

# PARTICIPATORY RESEARCH: MAKING FARMERS OUR RESEARCH PARTNERS<sup>1</sup>

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## ABSTRACT

Addressing the needs of primary producers through publicly funded research and development programs has become a higher priority in this time of limited resources. Traditionally, we have relied on the research - extension - producer flow of information to influence research program development, or have we? Many would argue that most research is based on the intuition, 'gut-feelings' and available funding for those scientists involved. Commodity groups (canola, flax and pulse) have allocated check-off resources toward directed research goals, successfully addressing the issues identified as highest priority by their producer members. The Melfort Research Station has been asked to develop new and innovative ways of conducting its research programs which will increase the role played by producers and extension staff. Developing a collaborative role for primary producers, extension agrologists and research scientists in program planning, priority setting, fund raising, and technology transfer, requires a significant change in both activities and attitude by all parties. The development of regional specific Learning Centres is presented as a model for enabling increased participation by all parties in developing solutions to current problems. Understanding the impact of introduced new technology on whole-farm operation and economic viability is also presented as a critical component to development of effective research and development programs.

## INTRODUCTION

The management of publicly funded research programs is continually under review and scrutiny, particularly during this period of financial adjustment. The competition between research scientists, whether from universities, private industry, or the federal and provincial governments, places funding agencies the unique position of being very selective in their allocation of support. It is becoming ever more popular for the funding agency to allocate research support to those groups who can demonstrate a direct benefit to producers, including a plan for delivery of methods, ideas or technology. In many cases, the agencies are not satisfied with a final report, or scientific manuscript, as a means of delivering the information to the clients.

As part of a change in focus, specific to the Melfort Experimental Farm (MEF), research staff were asked to develop or adopt methods of conducting research activities that in some way increases the participation of affected producers. The focus of research activities at MEF could be best described as adaptive and applied, versus the basic research characteristic of associated Agriculture and Agri-Food Canada centres in Saskatoon and Lethbridge. This change in focus at MEF requires a considerable shift from the traditional role which most research staff are used to and most comfortable with. The goal of this paper is to outline some background to the planning used in this change, and to describe some of the methods which are being implemented to increase the participatory role of farmers in the planning, conduct and evaluation of research.

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## BACKGROUND

There are few who would debate the importance of agriculture research and extension to the economic development of the prairie provinces. Research and development of innovations in plant and animal breeding, pest management, preservation of soil quality and productivity, and marketing and processing of primary products, have all contributed to the economic strength of the region. This development has been carried out through the collaborative activities of publicly funded research and extension agencies. Traditionally we have relied on the research community, principally located in provincial universities and federal research stations, to develop new technology and pass it along to the provincial extension service for interpretation and communication to end users - primary producers (Figure 1a). Extension staff, through their direct and ongoing contact

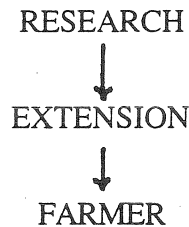


Figure 1a.

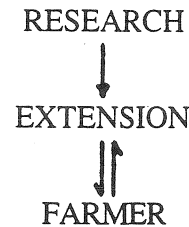


Figure 1b.

with farmers, have generally participated in more of an interactive role with producers (Figure 1b). This top-down approach to technology development and delivery worked fine until one day a few in the research community began to ask why certain new innovations were not being adopted by farmers. Consultation with extension workers, and select farmer contacts, indicated that certain technologies were being developed without a full understanding of how, or if, they actually fit into common farming systems. In short, there was no linkage between scientific merit and useful application of the innovation. Realizing this problem, research again turned to the extension service and requested 'feed-back', using the extensive network of contacts with farmers, on both the issues producers identify with as well as the manner in which new technology is being adapted by producers (Figure 2). Research administrators responded to this problem of inappropriate technology development by establishing research advisory boards for institutions,



Figure 2.

with membership of primary producers, agriculture extension and industry. Many would argue that we have become very successful in our development and delivery of new technology, however, somewhat less successful in our listening and incorporation of feedback into research program planning (Figure 3).

As our society advances from the "age of technology" to the "age of information", it became obvious that there were problems in the communication of new information. When requests by farmers for the research community to address specific needs were met with the response that "the work has already been done", it became obvious that somewhere in the research - extension - farmer system of information flow we had a communication problem. While the debate over who is responsible for this communication break down could only be described as "truly

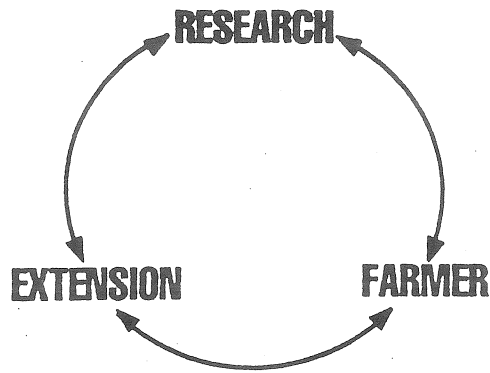


Figure 3.

