
Participatory Agricultural Development in Nepal: Discrepancies between Policies, Views and Experiences

Nav R. Ghimire

Ph.D. Student

Department of Agricultural Education and Studies

Iowa State University, 223 Curtiss Hall, Ames, IA 50010

Email: nghimire@iastate.edu

R. John Petheram, Ph.D.

Senior Research Fellow, Melbourne School of Land and Environment, The University of Melbourne, Creswick, Victoria, Australia 3363

John M. Perkins

Senior Research Fellow, Melbourne School of Land and Environment, The University of Melbourne, Parkville, Victoria 3010, Australia

Abstract

The objective of this study was to understand the government's aims in promoting farmer participation in agricultural development in Nepal, and to explore the experiences of farmers in a Sustainable Soil Management Program. Focus group discussions and in-depth interviews were held with farmers, policy makers, and extension staff to collect mainly qualitative data. Data were also collected on the stated aims of farmer participation from government policy and program documents and from staff and officials. Findings suggest large difference between the official aims of farmer participation stated in national policy documents, interpretations in government's program documents, views by extension staff and the experiences of farmers. Government policy stresses close coordination among research, extension and farmers but in practice farmers' needs and priorities were not considered in program design. Extension staff directed farmer participation in the program mainly to generate the data for program reporting, while farmers often participated mainly for the 'incentives' offered. These results point to a need for stronger interaction and coordination between national policy makers, participatory practitioners, and farmers on setting the aims and type of participation in agricultural development, and in evaluating their achievement. Emphasis should be given to approaches based on co-learning between extension and farmers, to ensure that interventions developed are appropriate to farmers' needs and resources. The finding that national policies on farmer involvement in development programs are not followed in program implementation suggests a serious need for awareness training and incentives systems for extension staff.

Keywords: participation, coordination, program evaluation, incentives, co-learning

Introduction

Over the past 25 years there has been a growing realization in Nepal that advanced technology and large scale development projects in rural areas are not always the panacea for improving welfare, as was once thought. There has been a shift towards a view that the crucial components of success in achieving development goals are decentralization, bottom-up planning and people's participation. The acceptance that local people and their communities should be the principal decision makers on matters of resource management has led development agencies to promote various participatory approaches to development.

The Nepali government introduced 'Participatory Bottom-up Planning' in agricultural development in 2000. This involves collaboration of service receivers and the service delivery agencies in planning and implementing extension programs (DOA, 2000). According to Keeling (2001), a key Nepalese development strategy since the 1990s has been to involve local communities in development programs. Pratt (2001), who studied the outcome of participatory programs in Nepal, states that government is favoring participatory approaches in all written documents, but a bureaucratic working style still exists in many places. In 2003, Vokes contended that Nepali policy makers have remained dominated by conventional approaches to agricultural development and planning and that agricultural production has been unable to keep pace with the rapid growth of population in the country.

Buchy, Ross and Proctor (2000) stated that it is difficult to know whether governments see public involvement as an opportunity to transfer responsibilities from the center to the periphery, or genuinely believe in involving people to run their own affairs. The effect of government's withdrawal from rural areas, in particular on the capacity of local communities to run their own affairs, is not sufficiently studied by agencies promoting local involvement. Although the concept of participatory development is receiving great official legitimacy in the international development community, there have been frequent gaps between participatory rhetoric and participatory practice (Gonsalves et al., 2005; Nelson & Wright, 1995). Development organizations want to effectively apply participatory approaches and are asking how to institutionalize these approaches into day-to-day practice (Thompson, 1995).

Chambers (1994) stated that factors that have positive and negative impacts on the practice of participatory approaches must be identified, so they can be either promoted or resolved. This study attempted to improve understanding about types and levels of participation in agricultural development in Nepal by exploring policies, people's views and the experiences of participation, through a case study of Sustainable Soil Management Program (SSMP) in Sanga, Kavre district.

