

Enhancing farmers' marketing capacity and strengthening the local seed system: Action research for the conservation and use of agrobiodiversity in Bara District, Nepal ¹

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Photo credit: Deepa Singh

BACKGROUND AND CONTEXT

The Country and the Research Site

Nepal is a mountainous country; it extends from the Indo-Gangetic plains in the south (60 m above sea level) to the high peaks of Mount Everest (8,848 m above sea level) in the north. The country is divided into five ecological regions: the Himalayas (over 4,000 m above sea level); high mountains (2,000–4,000 m); mid-mountains (1,500– 2,000 m); the Siwalik range (300–1,500 m); and the extension of the Indo-Gangetic plains in the western part of the country, also known as *terai* (less than 300 m). The climatic conditions range from tropical in the south to freezing alpine in the north.

Nearly 81 per cent of the people of Nepal rely on agriculture for their livelihood (CBS 1999). Farming is subsistence oriented; landholdings are small and fragmented, usually less than 1 ha per household, and families are large (average of 5.6 people per household). Productivity is generally low at less than 2 t rice/ha. Farming is labour intensive and women play a major role in farm activities. On average, they contribute up to 75 per cent of total agriculture labour (WFDD 2002).

Kachorwa, where the research described in this chapter was carried out, is a small village in the Bara district (Figure 4.1). It is situated in the Indo-Gangetic plains and experiences a subtropical climate. The mean annual temperature in the area is 24°C; January is the coldest month and May the hottest (35.4°C). Kachorwa is typical of the settlement pattern in the *terai*, where clusters of houses are surrounded by agricultural lands. The settlement at Kachorwa is an old one and can be reached by a rough pebble road. In the village the road is only usable during fair weather. The 914 households in the village comprise five ethnic

¹ http://www.idrc.ca/en/ev-93077-201-1-DO_TOPIC.html

groups: Brahmin-Chettri at the top of the social hierarchy, Sah, Koiri, Muslim and the lower caste or 'untouchables' at the bottom. The lower caste, which represents the most disadvantaged group, is socioeconomically and politically marginalized.

Both nuclear and joint families exist in Kachorwa, although there are slightly more nuclear families. The culture is typical Indo-Aryan, in which males are dominant and females are encumbered by taboos. Most women are confined to the house, especially in the richer farm families.

Figure 4.1 Map of Nepal Showing the Research Site



Source: Perry-Castañeda Library Map Collection.

The people of Kachorwa depend on a combination of on- and off-farm activities for income. Most engage in subsistence farming, usually growing three crops a year.

The level of interaction between villagers and the research and extension system is high; there is also contact with the wider Indian region across the border in terms of technologies and agriculture inputs. This is in contrast to many other parts of the country and makes this case study particular. Cultivated land is mostly *khet* (irrigated and rain-fed) land; *bari* (non-irrigated) land (*bhitha*) is found in only a few villages. Kachorwa is rich in terms of crop diversity: 18 crops and 34 vegetables are grown. Species diversity is also very high; in the case of rice, 24 different varieties are grown.

Link to the 'In-Situ Crop Conservation' Project

Bara is one of three sites in the 'In-Situ Crop Conservation' project—a global project implemented in nine countries and coordinated by the International Plant Genetic Resources Institute (IPGRI). The Nepal Agricultural Research Council (NARC) and Local Initiatives for Biodiversity, Research and Development (LI-BIRD) have implemented the Nepal component of the project in partnership with farming communities and groups in Bara, Kaski and Jumla districts, which represent plains, mid-hills and high hills areas respectively.

The first phase of the project (September 1997 to December 2001) was funded by the Netherlands Development Agency (NEDA). Three main objectives were: strengthening the scientific basis of *in situ* conservation on-farm; capacity building of national institutions in

conducting on-farm conservation; and adding value to local plant genetic resources for the direct benefit of farmers. Considerable effort was made to include social and gender issues while planning and implementing project activities in the field. Several specific results have been achieved in the broad areas of assessment and adaptive management of local crop diversity on-farm; capacity building and creating representative partnerships; and mainstreaming the use of local crop diversity in agricultural development. Space constraints prevent us from providing more details (but see reports cited in the reference list—Gauchan 2000; Rana et al. 2000; Subedi et al. 1999; Subedi et al. 2001).

At the end of the project period many activities in and with farming communities were still in progress. Gaps and new needs were also identified. IDRC agreed to fund a second phase of the project for two years beginning in September 2002. Our research on social and gender analysis (SAGA) complements the second phase, particularly by providing a better understanding of the social and gender dimensions of rural livelihood and by strengthening grassroots organizations interested in improving the local seed system. Our research is action oriented and has three broad objectives:

1. enhancing the capacity of farmers at different socioeconomic strata and gender groups in seed production and marketing, thereby contributing to their economic improvement;
2. strengthening local seed marketing systems and networks; and
3. enabling government and non-governmental organizations (NGOs) to mainstream social and gender perspectives in agriculture research and development.

This represents a comprehensive and challenging agenda and, in this chapter, we highlight some of the work in progress.

KEY NATURAL RESOURCE MANAGEMENT ISSUES

Farmers in Nepal have been maintaining biodiversity to meet the diverse needs of their households. Many landraces of the region have unique characteristics; for example, Bhathi is an excellent rice that performs better than modern varieties under waterlogged conditions. In many places, landraces are the only option for the marginal lands the farmers rely on and they have contributed substantially to food security, especially of the resource-poor households in Kachorwa (Rana et al. 2000). Many rice landraces have been identified to have economic and social value, and they are in great demand. At the same time, lack of market information about their high-quality attributes has limited the supply of seed and grains of such crops, for example, Lalka Basmati and Kariya Kamod rice. Farmers also lack certain skills and knowledge about production techniques to use with quality seeds of local landraces (Gauchan 2000). Generally, farmers save their own seed from year to year, but research has shown that this method of seed selection and conservation could be improved. This is one of the tasks we identified as part of our work.

In Nepal landraces are exchanged through informal seed networks. However, the poor links between small-scale seed producers and market channels are considered a major constraint. Farmers have not been able to maximize the benefits of the biodiversity they maintain in their fields. Because modern varieties have higher average yields and fetch a better price, farmers are inclined to plant introduced varieties. Thus, there is a need to build the capacity of the farming communities to produce quality seed and to enhance their skills in marketing to strengthen the local seed supply system and seed marketing networks. A second step is to respond adequately to consumer demands and to investigate the prices of land-race seeds.