Canadian" (given the federal - provincial relationships), each one of us has a responsibility to focus on how we can make the system work better. Funding agencies, principally provincial governments, now require that research projects supported have an acceptable plan for technology transfer either directly to farmers, or indirectly via the extension service. Commodity groups (pulse, flax and canola) have used check-off funds to support producer-directed research, based on membership priorities. Information from this work flows directly to the commodity group and on to their membership through their own communication network.

Within Saskatchewan the federal - provincial Save Our Soils (SOS) program is often cited as one of the most successful technology transfer efforts. Using conservation research developed on the prairies an extensive on-farm demonstration and extension program to evaluate the adaptation of this technology was established. Given the opportunity, producer controlled Agriculture Development and Diversification (ADD) boards selected priority technologies, strategically located on-farm demonstration projects, and fostered the critical evaluation and promotion of these technologies amongst their peers. The results of this effort on miles of shelterbelts, summerfallow management practices and direct seeded acreage throughout the province speak for themselves.

It is my opinion that the SOS program, and commodity group directed-research have brought us to a critical new era in applied research. These activities have helped to "demystify" the science of agriculture research, and "empower" farmers to value their on-farm research and demonstration efforts.

### **FARMING SYSTEMS RESEARCH AND EXTENSION**

Farming systems research and extension (FSRE) is a farmer-based systems approach originally used in low income countries. FSRE methods were developed in large part to address the needs of farmers operating diversified farming systems in resource-poor and risk prone environments. While farming systems methods are compatible with traditional discipline oriented research approaches, they have evolved as a means of involving farmers and farm families in setting research and extension priorities and in identifying appropriate paths to agriculture development. Specifically, FSRE views the whole farm as a system, and focuses on inter-dependencies between the system components controlled by the farm household, and how these components interact with biophysical and socioeconomic factors beyond their control.

Although FSRE methods are not clearly understood or used in North American agriculture, there is a growing awareness of the potential benefits of maintaining farmer involvement in finding solutions to problems using agricultural research. Farmer participation in research, technology development, and extension programming forms the foundation to establishing fully integrated on-farm research and education, as well as development of effective agricultural information systems. It is proposed that farming systems approaches, along with other methods of system study, are beneficial to addressing issues of increasingly limited research

and extension resources. Farmer participation, from problem diagnosis, through adaptation and evaluation, can reduce the incidence of redundant research and the promotion of inappropriate technologies. Agriculture systems research and the science of agroecology, provide the theoretical framework to understand the interrelationships of agricultural processes. Successful systems research will require specialists doing component research, and generalists who bridge the gap between disciplines, promote effective cooperation and integrate the component results. By educating one another we will improve on our skills to tackle complex problems.

### **FARMER PARTICIPATORY RESEARCH**

The discussion surrounding the development of new models for agricultural research and extension have focused on establishing partnerships which accommodate the needs identified by agricultural producers (Chambers et al., 1989). Including the farmer as an equal contributor to research program planning, execution and evaluation forms the foundation of Participatory Research activities. There must be a realization that both scientific knowledge, and 'indigenous' knowledge of local agroecosystems, are required to successfully implement new products or practices. While most researchers do have contact with some farmers, adoption of a participatory approach strengthens the feedback from farmers to scientists and creates a way for farmers to influence research directly (Francis et al., 1990).

Research and development projects carried out with active farmer participation often have different objectives and designs than would have been selected by research scientists alone. Farmers are interested in large plots (usually related to machine size), treatments which involve modest investment, high probability of improving yield and/or profit, and conditions that represent their farms. On the other hand, researchers focus on statistically valid experimental design, uniformity of non-treatment variables, site access and experimental conditions applicable to a major production region. Developing a balance between these two positions is critical to establishing positive and productive working relationships.

Participatory programs are based on the principle of adult learning theory that most adult learning occurs as a result of an individual's desire to solve a problem (Tough, 1982). Knowledge is not viewed as a commodity being transferred from the informed to the non-informed, but rather an ongoing and cooperative process among all participants. A participatory approach to learning also promotes social relationships based on common respect for each partner's contribution as both teacher and learner (Gerber, 1992). Rather than treating farmers, extension workers and researchers each as separate components, participatory programs do not provide distinction between research activities and educational activities.

Participatory research project objectives are established to reflect the needs of the farmer and abilities of the research staff involved. Specific research goals must be based on developing a response from the research-derived knowledge, specifically a problem-solving approach. However, it is important to note that participatory research does not:

1. Replace basic research conducted by scientists,
2. Replace station-based research programs,
3. Convert research scientists into extension workers, or
4. Rigidly follow traditional research project design and analysis.