The SSMP was a collaborative program between the Government of Nepal and the Government of Switzerland. In Sanga, SSMP was jointly implemented by District Agricultural Development Office (DADO), Kavre and SSMP (Central office, Lalitpur) in 1999. The guiding principle of SSMP was, "...*participation and empowerment of the key actors (the farmers) to ensure ownership of the promoted sustainable soils management practices*" (SSMP, Lalitpur, 1998 p.4). The goal of the program was, "...*to improve livelihoods of the people from the rain-fed Bari (up-land)-dominated hill farming system*" (SSMP, Lalitpur, 2002 p.1), because access to rice-based Khet (low lands) are characterized by a resource-richer segment of the population. In Sanga, SSMP was implemented through a farmer group which holds 45 member farmers and is registered in DADO, Kavre.

Purpose and Objectives

The aim of this study was to understand the perceptions of policy makers, government and SSMP staff, and farmers on 'participation', and the extent to which these perceptions conform and are borne out in practice in the field. The specific objectives were to:

- Document the government's aims (at national, department and program levels), in adopting participatory agricultural development policies.
- Explore the nature and types of participation stated in the documents and experienced by the people involved in the SSMP.
- Analyze and describe how government, agencies and farmers involved in the SSMP (participants) and the non-participants, perceived participation.

Methods and Procedure

This study was conducted as a case study using mainly qualitative data. The case study involved data collection in policy offices in Katmandu and in Kavre district, and among a farmer group of the Sustainable Soil Management Program in Sanga (program participants) and also involved farmers outside the program (non-participants). A total of 46 people were interviewed (8 government officials and 38 farmers), using semi-structured interviews (individual and focus groups). Selection of respondents was purposive and based (1) on criteria developed during the study and (2) on information provided by extension staff from DADO, Kavre and farmers from Sanga. Mainly qualitative data were gathered.

A mixture of methods was used for data collection and analysis. The main data collection techniques were individual interviews with national policy makers for agricultural development, Department of Agriculture (DOA) and SSMP (Central office, Lalitpur) staff, district agriculture extension staff in Kavre and farmers. Focus group discussions and in-depth interviews were held with participating and non-participating farmers in the SSMP. Data were also collected on the stated aims of farmer participation from government policy and program documents.

Grounded theory (Glaser and Strauss, 1967) was a guiding concept in data collection and analysis. The audio taped interviews were transcribed into Nepali script on word processor and then coded manually in English. During the coding process the interview text was analyzed line-by-line, to identify main concepts. These concepts were based on key words and phrases identified in the data. The abstracted concepts were analyzed and constantly compared with previous interviews. Similar concepts were grouped together to develop a core category or theme. A category here is a theory that makes sense of what the informant said (Strauss and Corbin, 1998).

In a secondary form of analysis, data from interviews and secondary sources were used to categorise aims of government policies and agency staff in promoting farmer participation, using a global scale of participation, constructed from literature on participatory development. This 'global assessment (GA) scale' (Table 1) was also used to characterise the types of participation experienced by participant farmers in this case study program and the type of participation desired by non-participant farmers. Dart, Petheram and Straw (1998) described a 'GA scale' used to understand the degree of achievement that a group has obtained in the management of salinity problems in Australia (p.95). They explained that GA Scales can also be used over time to monitor the progress of a group against the aim of an agricultural program.

Table 1
A Global Assessment Scale of Farmer Participation in Agricultural Development

Category	Nature or characteristics of participation type	Statements, views or experiences used to categorize participation types
8 Self-management (Participation as an end)	Farmers take initiatives independently; contacts external agencies for resources but retain control over its use.	
7 Partnership (collaboration)	Farmers and agencies agree to share agricultural development planning and decision making	
6 Delegated power	Agencies negotiates to give certain decision making authority to farmers over a plan or program	
5 Functional participation (Participation as a means)	Farmers participate by forming groups to meet predetermined objectives of the projects	
4 Consulting	Farmers give views, but there is no commitment by agencies to act on farmers' suggestions.	
3 Participation for material incentive	Farmers participate in the projects in return for incentives and have no stake in prolonging practices when incentives end.	
2 Informing	One way flow of information from agency to farmers, with little or no chance for feed-back or negotiation.	
1 Manipulative participation	Participation is simply pretence to give credibility to programs	

Note. (Scale developed from ideas from Arnstein 1969; Choguill 1996; Pretty, 1997)

Table 1 shows incremental steps representing the extent of citizen power in a program. At the top of the ladder is self-management, where people take initiative largely independent of external situations, and the lowest step is manipulative participation, where people are told what is to happen and act out predetermined roles.