Farmers do not conserve biodiversity for the sake of conservation. However, conserving biodiversity is important for the whole society, and it is thus fair that farmers benefit from

their efforts. Providing market options can be among the least expensive conservation instruments (Brush 1991). Helping market local crops and linking small-scale seed producers with markets could be effective ways to benefit farmers.

Integrating Social and Gender Analysis into Natural Resource Management

SAGA helps us understand the roles that different members of household groups and families play in natural resource management. The management of agricultural biodiversity involves a series of decisions about planting, managing, harvesting, processing, exchanging and acquiring seeds that affect the process of evolution and adaptation of crops to their environment (Jarvis 2000). Understanding how farmers make decisions about the management of biodiversity has gender dimensions; the work and responsibilities men and women undertake differ, resulting in diverse experiences and distinct knowledge (Adamo and Horvoka 1998; Subedi et al. 1999).

The seed system in Nepal encompasses a wide range of activities, and a particular person performs each activity. The division of roles and responsibilities has been built up according to the knowledge and skills of women and men, which have been passed on from one generation to the next. Seed production and the management of biodiversity are truly *social* phenomena.

Access to resources and knowledge vary between groups of different social status, giving rise to inequities in social and gender dimensions. To a large extent, the resource-poor households rely on resource-endowed farmers for genetic materials through farmer-to-farmer networks, which often extend beyond the village boundary (Subedi et al. 2001). Farmer-to-farmer networks play a significant role in the dissemination of genetic materials (seed and planting materials) as well as associated knowledge. In this type of system a (usually small) number of people of higher social status introduce and distribute seeds. We have termed them 'nodal farmers' (ibid.). Understanding the social relations in the networks is an important first step toward strengthening and expanding their function; for example, to increase the efficiency and effectiveness of the dissemination of technology. This, in turn, can contribute to the early realization of benefits accruing from adoption of the technology by different categories of farmers.

Our research aimed to address the following broad questions: What is the existing situation in terms of consideration of social and gender perspectives in agriculture research and development? What are the constraints to integrating social and gender concerns into agricultural research and development? In addition, specific research questions were more related to the seed system in Bara: What are the roles and responsibilities of different social and gender groups in seed production and marketing? What is the existing seed flow mechanism? How can the existing seed marketing systems and networks be strengthened?

FIELDWORK

Review of Literature

Two literature reviews were carried out in the initial stages of the study: one on existing seed production and marketing methods (for example, the Nepalese seed regulation policy of the Ministry of Agriculture and proceedings of workshops hosted by the Nepalese Seed Board), and the other on mainstreaming social and gender concerns in agriculture research and development (for example, NARC policy documents, Ministry of Agriculture policy and planning documents, the Nepalese government's Five-Year Plans). We paid particular attention to how SAGA has been mainstreamed by NARC in research and by the Ministry of Agriculture and Cooperatives (MOAC) and the Department of Agriculture (DOA) in policy

and extension. We tried to identify limiting factors and opportunities to facilitate the effective integration of social and gender perspectives into agriculture research and development.

Interactions with Government and Semi-government Personnel

Based on the literature review, we identified agriculture research and development organizations and institutions that have taken on the responsibility of mainstreaming social and gender concerns. A series of meetings, personal interviews and focus group discussions were conducted with personnel from the outreach division of NARC and the Women for Development Division (WFDD) of MOAC. Gender focal point people and members of gender working groups of MOAC were also contacted.

A focus group discussion was conducted to document past efforts toward integrating social and gender perspectives into agriculture research and development. An in-house discussion among LI-BIRD project staff was held and a checklist of questions was developed regarding the current status of these efforts as well as constraints and enabling factors.

Our interactions with government staff were problematic. Getting appointments was difficult. We also found that most people we interviewed had no clear understanding about gender or that other, sometimes contradicting, ideas exist. Conversations repeatedly tended to focus on women's issues rather than gender issues, forcing us to bring the topic back on track, which was not always appreciated by the higher authorities whom we interviewed. Our sample group was limited and, therefore, we cannot generalize about this situation. However, the experience made us more aware of the challenge, the on-the-ground realities, and the processes playing out in policy-making spheres. It also intensified our own attempts to pay attention to and integrate social and gender issues into our field research.

Rapid Assessment of the Market

Various participatory research tools were used to acquire insight into the existing rice seed marketing systems. Questionnaires were developed and a series of market studies was conducted. Focus group discussions were carried out with nodal and other farmers, followed by key informant interviews to document existing knowledge and the skills of both women and men. A detailed market survey was conducted with a total of 98 respondents (representing different ethnic groups, socioeconomic strata and sexes). Attendance at the local weekly markets (*haat bazaar*) allowed us to observe directly the trends in seed transactions. These methods proved useful and generated valuable insights into the everyday realities of farmers and vendors, their interests, aspirations, problems and constraints.

Training in Mass Seed Selection

A training manual and posters on rice seed selection were prepared. The training was conducted in two phases. The first included an initial orientation before planting and training in seed selection in the standing crop. Quality control, packaging and labelling were all covered during the second phase. Resource people from the National Rice Research Station and Regional Seed Laboratory were invited to give the training, which was highly appreciated by the participating villagers.

Stakeholder Workshops

Workshops were held for various stakeholders, such as seed producers, agro-vets, rice seed sellers and grain sellers within and outside the village to disseminate information about ongoing activities and to assess the demand for local rice seed.

During fieldwork, especially in Kachorwa, we experienced several constraints. As mentioned, Kachorwa is a typical *terai* village. Villagers speak the Bhojpuri dialect and Hindi is

understood to some extent; thus, language was one of the barriers, although interactions were manageable. The cultural barrier proved to be much more of a challenge. Interviewing women was very difficult, as they are not allowed to interact with 'outsiders'; thus, repeated visits were necessary to build rapport and make the women feel comfortable speaking out. In addition, men were uneasy speaking to women from 'outside'. Interviewees were sensitive about answering questions about decision making. We dealt with this by explaining gender issues repeatedly and asking them if they understood our questions.

SOCIAL AND GENDER PERSPECTIVES IN AGRICULTURAL RESEARCH, EXTENSION AND POLICIES

Getting Social and Gender Issues into the Mainstream of Agriculture Research

NARC is a leading, autonomous centre for agriculture research in Nepal. Its major challenge is to develop technologies that will enhance or support high and sustainable economic growth, alleviate poverty and ensure food security in the country. This goal can only be achieved by developing technologies that match the socioeconomic needs of the farmers and are socially acceptable and viable. To address this challenge, socioeconomic research was initiated in 1977 by the agronomy division. However, social and gender studies are currently conducted by the outreach division, based in Khumaltar, and in some regional and area-specific agricultural research stations within the country.

