



Agricultural Self-Sufficiency: Ensuring Sustainable Economic Development in Nepal

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ABSTRACT

This paper aims to explore the impact of agricultural self-sufficiency that can ensure a sustainable economic development in Nepal. To meet this objective, the paper has adopted the descriptive-analytical research method. The required data for this study have been taken from the secondary sources, mainly journal articles. During the study period from FY2016/17 to FY2018/19, the production in cereal crops has been increasing slowly, but the yield is found improving from 2.79 to 3.10 M.T./hectar and in the case of cash crops, the productivity is found to be the highest during the study period. It has increased from 12.77 to 13.04 M.T./hectar. Nepal is enriched with agro-diversity and the economy has ample resources for the production of all food grains. If there is no efficiency in agricultural production, the economy should import food grains to supply needy people. So, it is important to be self-sufficient economy in agricultural food grains and to drive economic growth by increasing production and productivity.

KEYWORDS: Commercialization, comparative advantage, poverty reduction, self-sufficiency, subsistence farming

INTRODUCTION

Nepal is rich endowed with agro-diversity in terms of agricultural resources. These resources are productive in nature and can be transferred to non-agricultural sectors as factors contributions. So agricultural self-sufficiency contributes to economic prosperity and development in terms of factor and product markets. The agro-diversity includes crop farming, livestock varieties, fish species and forest resources. The agricultural sector as a source of national income accounting comprises of two subsectors, mainly crop production and livestock development. Farmers generally produce their local indigenous crops considering the diverse nature and climate. They prefer to use native plants and natural vegetation. However, agricultural development has been slow and its contribution to the Gross Domestic Product (GDP) has also been declining. Weak agricultural growth primarily at subsistence level is also limiting overall

economic development. This would make people more dependent on agricultural products to fulfill their daily needs. Majority of households in the hills and mountains annually experience food deficits from their own productions. Specifically, the small farmers with lesser land holdings are found more vulnerable in order to meet their basic requirements.

Though the contribution of agriculture to GDP is remarkable, this sector has not attracted the youths who are going abroad. The trend of rural urban migration is also increasing upward. As a result, the rural land is becoming barren and urban land has been used for housing purposes. In such circumstances, the agriculture rural accommodating policy and its successful implementation has been suggested for poverty reduction and rural development (Chaudhary, 2018, pp. 33-46).

Considering these issues, this paper has focused on the production status of agricultural crops and their yield to analyze self-sufficiency in agricultural production. Generally, the concept of food self-sufficiency refers to a country that can satisfy food needs from own production rather than by buying or importing (FAO, 2012). Nepal in this perspective, has potentiality of becoming self-sufficient in the agricultural sector. Farmers can contribute significantly to making food demand self-sufficient by increasing their agricultural production and productivity.

This study aims to achieve the level of self-sufficiency in the agricultural production. A country is said to be self-sufficient only when it produces enough to meet its domestic demand. In order to accomplish this, the distribution of land is also important to recognize the total area of cultivable land and crop production to fulfill the households' food demand in the economy. However, the expansion of cultivable land in Nepal is limited due to existence of high hills and mountains. The production of paddy as a major staple food crop has increased by 1.3% and the gross value added from agriculture is estimated to increase by 2.6% in FY 2020/21 (GoN, 2021, p. 17)

With a view to increasing the agricultural production, the Ministry of Agricultural Development prepared the agricultural development strategy (ADS) in 2014. This strategy launched the vision of self-reliant, sustainable, competitive and inclusive agricultural sector that would drive economic growth and contribute to improved livelihoods and food nutrition security (ADS, 2014).

In order to achieve its vision, the ADS had accelerated agriculture sector growth through strategic components such as increasing productivity, profitable commercialization, promoting inclusiveness and competitiveness, and sustainability and connectivity to market infrastructure. In addition, the connectivity based growth with the expansion of agricultural roads and marketing centers is expected to result in increased food security, poverty reduction and strengthen farmers' rights.

For agricultural production, a plenty of resources are available in the Nepali economy. Ample resources provide an opportunity for inclusive growth and accelerating poverty reduction. Nepal's topography, water resources and skilled labor force can provide a comparative advantage in choosing agricultural production. By increasing production and yield in food crops, the economy would be self-sufficient and able to export the same. If there is no efficiency in agricultural production, the economy should import food grains to supply in deficient areas by spending a lot of hard currency. Thus, it is important to be self-sufficient in agricultural food crops and to succeed high economic growth by increasing their productivity, improving people's livelihood and achieving food nutrition security.

