Partnership and Participation in Research and Extension: Supporting Farmer Innovation in Central Ghana

Margaret M. Kroma, Assistant Professor
International Agriculture and Extension Education
Department of Education
Cornell University

Jun-Li Wang, Graduate Student
International Agriculture and Rural Development
Cornell University

Abstract
This paper presents a case study of a collaborative, participatory research and extension project in natural resources management in central Ghana. It describes the learning process and organizational framework characterizing farmer innovation, and the democratic partnerships between farmers, researchers and extension agents, and other stakeholders in resource management. The case study builds on concepts in social learning theory to examine, within a particular natural resource management context, the potentials and transaction costs in facilitating a process of group learning in the management of technology innovation. The discussion has theoretical and practical implications for change agents working with poor farming communities in developing countries.
Introduction

There is a wide gap between agricultural technologies produced in research institutions, and the adoption of such technologies by small farmers and rural households in sub-Saharan Africa. One explanation around which many scholars have converged is that the technologies offered by extension do not fit farmers’ contexts, and are often perceived as irrelevant. More recently there is a growing awareness that the targets for research and extension should be more than just technologies (products) for crops and animals. Interactive interpersonal relationships between farmers, institutions and rural communities are important if the goal is to enhance people’s learning in the agricultural and rural development process.

Scholars now suggest that the traditional linear and hierarchical technology generation and adoption process had tended to subsume the innovative potential and local ecological knowledge that farmers accumulate through experience and adaptation to contingent circumstances. By unwittingly privileging technical products, research and extension had not done very well in transforming people’s capacities and skills in ways that support sustainable agricultural production.

There is an emerging approach to research and extension that emphasizes participation and partnership as fundamental to “engaged” relationships with farmers and farmer organizations for sustainable agricultural development (Bawden and Packham, 1992; Pretty and Uphoff, 2002). Such partnership arrangements are perceived as alternative organizational frameworks that are democratic, characterized by inter-institutional collaboration, that situate the farmer as a learner than as a mere recipient of agricultural technology. Building such partnerships and creating synergies between rural communities and agricultural institutions however is a slow and difficult process (Lightfoot et al, 2001). And there are relatively few examples or case studies of “best practices” on which to build or learn from.

Theoretical Framework

This paper builds on the theoretical constructs of social learning as espoused by Bawden and Packham (1992), and Korten (1980). Social learning has been described as a process by which a community of interest or group of individuals learn how to engage in sharing and reflecting on knowledge gained through experience and action to enhance innovative capacities for managing change ((Bawden and Packham, 1992; Korten, 1980; Engel and van den Bor, 1995).

In agriculture and natural resources management, social learning emphasizes the notion that agricultural production is embedded in the social and cultural contexts of people and their communities (Pretty and Uphoff, 2002). Therefore the design and adoption of agricultural innovations must be reflective of and responsive to the local social and agro-ecological circumstances of farmers in order to enhance capacities to innovate and adopt new technologies. The value of a social learning approach is that extension professionals are enabled to learn their way through on how to work with farmers in a participative rather than a didactic, top-down way, while creating the social networks for facilitating exchange of knowledge between farmer to farmer, as well as between researchers and farmers (Pretty, 1995; Lightfoot et al, 2001).

Central in the focus on a learning approach is the building of joint capacity among the various actors in technology generation and adoption (Lightfoot et al, 2001; Bawden and Packham, 1992). This joint learning is in turn characterized by “face to face” interchanges of
ideas, farmer-led analysis and planning. A critical aspect of the joint learning process is the opportunity it creates for farmers and change agents to reflect on new ideas and experiences, and on how such new insights can inform and guide subsequent action. By enabling a process in which action is shaped by reflection, a praxis framework for facilitating learning towards sustainable management of agriculture and natural resources management is made possible.

Rather than exclusively focusing on convincing farmers to adopt introduced technologies generated outside their environments, a social learning approach provides an opportunity for farmers to tap their capacities to innovate in spontaneous response to situation specific challenges in their farming systems. Such an approach also reflects a broader view of extension agents as facilitators, linking farmers to networks of knowledge and resources to support local people’s productive activities. The social learning framework provides a relevant conceptual context for exploring how an informal youth organization in natural resources management in central Ghana is partnering with public and private extension professionals, and researchers in learning together, how to generate and disseminate new knowledge for technology innovation in natural resources management.