Social research is not yet strong in Nepal. Sound social analysis prior to the development of any technology has yet to be put into practice. We learned this during interviews with government staff by discussing a number of examples. For example, a new zero-tillage system and a rice-planting machine that were developed and promoted by NARC have both positive and negative impacts. They reduce the overall workload of farmers substantially, but at the same time reduce employment opportunities for those who work as labourers.

Another example is the hybrid varieties that are being introduced in all major crops. These are expensive and require an optimum environment and inputs. Hybrids may be high yielding, but may not be suitable for all categories of farmers or for the niche agro-ecology of the country. We initiated a joint research effort between NARC and LI-BIRD to address this shortcoming by identifying a wheat variety that is suitable for rain-fed conditions. Such a variety would require less water and be more suitable for poor farmers who cannot afford irrigation facilities. Another socially conscious initiative developed by the national research system is a set of mushroom cultivation practices that targets different categories of farmers instead of a single model package for all. What is important in both these examples is that actual research work takes place at the farm level with farmers involved. This approach is not as easy as it sounds, and we still have a lot to learn about how to do it well, but it is central to LI-BIRD's philosophy.

NARC's new 20-year strategic plan states that the centre's future research will take gender concerns into account. The plan mentions a rising concern about clients and their needs, and the need to increase the rate of adoption of new technologies. In past years some studies focusing on gender aspects have been carried out by the outreach division, but they were confined to the central level. The outreach division identifies needs and formulates programme activities at the so-called 'outreach sites', and some women participate in these outreach activities. Some simple technologies were developed to meet women's requirements, for example, for fruit thinning and processing. Women are also involved in such activities as visits and on-farm trials conducted by NARC.

NARC has also been including gender concerns or women's issues in the development of research proposals, and it has carried out studies of the impact of new technology on male

and female beneficiaries. For example, when milk marketing opportunities were created, men took over the sale of milk from women, and the resulting cash income was spent mainly on men's personal needs. However, NARC scientists perceive this area of research as a separate programme activity rather than a core part of its work.

NARC and LI-BIRD are working together on another initiative in participatory plant breeding. Special attention is being paid to women in participatory technology development, particularly in the development of a new maize variety. In Gulmi, with LI-BIRD's support, Resunga Composite, a new lodging-tolerant variety of maize, has been developed by a woman farmer-breeder. This very successful variety is now in the process of being released by the national system and represents a good example of strong and meaningful farmer participation. Through NARC–LI-BIRD collaborative efforts, we hope to demonstrate how NARC scientists can change their conventional practices. Working with women and men farmers on their farms is a crucial element in our way of doing research.

Social and Gender Perspectives in Extension Work

Nepal's agriculture extension system has made several attempts to incorporate gender concerns. However, other social factors or perspectives are still ignored. The implementation of extension programmes is mainly based on simplistic socioeconomic categories, such as rich, intermediate and poor. Different programmes are designed and implemented for each category of farmers in a community, but in practice there are many problems. No specific or detailed needs assessments are made, and, most critically, the very poor farmers have been and continue to be ignored by the system.

In Nepal all so-called gender-focused activities are centred on women. Instead of integrating gender perspectives into the system, separate activities are implemented for women. The inclusion of a certain percentage of women in various agricultural development activities was made compulsory in the extension system's five-year operational plans, beginning at 25 per cent in the Eighth Five-Year Plan (1992–97) and increasing to 35 per cent in the Ninth Plan (1997–2002). Currently, it is set at 40 per cent in the Tenth Five Year Plan (2002–07).

There are numerous special programmes for women. In addition, at the policy level the inclusion of the maximum number of women in pro-women technology development is promoted: for example, in vegetable production, food preservation and integrated pest management (IPM). Income-generating activities for women farmers—in vegetable production, bee-keeping, agro-processing and marketing—are carried out every year by district offices. District agricultural development offices (DADOs) conduct separate training sessions exclusively for women farmers; they also include women in regular activities. DADOs carry out gender matrix analysis to select participants for farmers' field school in post-harvest, irrigation and IPM practices. Women IPM trainers have been identified using this gender matrix analysis tool. In Bhaktapur women are conducting trials on the management of potato tubers. Rewarding women farmers based on their performance and contributions in agriculture is another DADO practice.

The MOAC also recognizes women's contribution to agriculture. For example, on World Food Day, the WFDD has been recognizing the achievements of women farmers for their work in agro-processing in five development regions. Women farmers are also encouraged to become involved in marketing. The WFDD has been providing them with market stalls in the Kalimati vegetable market. In Kathmandu some women farmers are providing fertilizer to other farmers. The WFDD includes women farmers in problem census and problem surveys and in its annual district-level programme planning. However, this is not widespread.

In summary, a start has been made toward the inclusion of social and gender perspectives in agricultural research, extension and development. However, several serious constraints still exist. Factors at the policy, implementation and grassroots levels narrow the possibilities for addressing social and gender issues in a meaningful way.

Changes in attitude play a major role in the entrenchment of SAGA. Ignorance about the importance of social and gender aspects in planning, development and dissemination has resulted in the inefficient implementation of most policies. Existing social norms and culture influence the involvement of women and men in research and development. For example, cultural norms in the *terai* are very conservative; women here are confined to the household area. Technology dissemination and action research are hindered by this.

The personnel involved in research and extension at all levels are profoundly technical and many ignore the social aspects of developing new technology. Their lack of exposure to concepts, tools and methods for SAGA is a major setback for effective mainstreaming of social and gender concerns in agriculture research and development. The lack of conceptual clarity on social and gender issues and the failure to understand the importance of SAGA in programme identification, design and implementation are blocking effective mainstreaming.

To provide an example of how SAGA can be solidly incorporated in development research, we now turn to our case study of Kachorwa, Bara.

SOCIAL AND GENDER ANALYSIS OF THE KACHORWA SEED SYSTEM

Importance of both Modern and Local Varieties

Farmers of Kachorwa grow both landraces and modern varieties of rice to meet their diverse needs. Landraces have sociocultural value, are adaptable to niche environments and are favoured for their taste. Land-races are grown for different purposes by farmers of different socioeconomic categories, depending on their needs. Some landraces such as Sathi (Gamadi rice) are grown by all farmers—rich, intermediate and poor—in small parcels of land. This is an essential variety for the *Chath* festival, an important and widely celebrated festival in the *terai*. Other landraces such as Lajhi, Basmati and Kariya Kamod are grown for making other products like *khir*. Aromatic rice varieties, such as Lalka Basmati and Kariya Kamod, are grown for their good quality. These latter varieties are grown by the rich and intermediate farmers and are used exclusively for entertaining guests and for specific festivals. Some landraces such as Bhathi and Nakhi Saro are grown for their adaptability.