### **SHIFTING DIRECTION AT MELFORT EXPERIMENTAL FARM**

Adapting current research programs, and setting the foundation for future Farmer Participatory Research activities, has been the focus for Melfort

Experimental Farm staff during the past 12 months. The staff developed a new framework for future direction of research activities, focusing on the Experimental Farm mandate of "conducting research on sustainable farm production for improved marketability and profitability". Emphasis will be placed on providing farmers with the knowledge to assess the risks and benefits prior to adopting new practices, with a view to improving the uptake of new technologies and reducing the barriers to adoption. These barriers include the risk of failure, and the potential impact of new technologies on capital, labor and management time. The common theme is *diversified farm production for the Parkland*, focusing upon the interactions of forage harvest and grazing systems, crop residues, tillage systems, nitrogen management, and interspecific competition. These activities are being developed under the heading Integrated Farm Research (IFR).

Specific to the development of the IFR program, the staff have established two goals from which to develop new research activities:

1. Integrate disciplines in on-farm, whole-farm, and farmer-participatory approaches to production research.
2. Develop an effective program in technology transfer with impact across western Canada.

A survey of 24 conservation tillage farmers, identified by Extension Agrologists, was carried out during the summer of 1993. Using personal on-farm interviews, a number of issues were established to guide program development. These included:

- Conservation or zero tillage is receiving wide spread interest and adaptation, because of efficiencies in the utilization of land, labor and capital. Conservation of the soil resource was rarely identified as a reason for adaptation of reduced tillage production systems.
- Most farmers grew a mix of cereal, oilseed and pulse crops in rotation, indicating wide spread adoption of new crop technology.
- Perennial weeds were identified as the biggest challenge associated with reduced tillage production systems. This is similar to the results obtained from provincial weed surveys.
- The four top issues identified as priorities for conservation tillage research were:
  - a) Crop residue management at seeding,
  - b) Weed control for broadleaf crops,
  - c) Fertilizer N placement to increase fertilizer-use efficiency, and
  - d) Management of broadleaf crops to optimize rotation profitability.
- There was strong support for linkage of research and demonstration activities, so as to provide "some useful data" on problems identified by producers. There was also interest in the critical evaluation of the biophysical, economic, and social impact of specific technology adaptation on individual farm operations.
- The majority of the survey participants received production information from other farmers, extension (public and private) and research agrologists and commodity group membership. Grainews was the most commonly cited farm publication when asked where project results should be published.

A number of research methods were reviewed for development of the IFR program at Melfort Experimental Farm. These included on-farm research trials with individual farmers, whole-farm analysis of biophysical, economic and social responses to new technology, and the development of cooperative research and development farms, or Learning Centres. The positive response to the linkage of research and demonstration activities at a common location in a district or region provided the necessary support to advance the Learning Centre concept with local producer groups. Along with providing for cooperative participation of farmers, public and private extension agrologists and researchers, the Learning Centres

provide a unique opportunity for the equal and shared experience of setting priorities, organizing projects and evaluating the results.

The initial proposal to establish Learning Centres was circulated amongst producers and met with a positive response, leading to the establishment of projects at Prince Albert - Conservation Learning Centre, Naicam - Canola Production Centre, Tisdale/Nipawin - Gray Soil Research Centre and Wadena - NET Agriculture Project. Each of these projects has specific goals and objectives, a large demonstration component, and an opportunity to establish a mechanism for the continual review and consultation on issues of concern to participating producers.

There was little interest amongst the survey farms in participating in establishing their own on-farm research trials. Lack of time, experience and adequate precision were most often cited for this decision. We anticipate that within five years we will see increased interest by farmers participating in the Learning Centres in establishing their own on-farm research projects. At that time we will realign Experimental Farm resources so as to provide for on-farm consultation and support in the planning, execution and evaluation of research trials.

Resources have been secured for the development of a whole-farm evaluation project starting in April, 1994. The focus of this trial project will be to collect and evaluate information on the biophysical, economic and energy impact of novel production systems. This will include direct seeding, dehydrated alfalfa production, chaff collection systems and alternative weed control practices. Priority will be to focus the project on those issues which cannot be addressed from research and/or demonstration trials, and will increase our ability to model these farming systems and predict the associated risk:benefit.

## REFERENCES

- Chambers, R.A., A. Pacey, and L.A. Thrupp (eds.). 1989. *Farmer first: Farmer innovation and agricultural research*. Intermediate Technology Publications, London, England.
- Francis, C., J. King, J. DeWitt, J. Bushnell, and L. Lucas. 1990. Participatory strategies for information exchange. *Amer. J. Alternative Agric.* 5: 153-160.
- Gerber, J.M. 1992. Farmer participation in research: A model for adaptive research and education. *Amer. J. Alternative Agric.* 7: 118-121.
- Tough, A. 1982. *Intentional change: A fresh approach to helping people change*. Follet Press, Chicago, Ill.