**Purpose of the paper**

The purpose of this paper is to present a case study of a collaborative, participatory research process involving members of an informal youth organization experimenting with “grasscutter” domestication as an alternative natural resource management strategy in the ecologically vulnerable, transitioning savannah region of Ghana known as the Greater Afram Plains. All the youths involved in the process are farmers. Thus “youth” and “farmer” are used interchangeably in the paper. The grasscutter (*Thyronomis swinderianus*), also known as cane rat, is a large rodent found in the wild. The rodent is considered a delicacy, and is a popular source of protein in many rural households in Ghana. It commands a high market value and has important livelihood and food security implications particularly in rural households.

This paper describes the social learning process and the organizational framework that has shaped the relationships between the various actors in the project. It highlights emerging outcomes relating to technology innovation and farmer capacity building in agriculture and natural resources management, and describes some of the pragmatic challenges in building democratic learning partnerships between farmers, researchers and extension agents.

**Data and Methods**

Data was obtained through participatory research involving twelve members of an informal male youth organization experimenting with grasscutter domestication in three rural communities –Nokwareasa, Samari Kwantan, and Samari Krom. The process included semi-structured interviews with each identified stakeholder in grasscutter domestication. Focus group sessions with the youths facilitated in-depth analyses and understanding of stakeholder perceptions of their partnerships with research and extension institutions, as well as motivations underlying their participation. Diagramming techniques were used to help youths articulate their perceptions of existing institutional linkages and the impacts on grasscutter domestication.

Data was also generated through personal interviews with other groups of stakeholders who are collaborating or partnering with the informal youth organization in the experimentation and innovation process. Stakeholders include World Vision, an international...
NGO whose community-based extension para-professionals work with rural youth groups in the grasscutter innovation process, the Ghana Ministry of Agriculture extension staff, and researchers at the University of Science and Technology, Kumasi.

A Graduate Research Assistant lived in the community for three months, closely interacting with the various stakeholders while facilitating interviews, and documenting personal observations of the process of grasscutter innovation among the youths involved in the project. All interviews and focus groups were taped and subsequently transcribed for analysis using the qualitative research software QSR N5, which supports the identification, coding and clustering of common conceptual themes across a range of data for in-depth hermeneutic analysis.

Analyses and Results

Social Learning and Grasscutter Innovation: How Farmers Learned

Five learning processes emerged in the analysis as critical in how farmers perceive and understand the process by which they have gained increasing knowledge and skills in grasscutter domestication. Table I shows the different processes through which farmers’ skills and knowledge in grasscutter domestication have increased during the course of the experimentation process.

Table I: Farmers’ learning processes in grasscutter innovation

<table>
<thead>
<tr>
<th>Farmers’ Learning Processes</th>
<th>Frequency of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Always</td>
</tr>
<tr>
<td>Individual Experimentation</td>
<td>N 12</td>
</tr>
<tr>
<td>Observing animal behavior in the bush (experiential knowledge)</td>
<td>12 - - -</td>
</tr>
<tr>
<td>Visits to other youth projects</td>
<td>8  4</td>
</tr>
<tr>
<td>Informal small group forum</td>
<td>12 -</td>
</tr>
<tr>
<td>Visits from researchers</td>
<td>4  5</td>
</tr>
<tr>
<td>Community based meetings with extension agent (WV)</td>
<td>12 -</td>
</tr>
</tbody>
</table>

Through focus group sessions, youth-farmers described in rich detail how their knowledge, skills and management techniques for producing grasscutters under caged conditions have grown as a result of their participation. The processes of learning together through innovative, local level experimentation has not, by no means been a negation of expert scientific knowledge. Youth-farmers themselves acknowledge that they have limitations in certain domains of knowledge that are critical to good management. As reflected in a quote from one farmer, youths valued their interactions with a university-based researcher from Legon University who regularly visited the youths, and shared her ideas with them in informal forums.