The rich farmers own larger parcels of land and have more options in choosing a rice variety to grow. Modern varieties are preferred over local varieties by all categories of farmers because of their higher productivity; taste and marketability are also important factors. Wealthier farmers appreciate the non-lodging character of certain modern varieties. Rich and intermediate farmers hire labour to work on their farms and pay labourers with varieties like Jaya and Sabitri. Farmers' choice of modern varieties also depends on such other parameters as straw quality, agro-ecological adaptation, cooking quality and milling characteristics (percentage undamaged grains). We found that these latter criteria are more important to women farmers and they relate closely to women's activities. Landraces are chosen by farmers in all three socioeconomic groups because of the role they play in religious functions. Rich and intermediate farmers also appreciate the importance of certain landraces for social functions, such as entertaining and festivals (Figures 4.2 and 4.3).

Figure 4.2 Reasons for Growing Modern Varieties of Rice

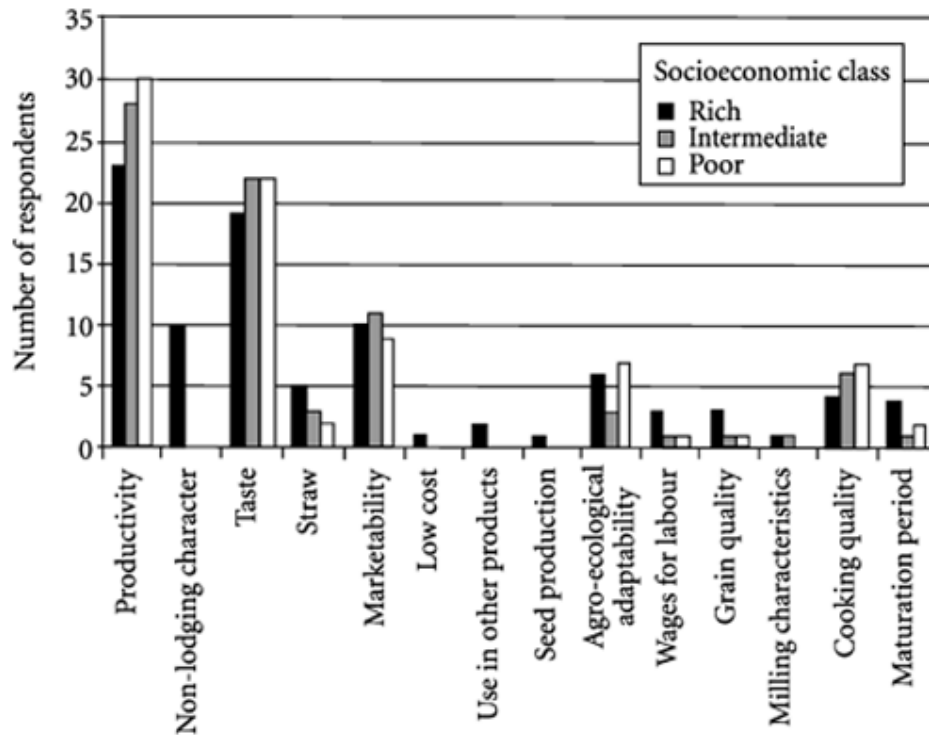
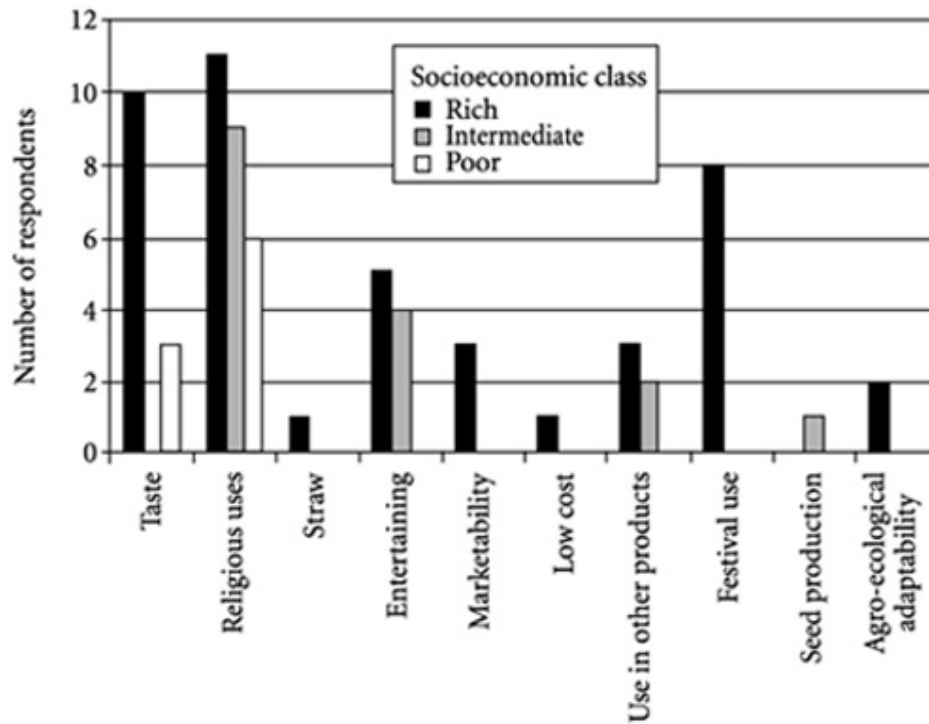


