is returned to the farmer, and the implications of large-scale manufacturers entering the organic market.

3 Exploring international trade opportunities for organically grown and processed organic commodities.

Organic products are very popular in many countries, but in many cases these countries' domestic supply is unable to meet demand. This may provide international marketing opportunities for U.S. organic producers. Research topics that could facilitate this trade include:

- ✓ Compatibility of certification standards used in different parts of the world, with the ultimate goal of harmonization and reciprocity;
- ✓ Marketing studies of international consumer demand for U.S.-produced organic goods;
- ✓ "Welfare analyses" (quantified gains and losses for producers and consumers) of trade policies affecting international competitiveness, including implementation of the National Organic Program, domestic support programs such as the Conservation Security Act, country of origin labeling, GMO labeling, etc.

4 Determining desirable traits for organic commodities.

Organic consumers perceive a difference between organic and conventional products, and are willing to pay a premium for this perceived improvement in nutrition, health benefit, and taste. Priority research topics include:

- ✓ Relationships between nutrients in the soil and nutrients in the food grown on that soil, including long-term soil nutrient and crop nutrient profiles under conventional and organic management;
- ✓ Comparisons of nutrient levels between organic and conventional crops and relationship, if any, between taste and nutrient profile. Cross-sectional studies that replicate by location rather than over

time may be useful in generating rapid results, focused initially on popular food crops such as strawberries, tomatoes, apples, lettuce, and potatoes.

5 Identifying marketing and policy constraints on the expansion of organic agriculture.

Past agricultural policies have served to reduce participation of organic producers in some farm programs because maintaining base acreage conflicted with the necessity to rotate crops. Other institutionalized biases against organic production methods—such as producing minor crops that are not eligible for price support programs—may have operated to slow conversion to organic production. Priority research topics include:

- ✓ Analyses of opportunities and constraints to organic agriculture resulting from provisions of the Farm Security and Rural Investment Act of 2002;
- ✓ Investigate specific barriers to markets, such as scale-based regulations that restrict family farm access to processors and/or markets;
- ✓ Study negative lender perception of organic farming and ways to change this;
- ✓ Analysis of regulatory barriers such as lack of access to federal farm programs, and develop solutions to these challenges.

6 Conducting advanced on-farm research and development that emphasizes observation of, experimentation with, and innovation for working organic farms, including research relating to production and marketing and to socioeconomic conditions.

The overarching organic research need is to develop and effectively manage systems that provide their own crop protection as emergent properties of the systems themselves. Working organic farms, and research station land that has been managed organically for three years at a minimum, are ideal locations for such work. Specific research needs are:

- ✓ Developing rigorous on-farm systems research designs;
- ✓ Most of the topics listed in this report and the appendix for research areas (1), (2), and (4) could be conducted in an on-farm context or involve an on-farm component.

D. REVIEW PROCESS

Panel Composition

In order to provide expert oversight of the organic grants program, we strongly recommend that organic farmers, organic advocates, and representatives of the organic industry be included on proposal review panels. In accordance with the 1998 *Research Title Federal Stakeholder Input Rule*, we suggest that research priorities, requests for proposals, and other administrative policies be crafted in consultation with these constituencies.

Evaluation Criteria

The following evaluation criteria should be used in reviewing applications submitted in response to this RFA:

- (1) Research must take place on a certified organic farm or its equivalent on an experiment station (if applicable).
- (2) Investigators must specify the organic standards they are following in managing the trials.
- (3) Investigators must demonstrate that the research topic is of concern to organic producers.
- (4) Research methods must be clearly described and scientifically rigorous.
- (5) Applications should describe mechanisms for research results to be presented to organic farmer organizations and other grower groups.

- (6) Cost: benefit analyses should be conducted on any recommended agronomic/horticultural practices.
- (7) Partnerships between farmers, researchers, extensionists, other federal agency personnel, and non-profit advocacy groups are encouraged and may be given higher priority.
- (8) Multidisciplinary partnerships between academic departments are also encouraged, especially those that involve non-production disciplines such as ecology, sociology, forestry, anthropology.

E. Expected Program Outputs and Reporting Requirements for Grant Recipients

- (1) A final report must be submitted within six months of project completion, documenting each project's findings and extension efforts.
- (2) In the case of multi-year projects, interim reports shall be submitted annually reporting on each year's results.
- (3) Research findings should be incorporated into existing Extension materials, when appropriate, or formatted into new Extension resources. A copy of these materials should be submitted along with the final report.
- (4) Organic farmer review of materials prior to publication is encouraged in addition to scientific peer review.



APPENDIX

Priority organic research topics have been identified by groups of farmers and researchers with experience in organic production systems. The following lists of organic research topics were gathered at a series of meetings hosted by SCOAR across the nation in 2001-2002 that brought farmers and researchers together. Research topics have been grouped under the six research areas specified in the Organic Agricultural Research Initiative, and are in addition to those listed in the administrative recommendations document. A list of the meetings where ideas were collected is included at the end of this appendix.