Results

The findings from this study are arranged below according to the objectives of the study and are also discussed in relation to the international literature on participation.

Objective 1 - Document the government's aims (at national, department and program levels), in adopting participatory agricultural development policies.

The National policy document - the Tenth Plan (NPC, 2002) - stated that the aims of farmer participation are to expand the opportunity for agricultural production for employment generation. The Participatory Bottom-up Planning document of the Department of Agriculture (DOA, 2000) aimed to involve farmers in planning programs for effective program implementation. The annual program document of the DADO, Kavre (2002) stated the aim as

raising agricultural production and productivity for independent economic growth. The program document of the project (SSMP, Lalitpur, 1998) emphasized aim as empowering key actors (the farmers) in taking ownership of sustainable soil management practices.

Clear inconsistencies were revealed between the aims of participation mentioned in national policy documents, departmental documents, district program documents and SSMP documents, and these are summarized in Figure 1.

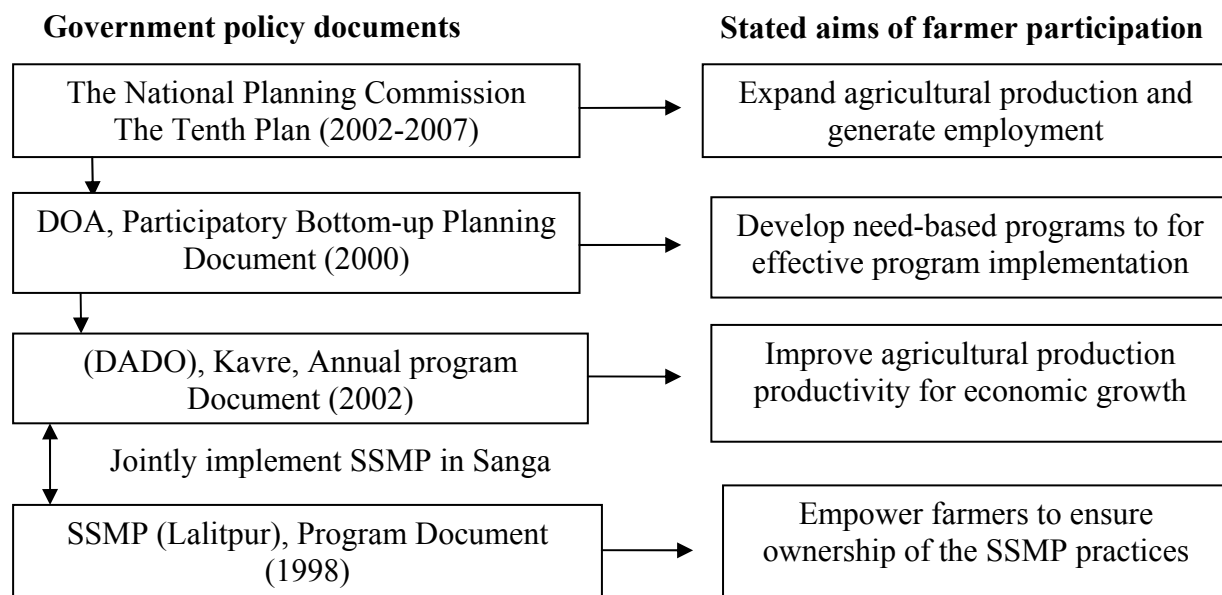


Figure 1. *Aims of participation expressed in various documents at various levels in agricultural development in Nepal.*

The differences between the aims expressed at various levels in Figure 1 suggest that there has been little or no interaction or co-ordination between practitioners and national policy makers on farmer participation.

It is notable that the aims of farmer participation stated in the government documents do not reflect the concepts of ‘co-learning’ - in which the knowledge and experience of farmers, scientists and managers are combined in a ‘learning dialogue’ in developing appropriate methods and techniques for agricultural development (Vernooy, 2005; Roberts et al., 2002). In co-learning approaches, there is an acceptance by extension staff that they themselves have much to learn from farmers, in diagnosing problems and seeking answers (Petheram & Clark, 1998).