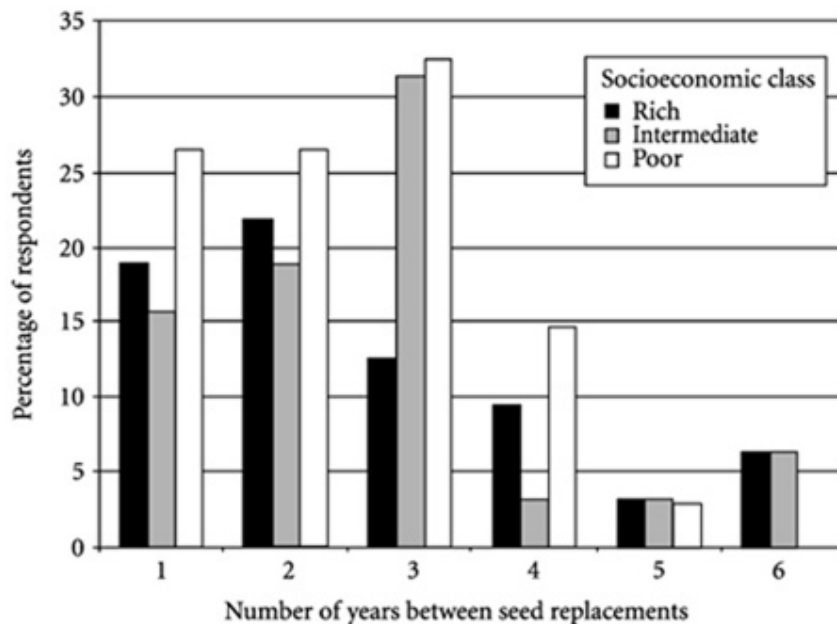
Figure 4.3 Reasons for Growing Landraces of Rice



The importance of seed purity of both local and modern varieties was well understood by all farmers. Better production was the main reason for maintaining seed purity; other reasons included uniform maturity, less pest infestation, consumer preference and better tillering.

Seed mixtures are a major problem in the case of landraces and they decrease the quality of the crop. The introduction of modern varieties necessitates the purchase of new seed for each crop or year. Mixing of seed due to out-crossing and mechanical mixing is the most prevalent problem perceived by most farmers. However, the rate of seed replacement and the reasons for seed replacement vary with social class and seed variety. Off-types are a more serious problem in the aromatic rices, such as Lalka Basmati, and these seeds are replaced every year. In the study area the rate of seed replacement varied from every year to once in six years. Seed replacement is more frequent among richer farmers, whereas an interval of three years was most common for intermediate (31.3 per cent) and poor (32.4 per cent) farmers (Figure 4.4).

Figure 4.4 Period of Seed Replacement for Three Socioeconomic Categories of Farmers



Seed Sources

In Kachorwa richer farmers have better access to seeds within and outside the village, which allows them to buy new seeds more frequently than intermediate and poor farmers, who do not have this kind of access.

Our fieldwork revealed that the informal seed system is predominant in terms of obtaining both landrace and modern seed varieties. However, most farmers depend more on the informal system for landraces, whereas there are other options for modern varieties. Most farmers in all three socioeconomic categories save seeds of both landrace and modern varieties for planting the next year. Exchanging seeds with neighbours and relatives, and purchasing seeds from agro-vets were other methods for acquiring landraces. Rich and intermediate farmers commonly bought seeds from agro-vets in and outside the village as well as from the Indian markets. Intermediate and poor farmers depend more on their own saved seeds and on seeds obtained through exchange locally. They find seeds sold by agro-vets expensive and in some instances they are not available on time. Poorer farmers also obtain seeds in exchange for their labour (Table 4.1).

In terms of seed quality, most farmers perceived that self-saved seeds are more likely to be pure than those obtained from relatives and neighbours. Other reliable sources they mentioned frequently were

Table 4.1 Sources of Seeds across Wealth Categories

| <i>Source</i> | <i>Landraces</i> | | | <i>Modern varieties</i> | | |
|---------------------|------------------|---------------------|-------------|-------------------------|---------------------|-------------|
| | <i>Rich</i> | <i>Intermediate</i> | <i>Poor</i> | <i>Rich</i> | <i>Intermediate</i> | <i>Poor</i> |
| Save from own crop | 15 | 19 | 5 | 63 | 65 | 44 |
| Relatives | 3 | 1 | 1 | 7 | 8 | 4 |
| Neighbours | 5 | 2 | 4 | 8 | 1 | 4 |
| Exchange for labour | – | – | – | 4 | 2 | 4 |
| Save + neighbours | 1 | – | – | 1 | – | – |
| Save + relatives | – | – | – | – | 1 | – |
| Agro-vets | – | – | – | 10 | 8 | 5 |
| NRRP | – | – | – | 5 | 2 | 1 |
| Indian markets | – | – | – | 10 | 7 | 3 |

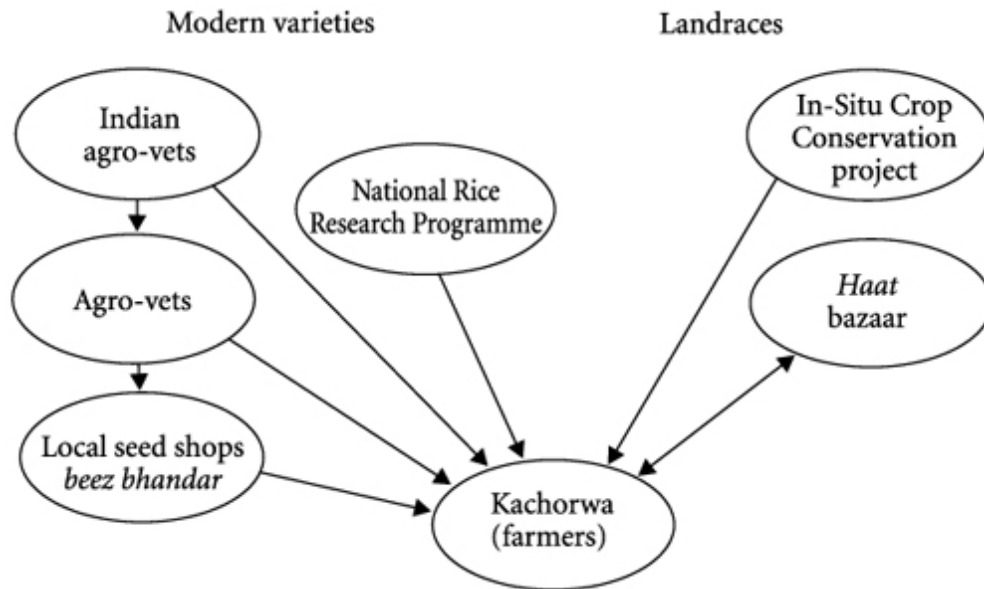
Note: NRRP = National Rice Research Programme.

agrovets and government farms; however, these sources deal only with the modern varieties. NARC's National Rice Research Programme is another source for modern varieties, and Kachorwa is situated close to a NARC research station.

The resource-rich farmers play an important role in seeking material from different sources, both within and outside the village. Nodal farmers play a significant role in trying out new varieties and facilitating subsequent seed flow (Subedi et al. 2001).

