

Farmer Research: Project Initiation and Implementation

Charles S. Wortmann, Extension Soils Specialist, and Keith L. Glewen and David L. Varner, Extension Educators

Recommendations for forming farmer research groups for conventional or alternative agriculture, including guidelines for involvement and project development.

U.S. agriculture is constantly challenged to achieve greater efficiency in resource use while providing high quality products, protecting the environment, and sustaining rural economies and societies. Improvement of already fine-tuned cropping systems, such as the corn-soybean rotation in Nebraska, is generally through adoption of practices that have small effects on productivity and profitability. Farmers face an overwhelming array of information of varying quality and applicability to their particular situations. Often this information is inadequate for decision-making. Validation of alternative practices requires careful study, often through replicated trials conducted over two or more years.

To address this information need, farmers are conducting systematic research studies based on their experience and knowledge of the farming operation and focusing on their questions. This research may address one or more topics and often is an on-going process to test possible solutions as needs and opportunities arise. Farmer research groups provide an opportunity to achieve better communication and enhanced cooperation among farmers, researchers and extension educators. There is a sharing of information and ideas for further improvements as well as group participation in the interpretation of the information and its applicability.

This NebGuide focuses on the initiation and implementation of farmer research projects. Methods of conducting on-farm trials are addressed in other extension publications, including: *On-farm Trials for Farmers Using the Randomized Complete Block Design* (EC125), and *Procedures for Field Demonstrations of Nitrogen Management Practices* (EC126).

Reasons to Form or Join a Farmer Research Group

In a study of two farmer research groups in Nebraska, farmers rated profitability and being a better farmer as the



For producers participating in farmer research projects and testing new practices or technologies, the proof is often found at harvest when yields are measured.

main reasons for their involvement (*Table I*). Based on their responses, farmer research has resulted in improved annual whole-farm profitability of \$2326 for planting, \$4105 for tillage, \$4821 for soil fertility, and \$3081 for pest management. Most said they enjoyed the participation and that farmer research was a very important means to improving the area's agriculture. The interaction with other farmers in research was appreciated and one commented, "Working with critical thinkers, growers and consultants is addictive and a formula for professional success."

Table I. Reasons given by farmers for being involved in a research project (shown as a percentage of 44 respondents).

Reason for participation	Very important	Important	Not important
It enables better farming.	84	14	2
It is profitable.	73	25	2
It improves the area's agriculture.	63	34	3
We enjoy it.	67	31	2
It impresses neighbors.	2	14	84

Guidelines: Farmer Research for Conventional Agriculture

Conventional, or mainstream, cropping systems generally are already fine-tuned with an abundance of available information. The systems generally are improved through adoption of alternative practices with small marginal benefits that can only be verified with replicated field trials.

Project Initiation

The following guidelines may be helpful when establishing a farmer research project to serve conventional cropping systems:

- Introduce the idea of a farmer research project to likely farmer participants and county extension board members with the assistance of an extension educator, private sector cooperator (includes independent consultants and agri-business advisors), and farmers involved in an established farmer research project.
- Start small, with adequate resources for establishment and expansion. Initial leadership by one or more extension educators with a medium- to long-term commitment to farmer research can be important to successful initiation. Participating farmers must be motivated to conduct research and willing to invest time and other resources to successfully implement and promote the project to other farmers.
- Achieve success early and build on it. Expand to include more farmers, advisors, and a larger geographic area, but avoid over-taxing human and financial resources and risking poor communication and implementation. The ideal size for a group is about 40 farmers from four or five counties.
- Involve farmers in identifying research topics and planning the research. A research topic can be planned with individual farmers, but developing some research protocols in groups is educational and stimulates cooperation.
- Select topics of farmer interest with a high probability of yielding profitable information. Not all research topics will lead to increased profitability, but interest will be stimulated if some early results show opportunity for increased profit.
- Communicate clearly about the purpose and experimental processes of farmer research. Provide a basic introduction to experimental design and statistical and economic analysis, including the roles of replication and randomization, steps for minimizing experimental error, repetition over years and/or farms, and probability in concluding that an effect is significant. This information may need to be repeated periodically as a refresher for experienced participants and as an introduction to new participants.



