Developing Local Organizational Capacity for Participatory Seed Management: Experiences from the Eastern Himalayas

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Abstract

This paper describes the objectives and goals of a participatory seed-management initiative that is presently being conducted in the Sankhuwasabha District of eastern Nepal as part of the Gender, Ethnicity and Agrobiodiversity Management" project. The long-term goal of the project is to develop local capacities to effectively manage existing genetic resources through the development of skills that enhance crop improvement. The research is based on an interactive methodology that emphasizes devolution through varying levels of farmer participation in the research process. Both men and women farmers are included in the project, with the requirement that they be involved in farming as a full-time subsistence activity. Specific problems faced by farmers in the area, such as out-migration of men looking for wage-work and a yearly period of food scarcity lasting as long as six months, are highlighted.

Introduction

Situated in the remote mountain regions of the eastern Himalayas, the "Gender, Ethnicity and Agrobiodiversity Management" project proposes to develop the research capabilities of selected local people in four sites: eastern Nepal, Sikkim, Bhutan, and Nagaland. The immediate objective of the project is to develop a local capacity to conduct research to better understand the causal links between ethnicity and gender and how these components affect and influence decisions related to management of agro biodiversity. However, the broader, long-term goal of the project is to develop local capacities to effectively manage existing genetic resources through the development of skills that enhance crop improvement. Within this latter context, a participatory seed management initiative is currently being implemented in one site (Nepal) with the objective of broadening the experiences gained from this process to other sites in the region.

The participatory seed management project is being conducted in three adjoining "village development committees" (VDCs), which are village-level administrative units of the Sankhuwasabha District of eastern Nepal. In broader terms, the project aims to enhance and develop new technologies for seed management in marginal mountain communities that lack access to new seed sources. The following hypotheses articulate the more specific objectives of the research project:

- The development and enhancement of seed-management technologies will occur most effectively through a process of interactive learning between indigenous and formal systems of agricultural development.
- Access to improved technologies can be most effectively sustained through community action. This necessitates the enhancement of existing technical skills for seed improvement, along with the organizational capacity of community-based organizations to ensure community access to these improved technologies.

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- Finally, the success of community action to manage development processes will depend fundamentally on the community's ability to control the processes of knowledge production, design, and implementation of actions.

The practical implications of this methodology can be summarized as the need to search for ways in which participatory research can be part of an ongoing process. Inherent to the process is the acknowledgment that power relations between researchers and the *researched* is problematic and that there is a need to develop a process of critical reflection that situates the production of knowledge and action within a specific context of a negotiated process, emphasizing community action (see also Koning and Martin 1996).

The setting

The major ethnic group inhabiting the research sites is an ethnically distinct but heterogeneous group of people known as the Rai. Together with a related group of people known as the Limbu, the Rai refer to themselves as *Kirats*, a term employed as much to unify all the various "tribes" and clans as it is a political statement employed to distinguish them from the dominant Hindu majority. Having until the recent past practiced a distinct system of communal land tenure known as *kipat,* the *Kirats* constitute one of the oldest ethnic components of the region. Yet in decades following their integration into Nepal after the "unification" in the mid-18th century, the *Kirats* have been confronted with numerous challenges to their traditional way of life. Dominant lowland influences have resulted in changes in sociocultural practices associated with traditional land-management practices and given rise to the ubiquitous rain-fed and irrigated terraces (*bari/khet*) that suit wetland paddy and other lowland crops. In the process, engineered landscapes have replaced extensive areas of forest cover where traditional swidden (slash-and-burn clearing) was practiced.

Compounding the asymmetry of historically derived center/periphery relations are constraints imposed by the harsh mountain environment. Typical of the eastern Himalayan region (see Shrestha 1989), human settlements are situated in elevations ranging from 500–2000 meters, where land-distribution patterns combine with steep slopes and shallow soil depths to severely constrain agricultural activities. The land-distribution figures of Tamku VDC (table 1), where the research sites are located, demonstrate the environmental constraints that the inhabitants are confronted with. From the total available land, only 10.6% is suitable for agriculture, and from this total arable area, 54% has slopes of 40 degrees and soil depths of not more than 20 cm (Goldsmith, 1982).