Another source of seeds is the weekly market, called the *haat* bazaar. Farmers bring small amounts of seed, especially landraces, to these markets to sell just before the planting season, although this practice is more common for vegetables than for rice. Seeds are also obtained from temporary shops (known as *beez bhandar*) before and during planting season. These are usually operated by richer farmers, who can afford to bring seeds and fertilizers from India. Figure 4.5 summarizes our findings graphically.

Figure 4.5 Existing Seed Marketing Channels for Kachorwa Farmers

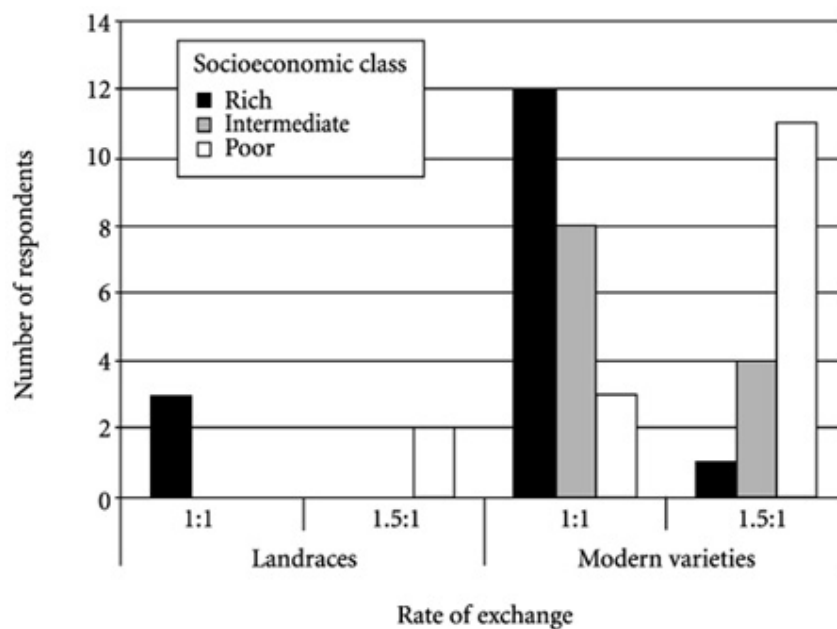


Source: Focus group discussion, 2003.

Types of Exchanges

The farmers at the study site engage in two types of exchange: seed-for-seed and seed-for-grain. For immediate transactions the ratio is 1:1 for both types of exchanges. However, the ratio is 1.5:1 when payment is delayed, for example, until after the crop is harvested. Poor farmers often must accept this higher ratio, because they do not have surplus seed to exchange and must wait to harvest the current crop. In other words, they pay more for their seed. Rich farmers usually have sufficient stored grain to take advantage of the lower rate (Figure 4.6).

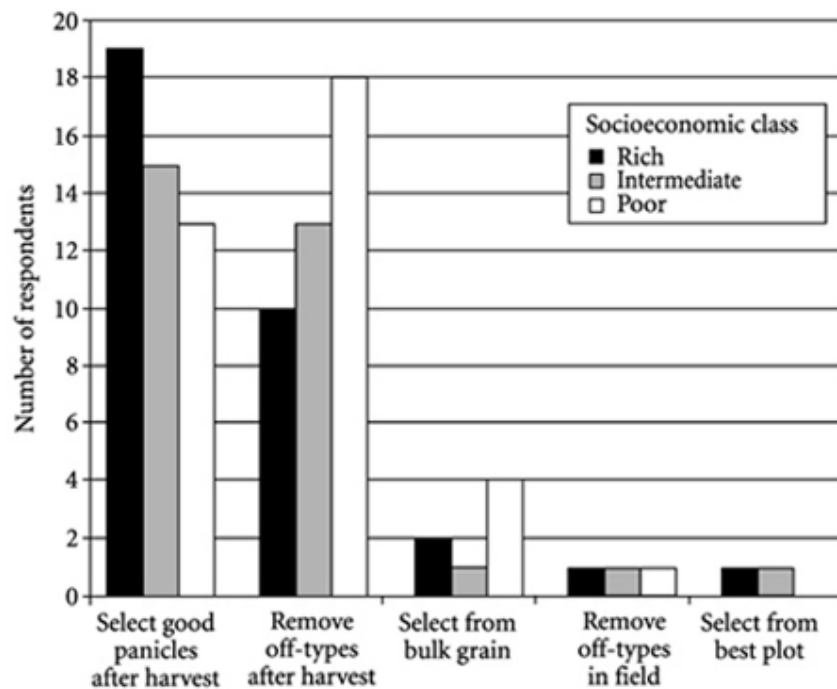
Figure 4.6 Rates for Seed Exchange across Socioeconomic Categories



Seed Selection Methods

Farmers adopt various seed selection methods to maintain the purity of their crops. The methods are the same for both local and modern varieties. The selection process can be divided into five categories that take place during harvest and storage (Figure 4.7).

Figure 4.7 Seed Selection Methods According to Wealth Category



The removal of off-types from bundles of harvested rice is the usual method of poor farmers. Removing off-types in the field and selecting seed from bulk grain are also common.

However, the seed selection process also depends on the amount of seed required and the cultural value of the variety. Critical and careful seed selection is carried out for varieties used for religious purposes. If only a small amount of seed is needed, farmers can select good panicles from the field. When a large quantity is required, farmers will generally simply remove off-types from bundles of grain as this method is less labour intensive and time consuming.

Seed selection practices vary with socioeconomic status. Poor farmers opt for the easier method of removing off-types from the bundles and saving the remaining seed. Richer farmers are able to hire labour for panicle selection. Interestingly, poor farmers said that they often do not spend much time selecting seed from their own crops because better quality seeds can usually be obtained from richer farmers.

Gender Roles in Seed Production and Marketing

The roles of women and men in decision making were explored for the various socioeconomic categories. Among rich farmers the selection of the seed variety was male dominated, whereas it was more a mutual decision among intermediate and poor farmers. Men play a dominant role in panicle selection among rich farmers; women are also involved in the intermediate and lower categories. Both men and women carry out panicle selection, depending on the availability of men during the specific season. Post-harvest operations like threshing and storage are exclusively female oriented, irrespective of socioeconomic category. Recently, the seasonal exodus from the village of men in the intermediate and poor categories has changed gender role dynamics and is resulting in greater women's involvement in seed selection (Table 4.2).