1 Facilitating the development of organic agriculture production, breeding, and processing methods

Organic Agriculture Production

Crops:

Crop rotation effects on soil microbiology and results for crop health;

Seed bank management, crop sequencing and timing, cover crop management for weeds;

Effects of soil management on plant phytochemical content and nutrition;

Nutrient budgets/cycling in organic systems;

Soil management strategies for disease suppression;

Compost effects on organic cropping systems;

Alternatives to copper and sulfur fungicides in organic fruit production;

Green manure management in organic systems: cover crop varieties, incorporation timing, mineralization, micronutrient contribution, soil and crop interactions;

Probiotic research investigating the potential to replace pathogenic microbes with beneficial ones, in guts, on crop surfaces, in water, etc. (Phospholipid fatty acid (PLFA) analysis and DNA fingerprinting are new tools that can be used for this work);

Long-term soil and human health effects of applying organically acceptable pesticides such as sulfurs, petroleum oils, copper fungicides, and botanicals;

Analytic methods for determining compost quality;

Guidelines for raw manure handling and usage;

Developing biological seed treatments for fungus control;

On-going materials review for inclusion on/removal from National List.

Livestock:

Effects of pelletized and supplementary feed on animal health, manure quality, and on the soil;

Optimizing pastured beef, hog, and poultry production;

Conduct livestock reproductive studies to compare the quality of organically and

Conventionally produced feeds;

Identifying optimum feed rations for organic livestock;

Effective management strategies to minimize fly populations

Alternatives to beak trimming

Efficacy of vaccines, homeopathy, and probiotics

The scientific basis for "animal welfare" and how humane practices relate to product

Quality.

Breeding and Genetics

Crops:

Breeding crop varieties that are especially adapted to and integrated with organic production systems suitable to different regions of the country;

Breeding work under organic conditions on minor crops that fill niche markets;

Developing mechanisms for preventing/eradicating genetic contamination, for instance, breeding non-compatibility genes into organic corn varieties that would prevent them from accepting pollen from GM varieties or methods to "breed out" GM traits;



Identifying useful traits in wild relatives and landraces of crop plants;

Developing seed-saving networks and farmer breeding clubs to maintain heirloom varieties, regionally adapted varieties, and seed purity

Breeding for horizontal resistance to pests.

Livestock:

Breeding animal varieties for production in organic systems;

Breeding livestock for uses beyond meat/dairy production, as part of integrated organic crop-livestock systems;

Preserving traditional livestock varieties.

Organic Processing Methods

Alternatives to chlorine;

Postharvest treatments for organic fruits and vegetables.

2 Evaluating the potential economic benefits to producers and processors who use organic methods

Measure the profitability of different organic cropping systems vs. conventional;

Document the scope of the organic sector and provide a detailed quantitative breakdown of supply, demand, prices, flows, economic impacts, etc.;

Identify market barriers for organic growers & identify methods to overcome them;

Measure consumer reaction to the USDA certified organic label and document any changes in organic sales post-Rule implementation;

Define & document social benefits of organic farming regionally;

Analyze scale of production issues.

Provide clear and accessible information on farm-level marketing strategies such as Community Supported Agriculture (CSA) arrangements, co-ops, value-added.

3 Exploring international trade opportunities for organically grown and processed organic commodities

Analyzing technical barriers to organic trade.

4 Determining desirable traits for organic commodities

Crops:

"Sensory analysis" of organic and conventional crops comparing flavor, texture, taste, color, fragrance;

Whether crop variety influences nutrient level under organic management.

Livestock:

Compare the biochemical composition of meat produced in different production systems;

Taste differences in conventionally and organically produced meat;

Influence of management system on animal processing, for example studying why hides come off organically-raised animals easier than conventionally-raised animals;

Effects of the ultra-pasteurization process on milk nutritional quality.

5 Identifying marketing and policy constraints on the expansion of organic agriculture

Surveying conventional farmers to determine what market and policy constraints that keeps them from transitioning to organic;

Documenting the transition period biologically, economically, and culturally;

Documenting the costs of and regulations governing labor used in organic agriculture;

Economic analysis of margins in conventional and organic farming to determine how elastic they are in being able to experiment with alternatives;

Cost:benefit analyses conducted at the farm and community levels.

6 Conducting advanced on-farm research and development that emphasizes observation of, experimentation with, and innovation for working organic farms, including research relating to production and marketing and to socioeconomic conditions.

Any research topic identified under research areas #1 and 3 may be satisfactorily conducted on-farm.



SCIENTIFIC CONGRESS ON ORGANIC AGRICULTURAL RESEARCH (SCOAR) SPONSORED MEETINGS AT WHICH ORGANIC RESEARCH PRIORITIES WERE DOCUMENTED:

1. The Inaugural Assembly of the Scientific Congress on Organic Agricultural Research, January 23-24, 2001, Asilomar Conference Center, Pacific Grove, California. Brought together over 100 farmers, researchers, information specialists, and agency personnel from around the country.
2. Workshop at Upper Midwest Organic Farming Conference, La Crosse, Wisconsin, March 17, 2001. Focused on upper midwest regional issues.
3. The Second Assembly of the Scientific Congress, Nov. 4-5, 2001, Rock Hill, South Carolina. Focused on southern regional issues.
4. Workshop at the Western Sustainable Agriculture Working Group meeting, February 8, 2002, Santa Fe, New Mexico. Focused on grazing and dryland crop production issues.
5. Workshop at the Association for the Study of Food & Society/Association for Food & Human Values joint conference, June 15, 2002, Chicago, Illinois. Focused on socioeconomic issues.

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