In Nepali agriculture, rice, maize, millet, wheat, barley and buckwheat are the major cereal or staple food crops whereas arhar, mashur and mug lentils, grams, black-grams, horse-grams and soybeans are the important pulse crops. Similarly, oilseeds,

potato, sugarcane, fruits, jute and cottons are the cash crops. Other crops are orthodox tea, coffee, large cardamom, turmeric and zinger.

Despite these food crops, Nepal is endowed with natural resources for increasing high land productivity. Many households, however, in the hills and mountain regions, experience food shortages. Particularly, the agriculture sector has faced the problem of input supply such as improved seeds, fertilizers and chemicals, skilled labor force, agricultural equipment and machineries. Furthermore, harvested food products might become waste in the absence of market accessibility.

LITERATURE REVIEW

Agriculture in Nepal is the largest economic sector since the starting of evolution. The first five-year periodic plan (1956-61) and the fifth plan (1975-80) to tenth plan (2002-07) prioritized agriculture as one of the promising sectors for poverty reduction. It was potential to reduce poverty from agriculture by increasing productivity in the cereal and cash crops. The diversified production of horticulture and high value crops were also needed for poverty reduction.

Agriculture perspective plan (1995-2015) was a national strategy of 20 years' duration. The strategy was based on the acceleration of agricultural growth rate that would sufficiently attain multiplier effect on employment generation. This plan was the first comprehensive periodic plan that identified agriculture sector as an engine of growth (DVN Report, 2018). The plan envisaged that there is considerable scope for expanding agricultural production through an increase in productivity and cropping intensity.

The three-year fourteenth periodic plan (2017-2019) gave high priority to entire agricultural and rural development. The plan mainly focused on reducing headcount poverty from 21.6% to 17% by 2020.

Within agriculture, some commercialization and diversification have been taking place in recent years. Some farmers are getting involved in producing high value crops for commercial purposes. As agriculture continues to provide a broad base to the Nepali economy, the growth originating in agriculture holds high potential to have a wider impact on poverty reduction (Karkee, 2008).

In order to achieve self-sufficiency in the major crop production in Nepal, Giri et al (2017) found that rice followed by maize production contributes more in both calories and protein in Nepali diet. The findings of their study suggested that self-sufficiency in rice production is attainable with correct policies in place, increasing research in rice production; introducing varieties with higher yield and subsidize fertilizers that farmers are using significantly.

A study made by FRTC-Nepal (2020) revealed that cultivable land occupies 21.8 percent of the total land (147,516 km²), which indicates the potentiality for expansion of this area is extremely limited with the given topography, climatic condition and the moderate soil fertility. The study of 2019 also showed that agro-forestry as a traditional practice of growing forest or tree species, agricultural crops and shrubs in and around the same agricultural field is widely adopted in the mid-hills and Terai region of the country. In addition, the economic consequences of the pandemic COVID-19 and its impact on livelihoods was expected to be the most acute for small farmers with lesser land holdings or informal workers who were more at risk of falling extreme poverty. So an immediate action was needed to support them by providing income, social protection and temporary employment (WBG, 2020).

In collaboration perspective, building partnership for sustainable agriculture and food security, the European Union (EU)-Nepal Cooperation (2014-20) has been guided

by Nepal's priority for poverty reduction, modernizing agriculture and sharing economic prosperity. The USAID and Nepal Partnership (2015) has also announced to promote agriculture development in Nepal. Under this partnership, farmers with small holdings would have access to mechanized farming technology. Such technology would have low cost attachments to power tillers or tractors that can increase farmers' agricultural yields and their income.

Reviewing these plans and various reports, it can be argued that the growth of agriculture sector is essential for food supply, income earning and employment opportunities. So it requires rapid transformation of subsistence farming into a large scale, specialized and commercial farming with a view to achieving agricultural self-sufficiency.

METHODOLOGY

This paper is mainly concerned with achieving self-sufficiency in the agricultural production. Maintaining the sustainability in the agricultural production with productivity would be the major determinant for economic prosperity. This study follows descriptive-analytical research method. The method has been adopted for fact finding and information gathering. For this purpose, required data have been assembled from the published sources of Nepal government such as Ministerial publications of Agriculture and Livestock Development (MoALD), National Planning Commission Secretariat (NPCS) periodicals, Year Book of the Central Bureau of Statistics (CBS) and the survey of Forest Research and Training Centre (FRTC) of Nepal. In the case of international agencies, the vision of Food and Agricultural Organization of United Nations (FAO), US Agency for International Development (USAID) and South Asian Focus by World Bank Groups (WBG) were taken into account. Time-series annual data of FY 2016/17 to FY 2018/19 have been presented and compared to measure the productivity of agricultural crops. In order to measure the agricultural self-sufficiency, three levels created by FAO, India (2018) have been followed. That is, below 80% indicating food deficit; between 80% and 120% signifying self-sufficiency, and above 120% representing food surplus in the economy.