Asymmetrical center/periphery relations embedded in historical processes have contributed significantly to the present deteriorating state of local institutional capacities to negotiate and orient

Table 1. Land Classification of Tamku VDC

Agricultural lands	10.6%
Grazing lands	14.6%
Shrubs	7.8%
Deciduous forests	35.6%
Subtropical forests	10.8%
Rock ice	20.6%

Source: Khanal (1992).

development services to their benefit, especially to counter the period of food deficit that typically lasts for four to five months a year. Unable to support their subsistence needs through crop yields alone, many households have male family members migrating in increasing numbers to urban centers in search of employment, leaving women and children to manage and care for the farm. An additional outcome of prolonged periods of food deficit is the inability of households to save seeds from consumption in times of stress. This, along with deteriorating local knowledge about seed-management practices and the absence of organizational capacities to access external sources of improved seed technologies has profound implications for the long-term subsistence of households in the region. It also significantly determines the nature and type of research methodology to be adopted for particular sites.

The research process: An interactive methodology

The objectives of the project evolved in several stages of a diagnostic process that sought devolution by emphasizing community participation in increasing stages during the research process. In order to facilitate community control and ownership, the methodology was developed from the principles of problem posing, dialogue, and reflection based on the Freirean (1972, 1973, 1978) notion that community involvement in the development process can be generated through developing a critical awareness of the causes of problems. The diagnostic process involved the following steps:

1. A survey was conducted to establish the need for a participatory seed-management initiative, based on the following research themes:
   - assessing the capacity of local community-based organizations
   - determining existing patterns of food sufficiency
   - identifying appropriate crop(s) for enhancing improved seed-management strategies
   - determining factors for farmer participation through gender-differentiated varietal assessment of identified crop(s)
   - determining the source of germplasm, either in existing local varieties or through external means
2. Analysis was done through a critical examination of baseline data to determine how the problem of food deficit is contextualized by community members. That is, are problems of food deficit linked to just economic issues of subsistence or are they affected by social dynamics of decision-making? And to what extent are these embedded in the values and cultural constructs of the community? Conceptualized problems in this way necessitates posing the following questions:
   - Do the issues deal mainly with problems of subsistence, decision-making, or values?
   - Where will action most likely come from?
   - What will most effectively motivate people?
3. Problem-posing material was prepared through the development of codes, which are representations of existing problems in the form of stories, dramatized enactments, pictures, results of participatory rural appraisal (PRA), etc. Fundamental to the preparation of codes is the need to ensure that they present a scene showing a concrete experience of the problem, which is familiar to the participants.

4. Discussion was directed through an interactive workshop whereby community members participated in defining the problem of food deficit and searching for solutions. The primary objective of this process was to develop a critical awareness of the problem of food deficit through the search for potential solutions. Additionally, the process also creates a context for the community to provide comments on the research results and to define the direction of the process. The process begins with a description of codes, followed by a first analysis, which is then related to real life and followed by a deeper analysis, ending in self-reliant action planning.

Farmer participation in the research process

The degree and type of farmer participation depends principally on the objectives for participation, as well as the context, as determined by the particular stage of the process. Thus, the diagnostic phase, consisting of the survey, analysis, code preparation, and discussion, involved varying levels of farmer participation. In the survey, three members of the community and two project members comprised the research team. Clan elders and farmers selected on the basis their knowledge related to seed management were consulted about the relevance of the project. In addition, the executive body of community-based organizations were consulted to establish interest in developing a working partnership to conduct the project.

The survey was conducted to establish (1) a crop inventory, (2) to determine the needs and priorities of different groups, based on gender and wealth considerations, and (3) to identify crop for improving seed-management technology. At the same time, farmers were selected for consultation on the basis of their knowledge, financial status, and gender. The subsequent analysis of the data to develop appropriate codes was conducted in collaboration with local researchers and farmers.

The main objective of the workshop that followed was to present the codes to the larger community

Table 2. Types of Farmer Participation

	A	B	C	D
Survey		x		
Analysis		x		
Code preparation			x	
Discussion				x

Source: Adapted from Biggs (1989).
Note: A = contractual; B = consultative; C = collaborative; D = collegiate.

to understand the root causes and potential solutions to problems of food deficit in the region. The selection of community members was based on the criteria developed in prior consultation with local members of the research team. During this stage of the interface, farmers were more extensively involved in the direction of the discussion of research findings, as well as decision making to determine the level of participation in setting the agenda for future action.

