RESEARCH ARTICLE

STATUS OF CAPITAL ASSETS FOR AGRICULTURAL SUSTAINABILITY IN GANGAJAMUNA RURAL MUNICIPALITY DHADING, NEPAL

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ARTICLE DETAILS

Article History:

Received 18 January 2021
Accepted 23 February 2021
Available online 17 March 2021

ABSTRACT

Capitals for agricultural sustainability include human, physical, natural, financial and social aspects present in agroecosystem. The status about these capitals provide base for sustainability in agriculture. In this regard, a descriptive research was done to record the status of capital assets needed for agricultural sustainability in Gangajamuna Rural Municipality of Dhading district. The study was based on primary data collected through structured questionnaire based on simple random sampling technique from 57 farming-based household samples during April, 2018. The study provided an overview on status of capital assets which must be taken into consideration for paradigm shift in current set of agricultural practices for achieving agricultural sustainability. The status of human, physical and financial capitals were poor in comparison to nature and social capitals. The study concluded that the state of farming practices, technologies and management system must be upgraded for ensuring agricultural sustainability and increasing adaptive capacity and transformability in order to thrive in the present context.

KEYWORDS

Capitals, availability, agricultural sustainability.

1. INTRODUCTION

Agriculture is the way to economic development, particularly in the developing economies of all regions (SAARC Secretariat, 2014). The sector is the major source of rural employment and backbone of rural economy in addition to ensuring food and nutritional security (MOF, 2014). Agriculture contributes about 20% to total GDP in Bangladesh, Bhutan, India and Pakistan (NSB, 2015; MOF, 2016; MOFERP, 2015) and 33.1% in Nepal (MOAD, 2013). The agriculture sector employs about 50% of the total employment in Bangladesh, India and Pakistan, 31% in Sri Lanka and highest (65.6%) in Nepal, hence demonstrating the importance of this sector in absorbing the growing labor force of these countries (ILO, 2015; CBS, 2015; MOAD, 2013). 75% of income of Dhading district comes from agriculture. Dhading produces a wide range of agricultural products. These include paddy rice, wheat, maize, millet, potatoes, and various seasonal and off-season vegetables. Moreover, the district is one of Nepal's major producers of milk and milk products (DDC, 2012). A number of agricultural development programmers encouraging intensification have been implemented in this district. Examples include paddy, maize, wheat, potatoes, vegetables, honey bees, oranges, bananas, mango and litchi. Similar programmes for livestock include buffalo, cow, goat, sheep, pig and poultry (DADO, 2012).

There is a great debate on what sustainability actually means. Different understanding expression about sustainability has been expressed to

imply greater sustainability in some agricultural systems over prevailing ones in both pre-industrial and industrialized agriculture. These include biodynamic, community based, eco-agriculture, ecological, environmentally sensitive, extensive, farm fresh, free range, low input, organic, permaculture, sustainable and wise use (Pretty, 2008; Conway, 1997; Scherr and McNeely, 2008; Clements and Shrestha, 2004; Gliessman and Kerski, 2005). There is an intense debate about whether agricultural systems using some of these terms can qualify as sustainable (Padel and Lampkin, 1994; Trewevas, 2002). A sustainable agriculture seeks to make the best use of nature's goods and services, technologies and practices to be locally adapted and fitted to place.

Jules explained that agricultural systems at all levels rely on the value of services flowing from the total stock of assets that they influence and control, and five types of assets—natural, social, human, physical and financial capitals are now recognized as being important (Jules, 2007). Further, FAO suggested the holistic indicators that must be applied at the global level to enable measurement and monitoring of agricultural sustainability in different countries, because they are context-specific, these tools and frameworks do not provide a robust basis for comparing countries in terms of agricultural sustainability (FAO, 2016). According to some researchers, sustainability in agriculture is a complex concept and there is no common viewpoint among scholars about its dimensions (Hayati et al., 2010). Nonetheless, various parameters for measuring agricultural sustainability have been proposed.

Quick Response Code

Access this article online

Website:
www.sfna.org.my

DOI:
10.26480/sfna.01.2021.44.47

Natural, human, social, financial and physical capitals are needed for ensuring agricultural sustainability. Agricultural sustainability is ensured by human capital through innovativeness (Pretty, 2008). A group researcher reported that various functions of agroecosystem are ensured by natural capitals (Ekins et al., 2003). According to a study, social capitals aid in capturing the idea of norms and bonds required for sustainable agriculture (Berkas and Folke, 1994). Financial capitals are required to determine the nature, quality and quantity of inputs used (UNDP, 2012). Physical capitals are required to create opportunities for farming communities (vanLoon et al., 2005). So, for ensuring agricultural sustainability consideration must be taken to develop and maintain each type of capitals. In this regard, the objective of this study was to explore the status of various capitals for agricultural sustainability in the study area.

2. MATERIALS AND METHODS

2.1 Research design

This research was based on descriptive research design. Descriptive research is a study designed to depict the situation, phenomenon or describe the population. Survey method was used in this study.

2.2 Selection of study area

Gangajamana Rural Municipality was selected for the study. It was formed by combining 5 former Village Development Committees (VDCs) namely Ree, Gumdi, Fulkharkha, Baseri and Budathum (MoFALD, 2017). The study area consists of ward number 1 and 2 of Gangajamana Rural Municipality, the entire area of former Ree VDC. The area was selected purposively due to accessibility and resource constraints. In addition, Dhading was also highly affected by the earthquake of 2015 (FAO, 2015). The study area represents most of the mid- and high hill regions of the Dhading district, but has high literacy rate of 70%, higher than other hilly regions of the Dhading district, and farming is the main source of livelihood (Ree VDC, 2070).