Individual experimentation with domesticating grasscutters has evolved into a group learning process through a farmer centered research and extension approach. Emergence of group consciousness, enhanced status, trust and shared learning were reflected in the dialogues. Farmers for example, shared their observations of changes in animal behavior.
under caged conditions, and mating behavior. Quotes from interviews and focus groups indicated that youths were learning their way through an alternative approach to grasscutter production, quite different than previous top down approaches to technology development and adoption. Through a participatory asset mapping and visioning process, farmers were able to share their visions of future developments in grasscutter housing and management. The mapping processes facilitated learning and knowledge exchange as each farmer discussed rationales for particular design structures, and their perceptions of how particular designs can improve management, including health and productivity of the animals.

Table II: Farmers’ perceptions of their current knowledge status in grasscutter management

<table>
<thead>
<tr>
<th>Types of knowledge</th>
<th>Extensive</th>
<th>Marginal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge on feeding habits and nutritional requirements</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Knowledge on structures for housing animals</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Knowledge on disease management</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Knowledge on breeding behavior</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Knowledge on animal behavior under caged conditions</td>
<td>11</td>
<td>1</td>
</tr>
</tbody>
</table>

The sustainable management of natural resources can also improve people’s livelihood security. However it strongly depends on embracing approaches that encourage personal and social learning (Pretty and Uphoff, 2002). The innovative activities of association members, in partnership with both private NGO and public sector extensionists and researchers show that farmers have the knowledge, entrepreneurial and social capital to invest in such an approach to learning. But there is recognition also that the knowledge they possess is partial. Thus while members acknowledged their familiarity with some aspects of grasscutter behavior through personal observation, there was a clear appreciation of the opportunity to validate their local knowledge through sustained observation and experimentation, complemented by learning through interactions with university student and researcher networks. As one youth-farmer quoted: “it makes us feel important that outside people can come to us because they think we possess knowledge about grasscutters” (Youth-farmer BBS, Samari Krom, Ejura district).

The opportunity to participate in an active, rather than a passive way in a process in which their own powers of observation and analysis are clearly valued appear to constitute an important underlying motivation to participate in the innovative process. Farmers’ powers of observation, analysis and inferential abilities became evident at one focus group session in which all twelve youths brought along samples of different types of forage they feed their grasscutters. In the session, the farmers proceeded to systematically describe in rich detail their rationales for the choice of particular forages as well as their observations of their effects on the animal development across different age categories. Samples of twenty-three different types of forages and sources of animal feed were compared and analyzed. The youth-farmers were actively engaged in not only describing their own experiences and knowledge accumulated through their sustained engagement in the experimentation project, but were also validating, testing, comparing and sharing knowledge. Farmers made frequent reference to information relating to particular aspects of grasscutter management they had obtained through the visits of animal scientists from the University and the Ministry. It can be seen in this
experimentation project that farmer knowledge and scientific technical knowledge are gradually converging in a complementary way to enriching the learning of the youths.

The grasscutter association reflects a process in which exchange of experience and observations are being codified into information for sharing. It shows how joint analyses of experiences can evolve into forums for reflection on individual actions that in turn contribute to knowledge accumulation. Other stakeholders—including community elders were able to perceive through the “eyes” of the farmers, interests and opportunities that can be the basis for farmer centered research and extension partnerships in community based resource management.

**New role relationships: farmer centered extension in grasscutter innovation**

The social organization of the knowledge and information system in which youths have interacted in managing new knowledge and skills in grasscutter innovation reflects a unique flexibility and interactive character quite different than conventional ways by which extension agents and researchers work with local people. It reflects what has been described as a bipolar (Pretty and Uphoff, 2002), triangular (Merrill-Sands, 1990; 1995), circular (Thrupp, 1996) set of relationships. In the farmer centered research and extension process that has brought together the informal youth association, university, government, and NGO stakeholders, the role of extension clearly reflects a shift from the conventional “extensionist as communicator, to extensionist as facilitator, organizer, and network builder for individual and group learning.

World Vision para-professionals are supporting farmers’ local innovative activities as they learn through the process of adapting existing local technologies and trying out new ways of managing grasscutters. The community based extension agents working directly with the youths have been pivotal in linking grasscutter innovators to public and private sector researchers, as well as to international communities or interests, including student researchers and faculty. As a community of interest, these stakeholders are learning together, through a flexible, loosely connected web of relationships. Figure I shows a schematic representation of such loosely connected webs of relationships in which farmers, communities, extensionists and researchers interact through iterative loops of learning and feedback mechanisms with the farmer and the community as the center of action.