User differentiation

The selection of participants was determined by the following criteria:

- demonstrated instances of innovation in seed management and knowledge of causal links between problems of food scarcity and gaps in existing seed-management practices
- gender-differentiated knowledge and gendered experiences
- farming for subsistence as a full-time subsistence activity

Innovation

The participants selected for participation in the research process demonstrated varying degrees of innovation in crop management. The type of innovations ranged from pre-harvest selection practices to post-harvest storage practices. In some instances, the practices were learned from experience gained externally, as in the case of selecting for desired traits of rice during the pre-harvest period or experimenting with new strategies as in the case of post-harvest storage of maize mixed with millet to reduce pest attack.

While post-harvest selection practices were common for crops such as maize and millet, pre-harvest selection was practiced only on paddy. One farmer, selecting specifically for larger panicles, denser grain quality, and tall height in a landrace (*punche dhan*) was successful in producing a "variety" subsequently named after him (*changkhu dhan*, literally "Changkhu's rice"). This "variety" is currently widely adopted by other farmers in the community, with Changkhu presently selecting for early maturation to coincide with the planting of winter wheat.

In seed-storage technology, some innovative farmers experiment with the leaves of a locally available plant (*bojo*) to ward off pest attacks on maize seeds. Dried leaves of this plant are placed in the bottom of the seed container and alternately in several layers approximately every three to four inches, then the container is sealed by additional leaves at the top. Sealed in September or early October, the relatively airtight spaces and the toxic nature of leaves sufficiently wards off pest attacks.

In another example, one woman farmer, noticing that millet grains were free of pests that attacked maize seeds, began mixing a handful of millet grains in the container where maize seeds were stored. This relatively simple practice was based on her observation that millet seeds were free from the pests that attacked the maize seeds that were stored in close proximity to the millet.

Knowledge and gendered experiences

In varietal assessments of maize, conducted separately between women and men farmers during the initial research phase, women and men listed different categories of preferences based on their roles and experiences. Men listed four varieties of maize, mostly modern varieties that had been introduced into the community in the last several years. Women, on the other hand, listed eight varieties, mostly landraces whose use had been discontinued in the project site but existed in the women's natal villages. Women cited fodder quality, ease in grinding, and taste as the primary criteria for their preference of landraces. Men, on the other hand, cited high yields, early maturation, resistance to drought conditions, and market prices as important in their preference for modern varieties. An additional ranking of maize varieties among farmers revealed differential knowledge and preference priorities between women and men (table 3).

Farming for subsistence

That participating farmers be involved in farming as a full-time subsistence activity was an important criteria for selection for two reasons: the first was prompted by the project need for the uninterrupted involvement of participants for two production seasons (for most farmers in the area,

Table 3. Varietal Knowledge and Preference Ranking of Maize for Men and Women

Women	Men
1. bhote' paheli	1. manakamana-1 (MV)
2. paheli	2. dhude' seti
3. dudhe' seti	3. paheli
4. bhote' seti	
5. tamlunge' seti	
6. arun-2 (MV)	
7. manakamana-1 (MV)	
8. chepti seti	

food-scarcity periods necessitated involvement in off-farm activities for supplementing household incomes); the second was because those farmers who were involved in farming as a "full-time" activity showed a greater inclination to be relatively self-sufficient in food production, even during the scarcity period. Of the nine farmer participants in Tamku VDC who were included in the "innovative" category, all claimed sufficient food security during the year and could be counted upon by other community members for food loans during periods of food deficit.

Out-migration of men to urban centers in search of employment is one of the primary strategies employed to counter food deficits. In the past, it was common for men and women to become involved in reciprocal arrangements within the community during times of food shortage. Usually this involved providing labor for wealthier farmers in return for food provisions during times of scarcity. Increasingly, however, the present trend is for the majority of young men to migrate to urban centers to work as porters for trekking companies, perform menial jobs in restaurants and hotels, or migrate to the Middle East (*arab*) through the numerous employment agencies that have sprung up in Nepalese townships.

In addition to out-migration, people also forage for a variety of forest foods (*kandamul*), although a degree of social stigma surrounds foraging activities, principally through the perceived notion that it is part of the "primitive" past.

At the household level, food-preparation strategies also play an important role in "making it last longer." Grains are boiled with excess water, creating a porridge-like consistency to increase the quantity. "Visitors and guests" during the time of scarcity are actively discouraged from visiting, though some women participants cited visiting relatives (preferably the natal home, for married women) as an option to combat food shortages.