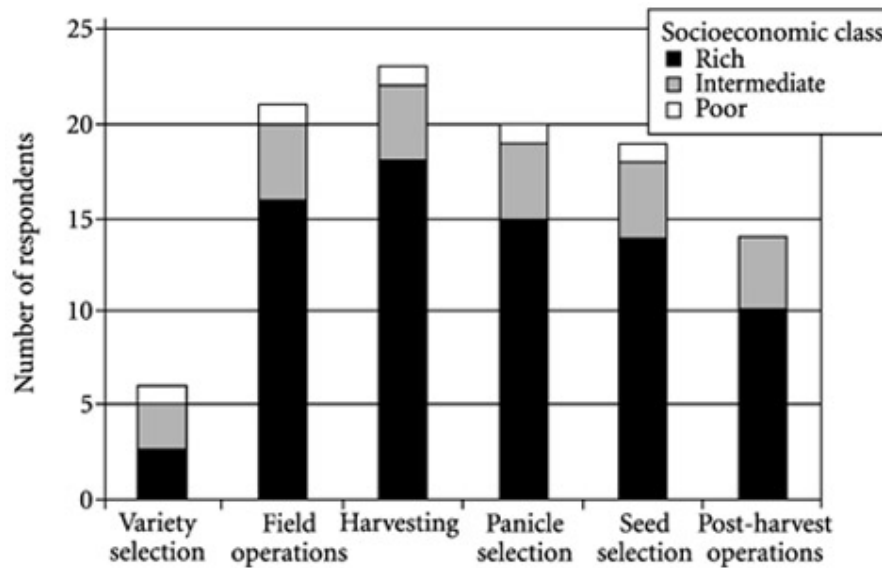
Table 4.2 Involvement of Men and Women in Seed Production across Wealth Categories

| <i>Activity</i> | <i>Rich</i> | | | <i>Intermediate</i> | | | <i>Poor</i> | | |
|--------------------------|-------------|--------------|-------------|---------------------|--------------|-------------|-------------|--------------|-------------|
| | <i>Men</i> | <i>Women</i> | <i>Both</i> | <i>Men</i> | <i>Women</i> | <i>Both</i> | <i>Men</i> | <i>Women</i> | <i>Both</i> |
| Variety selection | 18 | 2 | 12 | 13 | 0 | 20 | 11 | 4 | 17 |
| Intercultural operations | 24 | 1 | 7 | 21 | 0 | 12 | 12 | 3 | 17 |
| Harvesting | 25 | 1 | 6 | 18 | 1 | 14 | 5 | 6 | 21 |
| Panicle selection | 21 | 0 | 6 | 19 | 1 | 11 | 6 | 4 | 22 |
| Selection after harvest | 26 | 0 | 4 | 17 | 0 | 16 | 10 | 4 | 18 |
| Post-harvest operations | 12 | 14 | 4 | 5 | 11 | 16 | 2 | 25 | 5 |
| Storage | 3 | 12 | 5 | 0 | 23 | 6 | 2 | 24 | 2 |

Use of Women's Labour More hired labour is used by farmers in the rich category than by intermediate and poor farmers. The conservative norms and culture of Kachorwa dictate that women are not permitted to work outside the house, and these norms are adhered to by those in the higher socioeconomic category. However, rich farmers can afford to hire labour and the usual practice is to hire the poor farmers (Figure 4.8). Looking at the poorest households,

women and men contribute more or less equally (at least in numbers) to harvesting and panicle selection, while women are mostly responsible for post-harvest work (Table 4.2).

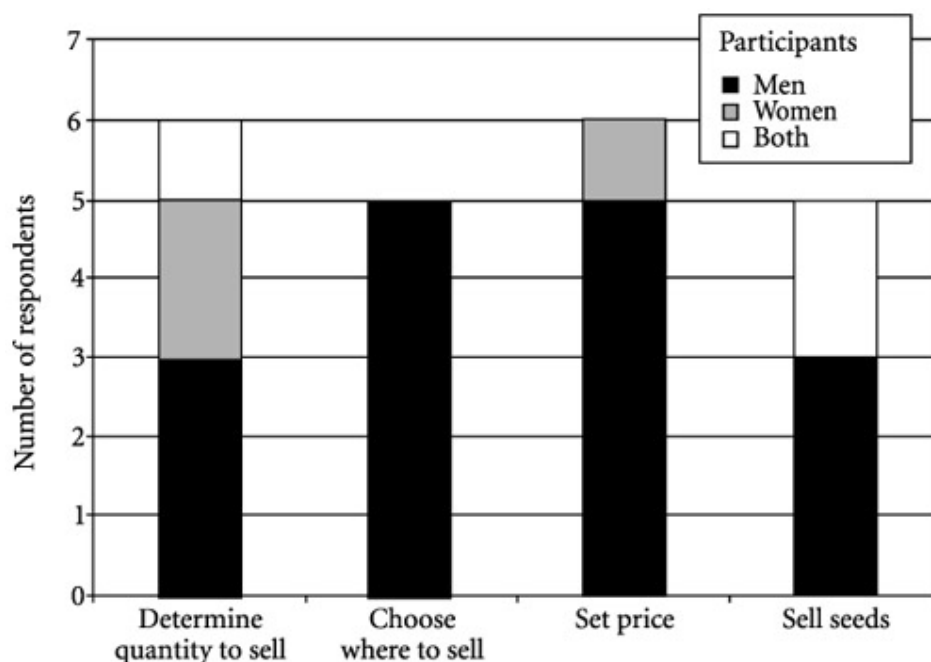
Figure 4.8 Labour Used at Various Stages of Seed Production by Socioeconomic Category



Marketing

Only rich farmers are involved in seed transactions. Within this class, the decision about the amount of seed to be sown is made by men and to some extent by women, whereas decisions about where to sell the seed and the price are more influenced by men. Men and women are both involved in the actual selling; men are involved in seed transactions both in and outside the village; women are only involved when the seeds are sold from their own home (Figure 4.9).

Figure 4.9 Participation by Men and Women in Decision Making and Selling (Rich Farmers Only)



Acquiring Knowledge and Skills for Seed Production

We found that knowledge of seed production techniques and skills was fairly consistent across wealth categories, ethnic groups and sexes. Knowledge and skills are passed from generation to generation, mostly by demonstration. Knowledge was acquired mainly from household members, but farmers also learned by observing neighbours and relatives.

Capacity Building and Strengthening the Existing Seed Market System for Local Landraces

Our findings suggested that the usual selection process is insufficient for the production of high-quality seed, especially for landraces like Lalka Basmati and Kariya Kamod. Off-types are a severe problem in the case of aromatic rice landraces due to admixture of the seed and out-crossing. The morphology of aromatic rice landraces makes them more likely to out-cross; thus, selection processes must be continuous to maintain good quality seeds.

