Would you, should you, could you?

Guidelines for successful participatory, on-farm research in sustainable agriculture

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Participatory research is an approach that brings professional researchers together with citizen stakeholders to define problems or questions, collect information and use it to promote change. It is used within the natural and social sciences and takes place in diverse settings including farms, schools, laboratories, hospitals, communities and businesses. Participatory research is built on the understanding that scientists and stakeholders each have unique forms of knowledge and resources,[1] and working together is a better strategy than working alone.

Participatory research grew out of innovative research methods used in developing countries. These include Participatory Rural Appraisal, which focuses on land use planning and land reform;[2] participatory research that seeks to meet the specific needs of subsistence farmers;[3] and Participatory Action Research, which focuses on engaging all stakeholders in finding solutions to problems.[4]

The benefits of participatory research include the creation of stronger relationships between researchers and other citizens, the exploration of problems important to stakeholders, and the creation of knowledge and technologies that meet citizens' needs. It can empower non-scientists to conduct their own research.[5] Because of the number and diversity of partners involved, participatory research may also result in more accurate science.

Drawbacks to participatory research include the effort needed to maintain relationships within a diverse group of participants, and possible conflicts between the needs of researchers and stakeholders. In some cases, researchers may find it difficult to publish work conducted in participatory settings.[6] Participatory research works best in situations where both sides commit financial resources and time to the process. It requires effective communication among all parties involved, and is more likely to succeed when all partners enter the project with mutual respect.

This publication addresses one specific form of participatory research—on-farm participatory research in sustainable agricultural systems. It draws on experiences using this approach for participatory plant breeding research at the UW-Madison, and as a result focuses on production agriculture.

Participatory research in sustainable agriculture

In agriculture, participatory research forges partnerships between farmers and researchers to address questions about agricultural systems. Participatory research processes allow researchers to learn about and address farmers' needs of which they may be unaware. If farmers participate in research from the beginning, it is more likely that they will accept its results and that its outcomes will benefit rural communities.

Over the last ten years, on-farm, participatory research has been increasingly important to sustainable agricultural research.[7] Sustainable agriculture relies on a complex set of practices to build soil health, maintain fertility, manage pests and produce crops and livestock profitably. Because building a sustainable cropping system can take years, it may be easier to research these systems on working sustainable farms than to establish them at research stations. By using farmers' land and expertise, researchers are better able to understand diversity and complexity in agricultural systems. Researchers carrying out interdisciplinary projects, in particular, have used participatory research to look at the economic, agronomic and social aspects of diverse agricultural systems.

Much participatory research has been done by nonprofit organizations and farmer networks, with farmers sometimes drawing on their own resources to conduct research in their own fields. While nonprofit organizations receive significantly less research funding than land grant universities, these organizations often have more experience with participatory research methods.

How does participatory research benefit farmers?

Participatory research can provide answers to questions that are important to farmers. On-farm, participatory research helps farmers gather information systematically and obtain statistically valid results. For instance, farmers experimenting with cover crops have gathered information on weed pressure and available nutrients to better understand how these crops will work in different soil types. On-farm research, whether or not it includes participation from researchers, provides farmers with opportunities to develop new production and management skills. Through participatory plant breeding programs, farmers in Washington have developed wheat varieties that fit the specific needs and characteristics of their farms and markets.[8] In some projects, plant breeders teach farmers new techniques for breeding and selecting seed, and help them compare varieties as they work through the selection process.

How does participatory research benefit researchers?

Participatory research enables researchers to identify problems in farming systems with which they may not be familiar. It also allows researchers to benefit from the knowledge farmers have gained from their informal experiments and observations. For example, in work funded by CIAS, pasture-based farmers told researchers that their method for measuring forage production in continuously grazed pastures overestimated the amount of forage that was actually available to livestock. Grasses that had been refused early in the season were not likely to be eaten later in the season, so they needed to be removed from production estimates. With participatory, on-farm research, the project gains a highly skilled, additional on-site research partner. Participatory research can provide an opportunity to replicate trials and measure the applicability of results in ecologically diverse or marginal settings, especially under circumstances where financial resources or access to land are limited. It also builds farmer support for research programs. Funding sources for sustainable agriculture often require farmer participation. Strong relationships with farmers give researchers an advantage when competing for these grants and carrying out funded projects. When farmers participate in research, the results are more likely to be used by them.