2.3 Nature and source of data

Both primary and secondary sources of information were used during which both quantitative and qualitative information were collected. The main method for collection of the primary data was household survey of randomly selected farmers done with the help of questionnaire along with the direct field observation. The data related to—demographic characteristics of the household and possession of the capitals, such as human, natural, financial, physical and social capitals were collected. Field visit and interaction among the individuals and farmers' group were done to understand the agricultural system, and after the administration of pretest data some of the indicators of capital related to agricultural sustainability were further continued and some were not as per availability of the resources and non-relevancy to the context of study area. The secondary sources of information were books, journals, survey reports, officially published data etc by the different scholars, authors and institutions, which were electronic and/or hard copies as well relevant to this study.

2.4 Sample size and procedure

According to a study, there are different opinions about the sample size as some of the experts have suggested sample size to be minimum of 5 to 10% of total households (Baskota, 2009). However, these views are of little use because no hard and fast rules can be laid down about the sample size, and for this study, 57 households were selected at random which constituted 10% of total households in the study area as suggested (Taherdoost, 2017).

2.5 Methods of data collection

2.5.1 Household survey

A household survey was carried out with the prepared questionnaire during April 2-22, 2018 asking questions with the household heads in the selected area.

2.5.2 Field observation

Field observation was also one of the important techniques for the data collection of this study. Several field visits to the study area were made by the researcher, to understand the situation of different agricultural sustainability capitals, land use system, understand the community and their access and explore the various other prevailing aspects of the agricultural capitals relating to the agricultural sustainability.

2.6 Data analysis and presentation

The radar diagram or chart from the MS Excel, version 2007 has been used to assess the status of the agricultural sustainability capitals indicators, where, indicator categories had been divided and presented into two ways, one was observed and the other one calculated. In radar diagram

3. RESULTS AND DISCUSSION

Various factors were playing important roles in the agricultural sustainability. The study explored the status of five capitals, i.e. human, physical, financial, natural and social, necessary to agricultural sustainability as below.

3.1 Human capital

The considered strong criteria for human capital measurement were availability of labour, year-round food sufficiency and formal and informal agricultural education. The respondents were asked about these indicators, whether they have it or not along with the reasons behind it. The radar chart (figure 1) indicates the average of human capitals indicators as responded by the household head. Either the respondent or any member in family if possessed any indicator was considered as a human capital taken as the driving forces in agricultural sustainability.

Figure 1: Status of indicators of human capitals in the study area.

As presented in the figure 1, the outermost line of the radar chart indicates the percentage of expected values, and inner values were calculated from the study. It was found that on an average 57% of the respondents have labor availability for agricultural activities, 36% of respondents were literate, 23% of respondents have informal agriculture education and 12.5% have year-round food sufficiency and have no formal agricultural education received. The average of these five indicators was only 35.7%, which is relatively a lower scale.

3.2 Physical capital

The radar chart (figure 2) indicates the status of indicators of physical capital. Among the various indicators, it was found that about 46% of the respondent households has year-round irrigation facility, but none of the respondent household had storage facilities and has no year-round road in operation. However, entire respondents had local agricultural tools that are needed for farming. As seen in figure 2, there was year-round local market available for small amount of marketing, but these markets could not consume large scale, commercial production. There was no problem for the local tools and seeds for the farmers and the area lacked storage facilities for the perishable products.

Figure 2: Response of households in indicators of physical capitals.

The status of the physical capital appeared very poor, although the sustainability capitals vary with the context and the study area was a remote area and the farming practice was based on traditional tools and equipment and farming was done for the family livelihood.

3.3 Natural capital

Figure 3: Mean values of natural capital indicators in study area.

The radar chart (figure 3) indicates the average of natural capital indicators as responded by the households. The study revealed that the farmers were farming their land since over 40 years and 64% were utilizing their arable lands. There was minimum use of agro-chemicals and no use of balance nutrients in the crop farming, but there was no problem of soil erosion, and water was sufficiently available for human, animals and farming. Entire respondents were using minimum agro-chemicals and also the use of chemicals was not rational as the respondents were found to be applying in their own way. The natural capitals in the study area based on the indicators used were relatively in very good status as the farming was done for living and close to nature and the introduction of the synthetic materials for the farming was low and the farmers were practicing some of the local methods for the conservation of the soil while farming.

3.4 Financial capital

The indicators considered for financial capital in this study were selling of farm products, land ownership in terms of monetary value, saving, access to loan and keeping farm records, especially in terms of cash (figure 4). It was found that, 80% of the respondents were selling their farm products, mostly live animals, potato and cardamom. About 32.14% respondents had access to loan, however, it was from informal sources such as landlords, relatives and friends. 37.5 % had farm report, but was not maintained in a proper manner.

Figure 4: Mean values of financial capital indicators in the study area.

3.5 Social capital

The social capitals indicators considered were, membership in farmers' network, community support for farming, access to agricultural information, security of tenure and plan for farming continuity. It was found that entire respondent-households had tenure security in terms of land ownership of the farm. More than half of the respondents (55%) has plan to continue farming and 39% has community support for farming (figure 5). Only 20% have access to agricultural information and only 25% were members of farmers group.

Figure 5: Mean values of social capitals as response of households of the study area.

4. CONCLUSION

From the study it was concluded that the physical (market, road, agricultural inputs, storage and irrigation) and human capitals (labor, food and education) were comparatively lower than that of natural (land utilization, less chemicals used and nutrient balance) and social capitals (farmers group, security and farm plans). Similarly, the financial capital was merely satisfactory. There must be efforts on developing the human and physical capitals along with other financial, social and natural capitals for the sustainability of agriculture in the study area by the government and other institutions working in the area for sustainability of the agricultural enterprises.

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