RESULTS AND DISCUSSIONS

Agricultural production is predominantly rainfed and food deficient year might happen due to irregular rainfall during the rainy season. The climate and soil types are different in total seven provinces in Nepal, but there have not been enough data for research and experiments to find out the best crops according to climate and soils' classification. Moreover, the agriculture sector has faced several challenges, which includes low productivity and high volatility due to climate change, unavailability of qualitative seeds, chemical fertilizers, insecticides, equipment and machineries, irrigation, adequate storage and easy credit facilities.

Status of agricultural products

Cereal crops are the major staple food crops in Nepal. Rice is the main component of cereal crops, which contributes to 20.8 percent of agricultural GDP. However, the production of rice largely depends on *monsoon* rainfall due to limited irrigation facilities. Fertilizers and chemicals as well as improving varieties of seeds are not timely available. Now-a-days, cultivation of high value crops is becoming more important for rural income generation.

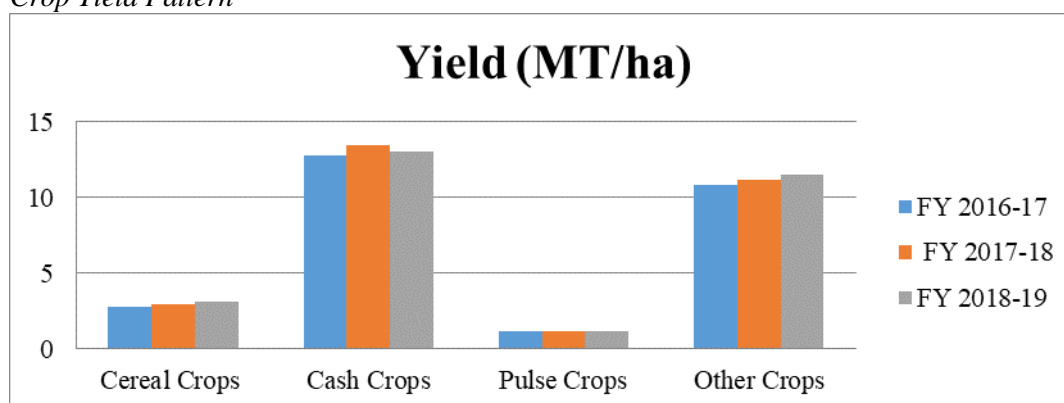
Following table and graph depict a comprehensive outline of the agricultural products in three years from FY 2016/17 to FY 2018/19.

Table 1
Status of Agricultural Products in Nepal (FY 2016/17 – FY 2018/19)

Crops	FY 2016/17			FY 2017/18			FY 2018/19		
	Area in 000ha	Production in 000MT	Yield MT/ha	Area in 000ha	Production in 000MT	Yield MT/ha	Area in 000ha	Production in 000MT	Yield MT/ha
Cereal	3491	9759	2.79	3429	10013	2.92	3450	10686	3.10
Cash	473	6038	12.77	507	6819	13.45	534	6962	13.04
Pulse	326	378	1.16	311	369	1.19	332	382	1.15
Others	485	5252	10.83	498	5545	11.13	522	6018	11.53

Source: Statistical information on Nepalese agriculture (2018/19), Government of Nepal, Ministry of agriculture and livestock development, Statistics and analysis division, Singh Durbar, Kathmandu, 2020 (1-11).

Figure 1
Crop Yield Pattern



The above mentioned table and graph depict the status and yield patterns of four types of crops, that is, cereal, cash, pulse and other crops respectively. The production of cereal crops has been increasing slowly but the yield is found improving from 2.79 to 3.1 MT/ha. The productivity of cash crops is found to be the highest as compared to others. The potato as an important source of cash crops is near to the level of self-sufficiency. Its cultivation is popular among farmers due to high yield potential and greater demand. In rural hill areas, the potato crop is produced to address food insecurity among small farmers and its import in urban areas mostly account for chips and other industrial purposes. Pulse crops are increasing, but their productivity is found minimum. Lentil is a high protein pulse, which covers more than 50 percent of total pulse crops production in Nepal and it would be the major exporting item of the country if self-efficiency is maintained (DVN Report, 2018). Other crops such as orthodox tea (or homemade tea), large cardamom, coffee and ginger are high value cash crops that have comparative advantages in production and trade due to favorable geography and climatic condition. They have high productivities and are relatively a reliable source of income for many producers.