Questions you should ask before starting an on-farm, participatory research project

Both farmers and researchers need to be aware of the constraints under which they operate in order to initiate, conduct and conclude a successful on-farm, participatory research project. Farmers and researchers may enthusiastically enter into this kind of project but face constraints from their jobs that prevent them from being effective research partners.[9] Perceived or real imbalances in power can lead to giving up on the participatory research process.[10] The following questions can help farmers and researchers consider their commitment to a participatory research project.

How much time will this project realistically take? How much time do you have now? Will you have this much time during the entire academic year or farming season?

Do not assume that since planting a field takes three hours, planting a research plot will take the same amount of time. Be realistic and take into account the added time research activities will take. If you are a farmer, how does this project fit with the demands your farm places on your time? If you are a researcher, do you have the time to visit the farm as often as the farmer needs or would like? If not, can you hire someone to help?

Are some times extremely busy for you? Will research be conducted at those times? Can it be done at other times instead?

A lot of agricultural research is conducted at the busiest times of the year, such as harvest and planting. A researcher or student will not be able to work on the farm for the entire growing season. If you are a farmer, does the project work fall within a time that is already busy for you? If research is competing for time with farming, can you give this project enough time, or will you need help? If you are a researcher, how does this project fit into your existing research program? Will an on-farm, participatory project compete too much with your current work?

What do you want out of the research?

Participatory research is more likely to succeed if both farmers and researchers get the benefits they want from their investments of time and resources. If you are a farmer, do you want results that you can apply directly to your farm, or would you like to contribute to a more general understanding of agriculture even if it does not immediately benefit you? If you are a researcher, does this work need to result in a publication? If so, how does this affect your ability to help meet a participating farmer's specific needs? Take time to make sure each side understands the other's goals.

Will you suffer consequences if the research project does not work?

If you are a farmer, can you tolerate an economic loss if a trial of a seed variety or animal production system results in low yields? If you are a researcher, do you have the means to compensate farmers for any losses? Will you suffer any professional setbacks for participating in this research? How well does this work fit in with your program and personal goals?

Who will pay for the research, and how?

Research requires time and capital inputs such as seed, land and equipment. Who will pay for this? Who will provide the labor and equipment? Will farmers be compensated for their time and materials, and at what rate? Both farmers and researchers can apply for grants that fund on-farm, participatory research. Who will write and administer these grant proposals, and write the final reports? How will you help each other?

Who will own or control the research findings?

Under the Bayh-Dole Act, many universities require researchers to apply for intellectual property rights on things they create, such as plant variety protection for seeds or utility patents on machinery.[11] If you are doing research with farmers, will you participate in the application for patents or other property rights? Are there material transfer agreements that clearly define relationships among all participants? Do you share the same viewpoints on what can and should be owned?

Do you deal with differences respectfully?

Farmers and researchers may have unique constraints and interests that come from their different professions. In the best projects, they are able to draw on each other's strengths and compensate for each other's weaknesses. But it's not always easy. As tax-paying citizens, farmers may believe that researchers working at public universities should be able to focus their work

on farmers' priorities. In reality, researchers are often constrained by the grants that fund most of their work. If these kinds of differences are not worked out, the result may be disrespectful relationships and problems with communicating needs and ideas. Both farmers and researchers should ask if they are able to communicate effectively with each other. Does everyone feel like their voices are being heard?

Conclusion

Participatory, on-farm research can be successful and mutually beneficial for farmers and researchers. When all stakeholders want to work together on sustainable agriculture research, and have funding and time to make it happen, participatory research can work remarkably well. Without these characteristics, however, it is unlikely that participatory research will benefit either party.

Going through the questions above before starting a project can increase a project's odds of succeeding. If farmers' and researchers' answers to the above questions conflict, it does not mean that they cannot move forward, but rather that they must be clear about what they can accomplish together.