Objective 2 - Explore the nature and types of farmer participation in the SSMP

The level of citizen participation in national agricultural development is mentioned in the Ninth Plan (1997-2002) which stresses strong co-ordination among research, extension, and farmers (NPC, 1998). The DOA (2000) proposed joint involvement of farmers and extension agents in carrying out agricultural development programs. The DADO, Kavre (2002) stated that farmers are the principal decision-makers in mobilizing resources according to their needs. SSMP, Lalitpur (2002) defined the role of farmers as to implement sustainable soil management practices and the role of SSMP as to support farmers on their demand.

The District Agriculture Development Officer, DADO, Kavre claimed that “...farmers are consulted in planning the program and both farmers and extension staff make joint decision on program design. The Agriculture Extension Officer of DADO (Kavre) responsible for implementing SSMP in Sanga stated that “...incentives such as, food and drinks, crop seeds, and a monetary allowance drastically raised the number of participants in the program. The types of participation stated in the government documents, claimed by the extension staff and experienced by the farmers in the SSMP are summarized in the GA scale in Table 2. The GA Scale in Table 2 is the brief version of the GA scale in Table 1.

Table 2

Types of Participation on a GA Scale Derived from this Study

<i>Category</i>	<i>Characteristics of participation</i>	<i>Statements, views or experiences from various sources in this study</i>
8 Self-management	Farmers take initiatives independently and retain control over resource use.	Farmers are the principal decision makers in resource mobilization -DADO, Kavre (2002) & SSMP (2002)
7 Partnership	Stakeholders share planning and decision making	Joint involvement of farmers and extension in program planning and implementation - Ninth Plan (1997) & DOA(2000)
6 Delegated power	Farmers have some decision-making authority	
5 Functional	Group of farmers meet predetermined objectives of projects	
4 Consulting	Farmers give views; no commitment to act on suggestions	Farmers were asked for their views but their requests were not considered - Participant Farmers
3 Material incentive	Farmers participate for food, cash, credit, etc	Incentives raised number of farmers in the SSMP - Extension staff and Participant Farmers
2 Informing	Flow of information from agency to farmers, no feedback	We have always been guided to follow instructions for our presumed benefits - Participant Farmers
1 Manipulative	Participation is simply pretence	We participate to make our presence felt and pass the time anyway - Participant Farmers

Note. (Scale based partly on ideas from Arnstein,1969; Choguill, 1996; Pretty, 1997)

Farmers participated in SSMP mainly because of a fear of losing their relationship with extension staff and hence possible future benefits. A participant said, “...we can't reject to participate in the program when invited otherwise extension staff may keep us from participating in future programs that can provide good incentives”.

A majority of participating farmers did not know details of the SSMP activities, “...we do not know what the programs are, who formulates them, when they will be implemented and why.

We participate in the program when extension staff invites us". Farmers said that extension staff informed them about predetermined programs and advised them to participate for their presumed benefits. A senior SSMP (Lalitpur) staff said, "...in practice, extension staff decides where and how to implement the program and who will be the participants, and farmers follow the staff".

Many farmers participated in the SSMP mainly for the 'incentives' offered by the program. The extension staff did not seek farmers' experiences and knowledge in program planning and implementation. Probst et al. (2003) argued that participation is important to make full use of local knowledge to ensure locally felt needs are addressed and that all parties get involved in analysis, planning and decision-making local issues .

The national policy documents advocated close coordination between farmers and extension in planning extension programs, but at the field level many farmers did not even know about SSMP activities. Watts (1984) found that, in developing countries, government use extension less for educating farmers, than as a means of conveying government policy and programs.

Farmers were consulted by the Extension staff but their requests were not considered in planning the programs, "... for formality extension staff ask us to submit the programs we want, but seldom have they acted on our request". Some participants complained that extension staff did not ask for their views about the program, "...we have always been guided to follow but never been given a chance to advise on our interests". Bolman and Deal (2003) stated that program managers often mandate participation in a controlling and top-down fashion rather than as a way to share authority with the program participants.

