Deborah Merrill-Sands, an anthropologist, is a senior officer at the International Service for National Agricultural Research (ISNAR) in The Hague, Netherlands. She was leader of a major research project at ISNAR on the organization and management of on-farm research in national agricultural research systems. She is now based in the USA and works halftime for ISNAR and halftime as a free-lance consultant.

Marie-Hélène Collion, formerly a senior officer for planning at ISNAR, is currently an agricultural economist in the Africa-Sahelian Department of the World Bank in Washington, DC, USA. Previously Dr. Collion worked with the International Research and Development Center in West Africa.

ABSTRACT User participation is a critical ingredient for relevant technology development, whether in agriculture or industry. This has long been recognized in private sector R&D firms. In most public sector agricultural research organizations in developing countries, however, systematic involvement of farmers, especially poor farmers, in research has been weak. These farmers are rarely powerful or well organized enough to bring pressure to bear on government agencies to respond to their needs and priorities. Farmer-responsive research methods, such as on-farm research, farming systems research, and farmer participatory research, have been introduced into research organizations to compensate for the lack of mechanisms for bringing farmers' views into the formulation of research priorities and agendas. The impact of these approaches in achieving this objective, however, has been less than hoped for.

Insufficient attention to the political and institutional dimensions of developing client-responsive research is a major reason for this lack of impact. To bring about permanent change, farmer-responsive research methods need to be reinforced by changes in the balance of power between research and its clients and in the constellation of decision-makers responsible for formulating research agendas. Participatory planning methods applied at the level of research programs provide new opportunities for involving farmers in decision-making about program priorities and for systematically incorporating information about client's needs. Recent experiments with strengthening farmers' associations and linking them with research organizations suggest new opportunities for increasing farmers' ability to express demand, act as an external pressure group, and serve as viable partners with research organizations.

I. Introduction

In the past two decades a great deal of effort has been invested in trying to make public sector research organizations in developing countries more responsive to the needs and priorities of farmers. Particular attention has been given to improving the capacity of research organizations to address the needs of the estimated 1 billion people who depend on agriculture in complex, diverse, and risk-prone environments (Chambers et al., 1989). National research organizations have worked hard to develop and implement farmer-responsive research approaches, such as on-farm research (OFR), farming systems research (FSR), and farmer participatory research (FPR), as a means for linking more effectively with farmers — their clients. The development of new methods and approaches have been supported by international agricultural research centers, donor agencies, and advanced research organizations and universities in developed countries.

Yet, experience has shown that it is difficult to integrate the farmer-responsive research approaches in a sustainable way within public sector research organizations. These methods have been successful in helping researchers improve their understanding of
diverse production systems, to identify niches for new technologies, and to sharpen the focus of adaptive research. But, they have been much less successful in promoting a strong client-orientation within research organizations or in bringing the farmer's voice into the decision-making processes that shape the priorities for research and technology development. Organizational and managerial constraints to integrating farmer-responsive research approaches have been identified, and in some developing country national agricultural research systems (NARS), they have been addressed (Merrill-Sands et al., 1991). But, still the impact of feedback from farmers on setting the research agenda has been sporadic at best.

In this paper, we try to take a fresh look at the issue of cultivating farmer-responsive research in public sector research organizations. Donning a broader political economy perspective, we argue that to bring about lasting changes in the client-orientation of research organizations, introduction of new research methods or improved management practices is not enough. We need to target the distribution of power, the decision-making processes, and the constellation of decision-makers within research organizations. At the same time, we need to support the development of farmers' associations so that they can bring pressure to bear on research organizations to make them more responsive to their priority needs and demands.

II. Bringing The User's Voice Into R&D: Luxury Or Vital Ingredient?

Making the Case for User Involvement

There is mounting and compelling evidence indicating that user participation is a critical ingredient for innovative, relevant, and efficient technology development, whether in agriculture or industry (von Hippel, 1978; Souder, 1980; Peters and Waterman, 1984; Gamser, 1988; Kanter, 1983; Röling, 1990). Users not only define demand, but they are also an important source of innovation. The benefits of involving users in research and development (R&D) have long been recognized by private R&D firms. Since their survival depends on whether users purchase their products, considerable investment is made in understanding users' needs and preferences and capitalizing on their ideas and innovations. Von Hippel's (1978) pioneering research on user innovation at the Massachusetts Institute for Technology (MIT), for example, showed that most of the successful new devices in the fields of scientific instrument production and semiconductor electronics derived from customer ideas and prototypes. The highly successful 747 aircraft also resulted from close, and often contentious, interaction between Boeing and its customer — Pan American Airlines (Gamser, 1988).

Similarly, when one looks at effective agricultural research and technology development systems, user participation and, indeed, some user control over research appears to be a key factor contributing to success. Examples from the West include the USA and the Netherlands — the two largest agricultural exporters in value terms in the world. In the Netherlands user control over research is strong. Approximately half of the costs of experiment stations and experimental farms are paid for by farmers. Farmers also participate in program committees and have representatives on boards of the main agricultural organizations (Röling, 1990).

In 19th century Europe, farmers associations played a critical role in the development of agricultural research. They served as a source of funding and represented a strong "demand pull" for research services. Later they also became a powerful lobby encouraging governments to support research.

In Israel, as well, about half the money for agricultural research comes from farmers through value added levy or farmers’ organizations. Farmers have the controlling voice over regional field trials, while their representatives participate in decisions on the research projects financed by the levy (Kaimowitz, 1992). China provides another example. The impressive developments in agricultural production have been fueled, in part, by active participation of farmers in R&D and the union of researchers' science-based knowledge with farmers' practical knowledge (Stavis, 1978). Farmer pressure on research is also considered to have contributed to successful agricultural performance in Japan and Taiwan (Sims and Leonard, 1990).

Although we have many cases that demonstrate the benefits of involving users in an organized fashion in R&D, there are few studies from agriculture that quantify the benefits of maintaining close links with users. Such studies have been carried out, however, on the closely related area of links between marketing and R&D in private sector industrial companies. These studies are relevant since marketing in private sector firms serves to link research with its clients. Marketing plays much the same role as that farmer-responsive research approaches, such as on-farm research (OPR), farming systems research (FSR), and farmer participatory research (FPR), are designed to play in agricultural research organizations of developing countries.

In one of the most rigorous studies of this type, Souder (1980) assessed how the quality of linkages between R&D and marketing in 150 randomly selected projects in 38 firms in the United States affected the commercial viability of the products developed. The results are striking and provide a forceful argument that links with users are vital for successful technology development. Linkages between R&D and marketing were strong in almost half the projects. Of the projects with strong links, approximately two-thirds generated products that were full commercial successes. The failure rate was only 14%. The outcome was exactly