The list of resources on the following page includes examples of on-farm, participatory research projects, sources of funding for this kind of research, how-to guides, and alternative intellectual property rights agreements. Used with the questions listed above, these resources can help you accomplish this bottom-up, activist approach to scientific inquiry.

CIAS research in sustainable agriculture responds to farmer and citizen needs and involves them in setting research agendas. Many of our projects have on-farm, participatory research components. For more information about our work, visit our web site: www.cias.wisc.edu

Resources

Selected participatory agricultural research projects

Practical Farmers of Iowa
www.pfi.iastate.edu/ofr/Practices_and_Research.htm

Washington State Wheat Breeding program
www.winterwheat.wsu.edu/

Public Seed Initiative (New York State & Northeastern U.S.)
www.plbr.cornell.edu/psi/

Northern Plains Sustainable Agriculture Society
www.npsas.org/breed.html

How to conduct on-farm or participatory research

Farmer-Researcher Roundtable. February 21-22. Nessmith-Lane Continuing Education Center. Georgia Southern University Statesboro, GA

Manual on Seed Saving, Variety Selection, and On-Farm Research. Northern Plains Sustainable Agriculture Society. Call Tonya Haigh at 605-627-5862 to receive a copy.

On-farm Research Results and Pointers. How-to information, including statistics for on-farm research.
www.pfi.iastate.edu/ofr/OFR_Pointers.htm

Intellectual property and ownership models

Aoki, Keith. Forthcoming, 2007. "Reclaiming 'Common Heritage' in the Plant Genetic Resources Regime Complex." *Michigan State University Law Review*.

Carpenter. 2004. "Intellectual Property Law and Indigenous Peoples: Adapting Copyright Law to the Needs of a Global Community." *Yale Human Rights and Dev. Law Journal* Vol: 7

Funding sources

USDA Sustainable Agriculture Research and Extension Program: www.sare.org

Organic Farming Research Foundation: ofrf.org

USDA Integrated Organic Program:
www.csrees.usda.gov/fo/fundview.cfm?fonum=1141

Endnotes

[1]Ortiza, Oscar. 1999 "Understanding interaction between indigenous and knowledge and scientific information." *Indigenous knowledge and Development Monitor* 7:3.

[2]Chambers, Robert. 1983. *Rural Development: Putting the Last First*. Longmans.

[3]Maurya D.M., A. Bottrall and J. Farrington. 1988. "Improved Livelihoods, Genetic Diversity and Farmer Participation: A strategy for rice breeding in rainfed areas of India." *Experimental Agriculture* 24: 311-320.

[4]Freire, P. 1970. *Pedagogy of the Oppressed*. New York, Continuum.

[5]Sperling, Louise Michael Loevinshown and Beatrice Ntabomvura. 1993. "Rethinking the Farmer's Role in Plant Breeding: Local bean experts and on-station selection in Rwanda." *Experimental Agriculture* 29: 509-519.

[6]Sperling, Louise. 2003. "The Quality of Science in Participatory Plant Breeding." Maccarese, Rome, Italy. IPGRI Headquarters September 30 - October 4, 2002 workshop.

[7]Lohr, Luanne and Timothy Park. 2002. *Improving Extension Effectiveness for Organic Clients: Current Status and Future Directions*. Department of Agricultural and Applied Economics, College of Agricultural and Environmental Sciences, University of Georgia.

[8]Washington State Wheat Breeding Program. http://www.winterwheat.wsu.edu

[9]Thiele, Gram, Elske van de Fliert and Dindo Campilan. 2001. "What Happened to Participatory Research at the International Potato Center?" *Agriculture and Human Values* 18: 429-446.

[10]Okali, Christine, James Sumberg and John Farrinton. 1994. "Farmer Participatory Research: Rhetoric and Reality." *Intermediate Technology*. Publications on behalf of ODI: London.

[11]Jones, Steven. 2003. "A System Out of Balance—The Privatization of the Land Grant University Breeding Programs." *Seeds and Breeds for the 21st Century: Summit Proceedings*. Michael Sligh and Laura Lauffer eds. Sept. 6-8, 2003. Washington D.C.

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