A senior SSMP (Lalitpur) staff who worked jointly with DADO, Kavre to implement SSMP in Sanga said, "...extension staff did not practice a 'truly participatory' approach in Sanga and were mainly concerned with program implementation. Their focus was on meeting the program targets rather than involving and assisting farmers to solve farming problems".

This finding is similar to that in many development projects and countries. For example, Harrison (2002) stated that in Ethiopia, extension agents were mainly concerned with distributing agricultural inputs provided by the state, such as seeds and fertilizers, and chasing peasants for repayments. Their focus was on meeting quotas imposed on them, rather than being 'farmers' partners'. Probst et al.(2003) stated that a participatory approach in agricultural research and development has often been limited to application as 'an instrument to improve technology transfer'. Uphoff (1992) opined that building people's capacity through participation is more important than achieving specific outcomes.

Some farmers said they participated in the SSMP to 'make their presence felt' to the authorities even though programs were not based on their needs, "...in spite of having no interest or enthusiasm to attend the program, we participate to make our attendance felt and we hardly have any intention to learn. We respond to the program because of incentives" ('Manipulative' on the GA scale, Table 2).

Objective 3 - Describe and analyze how government, agencies and farmers involved in the program (participants) and non-participants, perceived participation.

According to DOA (2000) the outcomes of participation in agriculture extension program should be measured in terms of farmer's ownership and commitment towards the program, and their achievements to solve agricultural problems of the community. DADO, Kavre (2002) emphasized the development of farmers' capacities through participation to institutionalize participatory process for agricultural development. SSMP, Lalitpur (2002) stressed in building

technical capacities of farmers from their participation in the program to manage sustainable agricultural soils and to achieve food security.

The Agricultural Extension Officer of DADO, Kavre claimed that participant farmers improved their knowledge in modern agricultural practices and generated income from the program participation. The Extension Officer further stated that farmers felt enriched in information that empowered them in making decisions, accessing resources and addressing their challenges. Some women farmers said, they gained social prestige because the community had begun to acknowledge their agricultural knowledge and experience “...*neighbors call us when they have farming problems*”.

Farmers said they participated in SSMP because it promoted the use of local resources (e.g. farm yard manure) in crop production, “...*when we came to know that we can replace chemical fertilizer with the sustainable use of local resources we decided to participate*”. Farmers wanted to continue their participation in SSMP and said, “...*we need to know and understand the world, so we must participate when invited, whether the program is based on our interest or not*”. Some farmers changed their cropping patterns and developed knowledge on cultivation practices, “...*we shifted to commercial vegetable production from kitchen garden and to seed production in cereal crops from grain production*”.

Many farmers did not know about the outcomes of the programs and said, “...*extension staff prepare the program outcomes in advance and do not involve farmers in outcome evaluation*”. Farmers complained about the performance of the SSMP recommended technology and said “...*SSMP did not offer significantly different practice to that of farmers’ existing practice and new practices often produced poor results*”. Some farmers felt that technologies were not farmer friendly, “...*technologies were expensive, needed careful handling and required a series of steps to reach the expected outcomes*”.

The few farmers who were aware of their ‘sharing’ role as participants in the SSMP were comparatively rich in resources. They occupied key positions in the group, controlled group decisions for their benefits, and were close to the extension staff. Participant farmers complained that, “...*rich farmers repeatedly participate in district and national level seminars and meetings offered by DADO, Kavre because they hold power for making decisions in our group*”. This confirms Hildebrand’s (1993) claim that extension agents often use contacts with progressive farmers as a prime strategy.

Farmers with small land holdings had low risk-bearing capacity to test and adopt new practices due to fear of losing their regular farm income and were attracted to non-farm jobs than to participate in SSMP. A farmer said, “...*who will take the responsibility if new technology fails to provide food security for my family*”. Resource-poor farmers world-wide show similar behavior in the face of risk. Timsina and Ojha (2007) in Nepal and Kamanga (2002) in Malawi and Zimbabwe found similar results and reported that poor farmers critically weigh up the risks to use their scarce resources in adopting a new technology. Aryee (2003) found that in Ghana small-scale farmers’ accessibility to agricultural innovations is often limited by unfavorable economic, socio-cultural and institutional conditions.