Keeping accurate field records is an essential part of farmer research projects.

- Good implementation of trials is critical to success. To ensure quality results, the farmer, extension educator, and private industry cooperator should review the research plan, in-season observations, and harvest plan prior to implementation. Having at least two of the team members present at planting and harvest will enhance quality control.
- Farmer participation is essential to the interpretation of research results and sharing of information. Annual meetings for reporting and discussing results have proven successful and served as a source for future research ideas. These meetings also help maintain and stimulate interest and enthusiasm in the group. As one farmer wrote, "...networking with other farmers is a plus. I have never met a group of individuals like this. They are all yearning to learn. It is my favorite meeting of the year."
- Bring private sector cooperators into the process and ensure they have a clear understanding of their roles.
- Avoid financial support that might threaten the unbiased nature of the research.
- Stimulate farmer interest with tours, field days, and informational meetings focused on farmer research.
- Farmer research should be enjoyed by all participants!

Project Improvement

Consider the following recommendations for improving existing research projects:

- Involve private sector cooperators.
- Gradually, pass leadership responsibilities to farmers and private sector cooperators.
- Continually recruit proactive farmers and private industry cooperators to replace retiring participants.

- Disseminate research results beyond project participants, such as on a Web site.
- Encourage and enable interaction between existing farmer research projects.
- Involve university specialists and provide feedback on needs and opportunities.
- Employ advanced technology as it becomes feasible, e.g., remote sensing, soil property mapping, and yield mapping.
- Minimize dependence on outside financial support.

Guidelines: Farmer Research for Alternative Agriculture

We consider alternative agricultural systems to include organic farming, bio-renewable agriculture and food systems, and production of specialty crops and products. Alternative agriculture is the largest growth sector in U.S. agriculture. The organic industry alone grew at an annual rate of 24 percent for much of the 1990s. Conventional and alternative systems may overlap significantly as conventional farmers diversify with specialty crops or production systems.

Private and public sector research has more frequently addressed concerns of conventional rather than alternative agriculture. Knowledge of a component of an alternative agriculture enterprise, e.g., a new crop under certain growing conditions, is often scarce relative to knowledge of conventional agriculture. Replicated, on-farm trials have a role here, as do alternative research procedures such as simpler, preliminary investigations. These may yield adequate information to reject possible practices, plan other research, or possibly adopt a practice. Replicated trials conducted over several years will be necessary to validate practices having small effects.

The guidelines for conventional agriculture are also relevant here, with the following additional guidelines for alternative agriculture:

- Consider the diversity of the participating farmers. Is there enough shared interest to justify cooperation in

farmer research? Is there sufficient interest to form more specialized research groups, e.g. for organic farming or acreage owners? Weigh these concerns against the need to have a critical mass of participating farmers for sharing creative thought, information, and perspectives.

- Alternative research approaches, in addition to replicated field trials, may be valuable for screening alternative crops and practices and provide sufficient information to reject some options. These might be “discovery situations” where one or more practices are applied or a new crop is planted to part or all of the field without replication, and maybe without a direct comparison, but with careful observation of crop performance.
- Fine-tuning of production systems is likely to require replicated trials to evaluate small effects with confidence.
- Tours to visit the farms and research of participating farmers may be important for information sharing, observation and interpretation of observations, and for generating ideas for future research.

Related NebGuides and Extension Circulars

The following publications are available from University of Nebraska Extension offices:

- On-farm Trials for Farmers Using the Randomized Complete Block Design, EC125.
- Procedures for Field Demonstrations of Nitrogen Management Practices, EC126

UNL Extension publications are available online at <http://extension.unl.edu/publications>.

Index: Field Crops Cropping Practices

Issued March 2005

Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln cooperating with the Counties and the United States Department of Agriculture.

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