**Figure I: Social Learning in Grasscutter Innovation**

![Schematic representation of social learning in grasscutter innovation](image-url)
Another important aspect of the grasscutter innovation project is the diversity of coalitions engaged in the process. Starting from a narrow set of institutional actors at its inception two years ago, the grasscutter initiative has evolved into a diverse coalition of social actors, flexibly connected through a variety of networks. A faculty member and animal scientist at the University of Science and Technology in Kumasi Ghana, and an animal science senior extension officer in the Ministry of Agriculture have been important stakeholders in this process, linking scientific technical knowledge on grasscutter domestication to youth innovative activities on the ground. This mode of social organization is not a cumbersome formal structure, but rather opportunistic creations fashioned and guided by like-minded individuals (Uphoff, CIIFAD Annual Report, 2000:120). The new role relationships emerging in the grasscutter innovation project show how community partnerships are becoming a central feature quite different than the initial strategy in which knowledge-generating and disseminating institutions were the primary actors driving the technology development process.

The synergies that have been created in this micro level case of farmer innovation indicate that where partnerships and participation with farmers and rural communities are democratic and farmer centered, extension services are more likely to identify the appropriate actors in the most effective ways. However, among the important emerging lessons is that establishing and sustaining effective partnerships between farmers, rural communities and extension institutions does not just happen. There are often important transaction costs involved in forging such partnerships and facilitating process.

Social organization for learning: transaction costs and community capitals

Informal discussions and focus groups sessions with the stakeholders in grasscutter innovation indicate the importance of spending much more than fleeting moments with communities especially at the initial phases of project development. Barriers to community participation are often embedded in uncertainty relating to potential risks and outcomes. In particularly poor and vulnerable rural contexts, such perceptions take on even more serious significance. Farmers also often balance a number of farm and non-farm production activities to satisfactorily meet household livelihood security. This raises the question of possible constraints rural people face in prioritizing among a whole range of different activities. It was evident from the group forums and semi structured interviews that the development of the informal youth organization was a slow process, partly because it was difficult at the initial phase to reach a critical mass of youths in the community who may have been involved in other production related activities.

The development of group identity and trust between individuals and institutional actors also require tremendous investments in time and other material resources. An important transaction cost evident in the project is the community-paced approach adopted as stakeholders have slowly learned their way through on how to partner in the process of innovation. As Jules and Uphoff (2002) observe, it is important for outsiders working with local groups to first foster an environment for dialogue, negotiation, humility, patience and respect for local norms as critical preconditions for facilitating learning in a participative and democratic way. Studies have shown that where such social capital indicators are evident, local people are more likely to be motivated to participate with genuine commitment to collaborating with institutional actors for initiatives that lead to sustainable changes in agriculture and resource management (Kroma and Flora, 2001; Russell and Ison, 2001).

Conclusion

The case study shows how various stakeholders (farmers, rural communities, extension, researchers and NGOs) are learning their way through to a partnership that supports farmer innovation in agriculture and natural resources management. The underlying theoretical framework shaping the partnership and the transaction costs involved in sustaining the process are highlighted.

The case study identifies key elements and characteristics of effective partnerships between farmers, research and extension. Small group community based forums for joint analyses, and farmer-
to-farmer exchange of knowledge emerge as significant factors sustaining motivations for participation. The group learning process has fostered important synergies between youths and the broader rural community. A recent development providing a key indicator of community buy-in was the award of seed money by the district administration for an increasing number of youths interested in startup experimentations on grasscutter management.

The study also illuminates the potential inherent in a broader role of extension. Emerging realities at local, national and global levels as economies restructure demand a more strategic extension, responsive to new complexities in community resource management and agriculture. Such a strategic extension approach will require institutional actors not only embracing participatory methods, but also undergoing shifts in values and normative positions relating to the roles of ordinary people in the process of innovation.

The study highlights an example of how institutional innovations in research and extension can transform farmer learning and strengthen their capacities where traditional constructs of technology generation and adoption have not been very successful in engaging farmers. It also contributes to increasing the knowledge base of agricultural professionals on emerging concepts and approaches for working with small farmers in research and extension in Sub-Saharan Africa.

References