Some farmers said, they lacked confidence (due to lack of education) in learning new practices and were unclear about the government’s intent for their participation in SSMP. However, generally farmers’ expectation from SSMP participation was, “...*to develop agricultural enterprises that can provide a regular source of income for family’s food security*”.

Non-participant farmers developed a negative attitude towards extension program offered by DADO, by perceived failure of the previous program technology. Hence they lacked interest

to participate in SSMP and a non-participant farmer said, “...*I got a new species of bee from DADO but in next few months all the bees flew away and I threw out the hives*”. It seems that there is little or no acknowledgement by the extension staff that technologies developed without farmers’ inputs are less likely to be adopted than with farmer participation (Tyler, 2006). In many developing countries a large amount of agricultural technology has been rejected simply because farmers feel that it is impractical (see Collinson, 2000)

Non-participants perceived that extension staff had insufficient practical experience to solve their farming problems, “...*we followed their advice in farming practices but only bore loss. We can’t participate in the program giving away our farm incomes*”. Gallagher (1999) stated that in most countries, the extension staff have never grown crops ‘from seed to seed’ and most often lack confidence to solve farmers’ problems. These staff should be trained in field based season-long crop production and management courses to develop technical skills which also help to understand why farmers do not immediately adopt their extension messages.

The non-participant farmers stated that agricultural programs that could take into account their farming experience, knowledge and ideas to explore the local agricultural potential would be most attractive to them (‘partnership’ on the GA Scale, Table 2). Some farmers did not participate in SSMP simply because they had no invitation from extension staff. A non-participant farmer said, “...*I wanted to participate in the program but no one came to my door to inform me about the SSMP activities*”.

In Nepali social custom, community members feel uncomfortable in attending any event without a formal invitation, even when attendance may be useful to them. Millar and Dittoh (2004) stated that socio-cultural factors and individual beliefs can affect farmer participation and learning or change. Salmen (2002) argued that extension agents need to gain a practical understanding of social values and behavior to promote people’s participation in development. The change in people’s attitude either to accept or reject a program or technology is directly related with how they are approached (Sherif & Sherif, 1967).

Conclusions

There is a need to find ways for interaction and co-ordination between national policy makers, participatory practitioners and farmers, on the aims and design of farmer participation in agricultural development. Professional reward structures are needed for extension staff to encourage them to work in close contact with farmers, study and understand their problems, and be aware of the philosophy of participation and program ‘ownership’ by farmers. The disappointment expressed by farmers about exclusion from program design indicates potential for more participatory design of future agricultural projects. Extension staff were ill-prepared for their extension role at the grassroots level. The fact that farmers’ local knowledge and expertise remained largely untapped emphasizes the requirement for training of extension agents in their role as facilitators, and in showing respect for farmers’ skills and experience in planning and implementing government programs. SSMP activities were poorly promoted and out of step with the available resources of the poor farmers. Farmers weighed up the risk of change in practice against the perceived chance of improving their livelihood.

Extension staff paid little or no attention to fair selection of participants for SSMP activities; and most of the opportunities to be gained from the SSMP were obtained by the privileged members of the group. This may have contributed to negative views of the program held by non-participant farmers. It seems important that extension workers employ a more equitable process in selecting participants for future activities and projects. The perceived failure

of technology in past programs and farmer perceptions of lack of staff capacity to solve local farming problems suggests that extension staff passed technology to farmers without analyzing its real affect in the farmers' fields.

Lack of acknowledgement of farmers' experience and knowledge by the extension staff indicates that DADO, Kavre, should revise its policies to ensure close communication with farmers, including non-program participants. Further research is needed on why farmers are not participating in available extension programs. The evidence of potential benefits from this case study program confirm the value of participatory programs and the need to strive for their improvement through research, policy training and other means. The need for in-built monitoring and evaluation in development programs seems paramount – to ensure that discrepancies between aims at different levels are detected, and brought to attention of all involved, so that program management is continuously improved, and that practical gains result for the farmers and the nation.