Despite these, agriculture presents high potentiality for economic growth and poverty reduction. Increased productivity of agriculture raises farm income, food supply and provides greater employment opportunities for the majority of people living in urban and rural areas. To attain self-sufficiency in agriculture, terrace farming, rooftop farming, container farming and cultivation in controlled environment of agriculture in urban areas can be adopted while in rural areas the focus should be on the cultivation of locally

available seeds' varieties, and the promotion of indigenous crops, fruits and vegetables. These products would have high nutritious value and they should be promoted and cultivated for commercial purposes.

Level of Self-Sufficiency

The level of self-sufficiency has been computed as the ratio in percentage of domestic production or supply over its requirement or demand. The higher the ratio, the greater the self-sufficiency would be maintained. For this purpose, the supply and demand for food grains has been analyzed from the balance sheet prepared by the Ministry of Agricultural and Livestock Development (MoALD, 2020). Since FY 2013/14, Nepal's agriculture is heavily inclined to food grains production guided by sufficiency objectives. In FY 2018/19, the domestic supply of food grains was 7312 thousand M.T. whereas the requirement or demand was 5619 thousand M.T. It showed the surplus balance of 1693 thousand M.T in FY 2018/19. Taking this figure of balance as a percentage of demand requirement, it can be said that the level of sufficiency is found to be 130.13%. This percentage justifies the surplus level of food grains above 120%. The current level of sufficiency is also expected to be more than 100% due to the favorable climatic condition and increase in agricultural productivity.

Government Initiatives

For poverty reduction in Nepal, the government has given emphasis towards agricultural development. Agriculture plays a major role in economic growth and development. As a supplier of food, it is a foundation stone of human existence. It is important not only because of its contribution to the national GDP but also providing activities to other sectors like industries and services. It delivers raw materials to agro-based industries, supplies food to tourism and promotes agribusinesses.

Nepali agriculture as a base of productive economy can be sustained through its modernization and commercialization. Under the implementation of 58 agriculture modernization projects, there were 106 zones and 16 super zones in operation in 77 districts. Of the total production of agricultural crops during the FY 2020/21, the share of food crops was estimated to be 44.9% and the share of other crops was found to be 54.1% (GoN, 2021, p. 104).

Recently, crop diversification is becoming more important in terms of contributing national income and making attraction to the labor force. This practice allows farmers to expand the production that helps to generate higher level of income. So, employing diversification helps in reducing risks involved in production processes. It ensures that the farmers do not lose all their investment as the weather does not support the crop production.

In order to increase agricultural production, the government of Nepal has focused on ensured irrigation, availability of fertilizers and insecticides during the cultivation period, introduction to quality seeds of improved varieties and the facilities of credits for cropping and harvesting. With this purpose, the government has allocated Rs. 41.4 billion in the latest budget of FY 2020/21 for the overall development of agriculture and livestock sector.

Despite these efforts, the government has also taken substantial initiatives for the development of agriculture such as dividing agricultural land into pocket zones and promoting crop policy. Soil testing for the purpose of identifying most suitable crops, promoting quality seeds through testing and certification, establishing market hubs and branding of high value crops like tea and coffee.

Policy Implication

The national agricultural policy, 2004 focuses on sustainable agricultural development. It can be attained by transforming the subsistence farming system into a commercial and competitive farming. This policy aims at achieving high and substantial economic growth through commercial agricultural system, contributing to food security and poverty reduction.

Further, the agricultural development strategy, 2014 has also been prepared by the Ministry of Agricultural and Livestock Development (MoALD). It includes ten-year action plan with roadmap and a rationale based on the assessment of the current and past performance of the agricultural sector (Chaudhary, 2018, p. 37).

This strategy prioritizes major factors needed to increase agricultural productivity. It aims to increase the income of farmers and agro-entrepreneurs, to improve livelihoods, and to achieve food nutrition security. In this regard, the strategy is mainly concerned with conducting agricultural research and extension, efficiently using endogenous resources, and adapting well in the face of adverse climate change and natural disaster.

Despite this, a plan to reduce increasing trade deficit in the economy and making economic progress, Nepal can primarily focus on the agricultural sector by moving towards self-sufficiency in food products.

CONCLUSION

From the above discussion, it can be concluded that agriculture-led economic growth can be a valuable determinant for sustainable economic development. This growth can be achieved through agricultural self-sufficiency. During the study period, the production of cereal crops has been increasing slowly, but the yield is found to be improving from 2.79 to 3.1 MT/ha. The level of self-sufficiency in food grains is also measured 130.13%, which indicates surplus balance in the economy. This level can be sustainably maintained through avoiding barren lands and deforestation, providing sufficient irrigation facilities, making storage houses and soft loan facilities and promoting commercialized agriculture with high value crops. For this purpose, the role of good governance is vital. The government should, therefore, make local governance effective to implement policies and programs related to achieving agricultural self-sufficiency.

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