Increasing capacity in the community for seed selection and marketing was our main action strategy. To this end, we developed a training manual that explains the scientific basis of seed selection in simple language with sketches. Both men and women farmers of different socioeconomic categories and ethnic groups were trained in seed selection.

The training was conducted in two stages: orientation and field-level seed selection. The first phase focused on the importance of seed selection and basic requirements, and was conducted before the rice season. The farmers were made familiar with various steps in seed production. At the end of this phase we identified farmers who were interested in putting into practice what they had learned immediately.

We also assessed the demand for particular landraces and found that farmers showed strong interest in three. Collection of source seeds of these three landraces, quality testing and seed distribution were carried out by the Agriculture Development and Conservation Society (ADCS), a community-based organization of women and men farmers of the study area, with the technical assistance of LI-BIRD staff.

Follow-up training on seed selection was provided to three farmer groups before paddy harvesting. The second phase of training comprised seed selection in the field, post-harvest activities and quality control methods. The farmers practised seed selection methods in the field and also learned simple germination and purity tests.

As a result of the training, a women farmers' group reported:

From the training obtained through the SAGA programme on seed selection we have been able to select and produce good quality seeds for ourselves as well as for the market. Now, we don't have to depend upon others and go searching for quality seeds around the village.

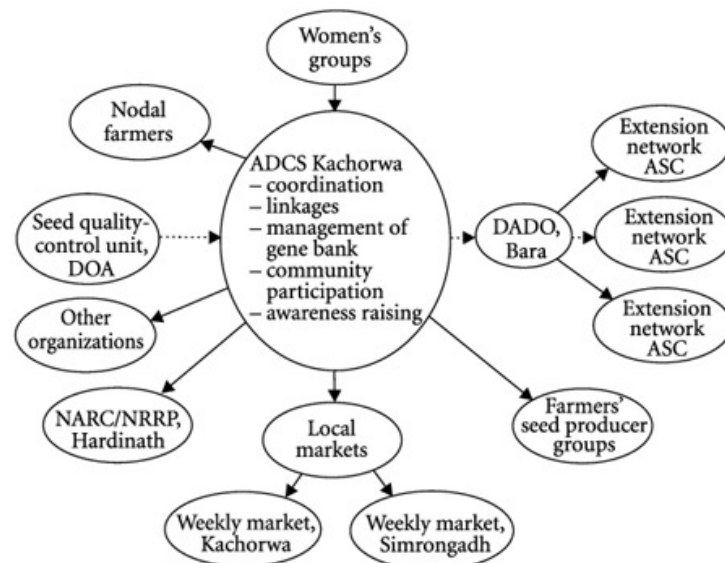
ADCS members also provided feedback:

For many years we had been selecting the seeds and saving it for the next season. However, the right way of seed selection from the very beginning results in significant change in quality of the seeds. The SAGA project provided us with good quality source seeds, which has helped us to really take up the seed selection process very seriously. Due to the opening of market linkage, the farmers have been encouraged to grow the landraces.

Market Links

In strengthening markets for local landraces, our efforts contributed to the development of a new marketing network that integrates both formal and informal seed networks into a more structured, resilient configuration—in which notions of formal and informal become blurred (see Figure 4.10 compared with Figure 4.5).

Figure 4.10 New Seed Marketing Channels



Notes: ASC = Agricultural Service Centre; ADCS = Agriculture Development and Conservation Society; DADO = District Agriculture Development Office; DOA = Department of Agriculture; NARC = Nepal Agricultural Research Council; NRRP = National Rice Research Programme.

A village-level workshop with representatives of agro-vets, the DADO, agriculture service centres and *golas* (local rice trading centres/shops) in and around the village was conducted to link the quality seed production programme with market outlets. Various stakeholders in the seed system were brought together into a common forum. Demands from the agro-vets and *golas* were noted at the forum.

ADCS, which is responsible for management of the local seed bank, plays a central role in the new marketing network. It carries out seed distribution, collection and quality control. Quality is monitored by ADCS in coordination with the quality control unit under the DOA. Marketing takes place through various formal and informal channels. The new marketing system integrates the formal seed network, which includes the agriculture service centres, agro-vets and the NRRP, with the informal networks, including the nodal farmers, seed producer group and *haat* bazaars.

Financial support for the project in the form of seed money to ADCS has allowed for the advertising and the establishment of seed stalls in the weekly markets to ensure the sustainability of the seed production programme. With this support and returns from initial seed transactions, the farmers of Kachorwa have begun producing seed from three more landraces that have high potential in the market. Farmers are very enthusiastic about these new opportunities.

CONCLUSIONS

Social and gender issues are important aspects to be considered in agriculture research, policy and extension activities, especially in a country like Nepal where the majority of the population depends on agriculture. Although various policies and development plans that mention social and gender issues or consider them to some degree have been in place for some time, the implementation part remains weak. The wide gap between policy formulation and implementation can only be narrowed by creating greater awareness of the vital importance of social and gender issues. Conceptual clarity is very important at all levels. Monitoring and assessment of how policies, programmes and projects have different effects on women and men, the poor and the rich, and various ethnic groups require strengthening throughout the agricultural research and development system.

Our case study aims to contribute to the way forward: how to systematically incorporate SAGA into concrete situations and crucial issues for farmers (that is, seeds). Our case study shows that culture and social structure strongly inform roles and responsibilities. Our analysis of the seed system in Kachorwa clearly shows that men across all wealth categories and ethnic groups are more involved than women in seed selection activities. Only a few women in the poor category are involved and only to a limited degree. Our research seems to show that the perception that women in South Asia are involved in seed selection may not be true in all cases.

Formal and informal systems are equally important in the flow of local and modern varieties. The formal system has a place in the flow of introduced varieties, whereas the informal system operating in the village has a significant place in the flow of both local and modern varieties. In the informal seed system a number of individuals play a significant role in the flow of genetic materials. These nodal farmers have their own network through which the flow of seeds and other planting material takes place. They tend to be richer farmers and men.

Farmers have developed their own methods for various farm activities. They have been practising seed selection for centuries and have considerable expertise. However, we found that their practices could be improved and we set out to do so by building capacity in quality control. Support to a community-based organization to carry out quality control at the field level will help ensure the sustainability of the seed production programme. Similarly, we expect that opening up new marketing opportunities for quality seeds of local landraces will provide incentives to farmers. 'Keeping landraces going' will also contribute to the conservation of local biodiversity.

The challenge of bridging the gap between improved local field experience and policy making remains. Our work aims to make a small contribution to this, but more efforts are required—by researchers, extensionists and policy makers alike.

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