Educational Implications

The evidence of farmer benefits from SSMP suggests that a participatory approach would be worthwhile if the process is well understood and applied by staff, and the aims and outcomes properly monitored. The findings from this study have implications for designing contemporary community development programs in Nepal, and more broadly throughout non-industrialized and industrialized countries. It would be valuable to document practical examples of co-learning (in Nepal and elsewhere) - for use in extension training for all levels of government staff, that emphasize the primary need for researchers and extensionists to acknowledge that farmers have a serious contribution to make to the research and development. The GA scale provides a graphic and valuable way of analyzing and explaining the results of this type of research.

References

- Aryee, A. B. N. (2003, August). *Highlights of the situation with linkages among researchers, transfer agents, and farmers in Ghana*. Paper presented at the AARDO International Workshop on Agriculture Technology Transfer and Its Consequences, Agricultural Research Institute, Taichung, Taiwan.
- Arstein, S. R. (1969). Ladder of citizen participation. *American Institute of Planning*, 35(4), 216-224.
- Bolman, L. G., & Deal, T. E. (2003). *Reframing organizations: Artistry, choice, and leadership*. San Francisco, California: Jossey-Bass.
- Buchy, M., Ross, H., & Proctor, W. (2000). *Enhancing the information base on participatory approaches in Australian natural resource management*. Social and Institutional Research Program, Land and Water Australia, Canberra.
- Chambers, R. (1994). PRA: Challenges, potential and paradigm. *World Development*, 22(10), 1437-1454.
- Chougill, M. B. G. (1996). A ladder of community participation for underdeveloped countries. *Habitat International*, 20(3), 431-444.
- Collinson, M. (2000). Evolving typologies for agricultural research and development. In M. Collinson (Ed.), *A History of Farming Systems Research* (pp 51- 58). Wallingford, UK: CABI Publishing.

- District Agriculture Development Office (DADO), Kavre. (2002). *Annual program document*. Kavre, Nepal.
- Dart J., Petheram R. J., & Straw, W.W. (1998) Corangamite salinity program and global assessment scaling. (pp 61-62). In R. J. Petheram (Ed.), *A Review of evaluation in agricultural extension in Australia*. Rural Industries Research and Development Corporation, Publication 98/137, Canberra, Australia. Available on-line at: <http://www.rirdc.gov.au/reports/HCC/VCA-3A.doc>.
- Department of Agriculture (DOA). (2000). *Policy and implementation guidelines on participatory bottom-up planning*. Lalitpur, Nepal: DOA.
- Gallagher, K. (1999). *Farmers field schools (FFS): A group extension process based on adult non-formal education methods*. Rome: Food and Agricultural Organization, Global IPM Facility Secretariat.
- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine Publishing Company.
- Gonsalves, J., Becker, T., Braun, A., Campilan, D., Chavez, H. D., Fajber, E., Kapiriri, M., Rivaca-Caminade, J., & Vernooy, R. (Eds.). (2005). *Participatory research and development for sustainable agriculture and natural resource management: A source book* (Volume 1). Ottawa, ON: International Development Research Center.
- Harrison, E. (2002). The problem with the locals: Partnership and participation in Ethiopia. *Development and Change*, 33(4), 587- 610.
- Hildebrand, P. E. (1993). *Targeting technology diffusion through coordinated on-farm research*. Gainesville, FL: University of Florida, Food and Resource Economics Department.
- Kamanga, B. C. G. (2002). *Understanding the farmers' agricultural environment in Malawi* (Working Paper 02-01). Lilongwe, Malawi: Risk Management project.
- Keeling, S. J. (Ed.). (2001). *Pro-poor governance assessment Nepal*. Kathmandu, Nepal: Enabling State Program.
- Millar, D., & Dittoh. S. (2004). Interfacing knowledge systems: Local knowledge and science in Africa. *Ghana Journal of Development Studies*, 1(2), 70-84.
- Nelson, N., & Wright, S. (1995). *Power and participatory development*. London: Intermediate Technology Publication.
- National Planning Commission (NPC). (1998). *The Ninth Plan (1997-2002)*. Kathmandu, Nepal: NPC
- National Planning Commission (NPC). (2002). *The Tenth Plan (2002-2007)*. Kathmandu, Nepal: NPC.
- Petheram, J., & Clark, R. A. (1998). Farming system research: Relevance to Australia. *Australian Journal of Experimental Agriculture*, 38(1), 101-115.
- Pratt, G. (2001). *Practitioners' critical reflections on the PRA and participation in Nepal* (IDS Working Paper 122). Sussex, UK: Institute of Development Studies.
- Pretty, J. (1997, November). *Changes in agricultural and rural communities emerging challenges for extension*. Paper presented at 2nd Australasia Pacific Extension Conference, Albury Convention Centre, New South Wales, Australia.
- Probst, K., Hagmann, J., Fernandez, M., & Ashby, J. A. (2003, July). *Understanding participatory research and development in the context of natural resource management - Paradigms, approaches and typologies* (AgREN Network Paper No. 130). London: Overseas Development Institute, Agricultural Research and Extension Network.