A seasonal calendar for food production reveals a period of severe food scarcity between the months beginning in late February and lasting till early July. The relationship between food production and out-migration, especially of males to urban centers in search of employment, is directly proportional to the increasing number of female-headed households as well as the additional, "gendered" burden of farming responsibilities that this trend implies. Moreover, there was a strong relationship between decreasing food production and poor access to seed sources and deteriorating seed-saving practices. Research suggested that the deterioration of seed saving was not necessarily related to loss of knowledge but was, rather, determined to a large extent by food scarcity and the additional burden of farm households to do "other things." Increasing trends in food scarcity over the last few generations have resulted in people consuming instead of saving seed material.

Though there were many reasons for food scarcity, research demonstrated a causal relationship between decreased crop yields and the inability to manage seed, in terms of both maintaining seed purity (*saadha biyu*) and poor seed storage practices. Moreover, access to the Agriculture Input Sector (AIC), a public-sector undertaking responsible for seed supplies was difficult, since it is situated in district headquarters a day's walk from the village and using it often proves to be a difficult bureaucratic process beyond the reach of individual farmers. The consequences of low yields, the inability to maintain seed purity, and lack of access to reliable sources of new germplasm all contribute to food scarcity in Tamku.

Lessons learned: Reconceptualizing participation and knowledge

In order to address the objective of developing improved seed technologies in marginal mountain environments while emphasizing community control of the management of the process, it becomes important to conceptualize farmer participation in the research process as an instrument of empowerment. One principle way forward in this direction is to situate farmer participation in the context of local knowledge. In doing so, however, it becomes important to view knowledge, or indigenous technical knowledge, beyond common representations of its being produced as a rational response to environmental contingencies (e.g., Mathias-Mundy et al. 1991; Howes and Chambers 1980; Brokensha, Warren, and Werner 1980). Instead, it becomes important to situate indigenous technical knowledge within cultural categories of meaning, which can then become an empowering base for participation in the interface with more powerful external categories of knowledge.

The workshop discussions revealed how empirical experiences cannot be separated from cultural experience, especially in the way Rai farmers talk about food scarcity and place the phenomenon in a mythic context. Local discourse of food scarcity finds expression both in the dominant Nepali language as well as the various dialects of the Rai group. The words to describe food scarcity range from *anikal* (food shortage), *bhokmari* (to kill hunger), *mahamari* (the great killer), and *sisawa* (famine) in the Kulung dialect of the Rai. It also finds expression through simple expressions such as "*khana ko abab hunu*" (to be short of edibles), "*dhayrai/chitto bhok lagnu*" (to experience hunger pangs sooner and more frequently than normal), "*chasum na hunu*" (to lack prosperity), as well as more abstract expressions, such as in this lament in the Kulung dialect "*Etenay sisawa udanai lay tay ho wumche"* (dear friends and brothers, . . .how do we survive the *sisawa* [food shortage] this year?) or the more common instructional verse admonishing people to save seeds to combat food shortages "*Almal ma jiyu bachhaunu, Anikal ma biyu bachhaunu"* (save oneself in times of confusion, [but] save seeds in times of [food] shortage) or "*Chha geda sabai mero Chhaina geda sabai tendo*" (having seeds, all is mine, [not] having seeds, all is not mine [i.e., lost]).

In the indigenous schema, food scarcity is a condition of cultural "disorder" that has its genesis in the curse that one warring ancestor castes upon another for perceived treachery. In cultural terms, the condition becomes inevitable and requires annual propitiation of the ancestor through ritual appeasement. The myth, consisting of ancestral deeds that include the settling of present territories, serves as a metaphor for the sacred relationship that exists between the Rai and the delimited territory they occupy. Traditional Kirati notions of ethnicity cannot be separated from this relationship and are symbolized by an ancestor stone that is situated in every village and propitiated in annual agricultural ceremonies (*ca:ri*).

What such a view of knowledge implies is that by granting legitimacy to cultural epistemologies, indigenous explanations for empirical categories are not subjugated by rationalist scientific explanations and thereby become an empowering element for farmer participation. Within such a context, the transfer of technical skills to enhance seed technology neither diminishes nor disempowers indigenous systems of meaning.

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