- Roberts, K. C., Coutts, J., Ayres, J. F., & Bilston, L. (2002). Co-learning in the development of lotus pasture technology in Australia. *Australian Journal of Experimental Agriculture*, 42 (5), 527 - 533.
- Salmen, L. F. (2002). *Beneficiary assessment: An approach described* (Social Development Papers No. 10). Washington D. C.: The World Bank.
- Sherif, C. W. and Sherif, M. (Eds.) (1967). *Attitude, ego-involvement, and change*. New York: Wiley.
- Sustainable Soil Management Program (SSMP), Lalitpur. (1998). *Sustainable management of agricultural soils in the mid hills of Nepal (HMG/SDC): Program document (1999 - 2002)*. Lalitpur, Nepal: SSMP
- Sustainable Soil Management Program (SSMP), Lalitpur. (2002). *Sustainable management of agricultural soils in the mid hills of Nepal (HMG/SDC): Program document for the 2nd Phase (2003-2007)*. Lalitpur, Nepal: SSMP
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing Grounded Theory*. Newbury Park, California: Sage Publication.
- Thompson, J. (1995). Participatory approaches in government bureaucracies: Facilitating the process of institutional change. *World Development*, 23(9), 1521-1554.
- Timsina, N. P., & Ojha, H. R. (2007). Agricultural technology development in Nepal: Critical assessment from knowledge system perspective. In H. R. Ojha, N. P. Timsina, R. B. Chhetri, & K. P. Paudel (Eds.), *Knowledge systems and natural resource: Management, policy, and institutions in Nepal* (pp. 23 – 39). New Delhi, India: Foundation Books.
- Tyler, S. (2006). *Conclusions: community-based natural resource management in action*. In S. Tyler (Ed.), *Communities, livelihoods and natural resources action research and policy change in Asia* (pp. 373 - 397). Ottawa, ON: International Development Research Center.
- Uphoff, N. (1992). Monitoring and evaluating popular participation in World Bank-assisted projects. In B. Bhatnagar & A. C. Williams (Eds.), *Participatory development and the World Bank: Potential directions for change* (Discussion Paper 183) (pp.135 - 153). Washington D.C.: The World Bank,
- Vernooy, R. (2005). The quality of participation: critical reflections on decision making, context and goals. In J. Gonsalves, T. Becker, A. Braun, D. Campilan, H. D. Chavez, E. Fajber, M. Kaporiri, J. Rivaca-Caminade, & R. Vernooy (Eds.), *Participatory research and development for sustainable agriculture and natural resource management: A sourcebook* (Volume 1) (pp. 32- 40). Ottawa, ON: International Development Research Center.
- Vokes, R. (2003, January 12). ADB defines four basic elements of good governance: Accountability, participation, predictability and transparency. *The Telegraph Weekly*, Kathmandu, Nepal.
- Watts, L. H. (1984). The organizational setting for agricultural extension. In B. E. Swanson (Ed.), *Agricultural Extension: A Reference Manual* (pp. 21- 41). Rome: Food and Agricultural Organization.