

CHAPTER II

RICE PRODUCTION AND ITS POLICIES

Modern and planned development was introduced in Bhutan in 1961 through the First Five Year Development Plan. With the inception of planned development, infrastructure and trade have developed rapidly. Agricultural development is also slowly changing the face of rural Bhutan but is still predominantly subsistence oriented though the economy is in the process of transforming into a market-based economy. Subsistence agriculture at low productivity and high labour requirement is still sufficient to provide for household food security in most parts of the country and abject poverty is not a major problem. Rice as a staple food crop of the majority of the population is of utmost importance to the country. It is grown by farmers in almost all the districts of the country for meeting the cereal requirement of the households. According to the RNR Statistics, about 16 percent of the households in Bhutan own wet land less than one acre (0.4 hectare), while 68 percent have wet land between 1 and 4.99 acres (3.40 ha) each. Of the total wetland cultivated, 84 percent are owner operated while eight percent are leased out mainly due to shortage of farm labour while another eight percent are left fallow primarily due to acute water shortages or damage from wild animals.

2.1 Rice production status

Ghimiray (2000) noted the total land area in Bhutan under paddy cultivation to be 37,727 ha. This area was further based on the GIS-Land Use Planning Project (GIS-LUPP) of 1995. As shown in Table 2.1, not all of this area is however put under cultivation for various reasons such as farm labour shortages, crop depredation by wild animals, intention of land use conversion, and land abandonment etc.

He also pointed out that the estimated production of 88,503 tons (t) of paddy is based on the assumption that 100 percent of the rice land is cultivated where as vast chunks of wetland are currently not under cultivation especially in the wet sub-tropical zone. He compiled the district reports for 1997 and estimated the total production for that year to be 63,046 tons from an area of 24,175 ha.

Table 2.1. Rice area and production by agro-ecological zones

Agro Ecological Zone	Total rice area (ha)	Percent of total rice area	Yield (t/ha)	Production (Ton)
Warm Temperate	7,545	20	3.12	23,540
Dry sub-tropical	6,791	8	2.5	16,978
Humid sub-tropical	8,299	22	2.20	18,258
Wet sub-tropical	15,090	40	1.97	29,727
Total/Average	37,725	100	2.42	88,503

Source: Adapted from 9th Five Year Plan document for field crops

Both irrigated and non-irrigated lands are presently not optimally used for production. Even though varieties and techniques for double cropping of rice in a year for the mid and low altitude are available, the rate of adoption is very low and most farmers still cultivate one crop per year.

According to Shreshta (2004), the area under paddy had decreased by nine percent during the period spanning from 1989 to 1997, but the overall production of rice in the country increased by 58 percent during the same period. She estimated Bhutan's current rice area to be more than 26,000 hectares with a production capacity of more than 60,000 t. Samtse had the highest rice growing area in Bhutan with 2,889 ha followed by Sarpang with 2,839 and Punakha with 1,971 ha. Production, however, was highest in Punakha with 6,274 t a year. She also mentioned that 15 improved rice varieties were made available to farmers during the last two decades. Two of these varieties were developed at the International Rice Research Institute in Philippines, seven in other countries like India, Bangladesh, Japan, Korea, Nepal and Sri Lanka, and six varieties, Bhutanese improved modern varieties of rice, were

developed specifically by the Bhutanese rice research scientists. Bhutanese modern varieties include Bajo Maap 1 and 2, Bajo Kaap 1 and 2, Yusi Ray Maap and Yusi Ray Kaap. Most of them are blast resistant. During this period the various improved management practices developed and adopted include weed control, application of inorganic fertilisers, land and nursery preparation methods.

2.2 Food availability

The FAO (1994) reported high incidence of chronic and transitory food insecurity in the northern and southeastern parts of the country. The incidence of chronic food insecurity is low in other parts of the country, while transitory food insecurity is prevalent.

In terms of food availability, Bhutan is relatively comfortable. At the most, seasonal shortages of supply are experienced in some parts of the country, which have poor accessibility (Planning Commission, 2001). The per capita food availability of 2500 kilocalorie (kcal) is higher than the South Asian average of 2,499 kcal per day but lower than the world average of 2,782 kcal per day (UNDP, 2001). The Food Corporation of Bhutan has established a network of fair-price shops that makes essential food commodities readily available to households in most parts of the country. In terms of access to food, traditional coping strategies such as seasonal borrowing from food-surplus households, bartering with other local products, work for food as well as income from the modern sector such as from cash crops, remittances from salaried family members and off-farm waged labour have greatly enhanced the purchasing power of most households and their access to food.

People's access to food had been greatly improved both in terms of quantity and quality. Food security at the household level has significantly improved as a result of increase in production due to new crop varieties and improved farming practices. The food basket has expanded to include more varieties of vegetables, fruits and animal products. Starvation had been eradicated and although seasonal shortages of food are experienced in some pockets of the country, people are able to

make ends meet by purchasing from the markets with the income they earn from sale of cash crops and livestock products. Chronic malnutrition is very rare, morbidity and mortality rates have been reduced drastically as a result of the improved nutrition besides other interventions (MoA, 2004).

Vulnerability to food shortages is a more pressing contemporary issue for Bhutan than the other dimensions of food security or insecurity. Bhutan is prone to landslides, flood, drought and other forms of natural calamities that cause temporal reduction in food production and supply. It is also highly susceptible to fluctuations in market prices beyond its borders in the north-eastern region of India. India accounts for 90% of Bhutan's overall export and some 70 percent of its imports. As a result, political and economic instability in India makes Bhutan highly vulnerable to food shortages (MoA, 2004).

Shreshta (2004) stated that despite the population growth, the annual import of rice into the country had stabilized at an average of 33,000 MT in the recent years due to steady increase in rice production. The increase in production was primarily because of farmer's easy access to improved varieties of rice and the improved technologies had led to an increase of national rice output by 5,000 to 10,000 MT a year. She found that 68 percent of the households are self-sufficient in rice and the national food shortage was estimated at 2.2 months a year.

2.3 Demand for rice

FAO (1994) said that the gap between domestic cereal supply and aggregate demand, which to a great extent represents urban demand is met by imports from India. In 1990 Bhutan imported about 40,000 Mt of cereals, mainly rice and wheat valued at about Nu.235 million. The demand for rice is rising in both urban and rural areas. The import of rice in 2003 amounted to 18,262 tons to an overall value of Nu. 159 million (Food Corporation of Bhutan, 2004).

Lhamo and Swinkels (2000) reported that rice per capita consumption was highest in the rural west, with a rice consumption of slightly more than 200 kg/person/year, followed by urban east (about 180 kg/person/year). They also found that the per capita consumption of imported rice is higher in the urban areas as compared to the rural areas meaning that urbanization trend would result in an increased consumption of imported rice per capita.

The Agricultural Marketing Section (AMS) of the MoA in 2000 reported that there is low demand for cheap imported rice in Punakha and Wangdue and that it appears the marginal and poorer producers are consuming cheap imported rice in the rice producing areas. The gap between domestic cereal supply and aggregate demand, which to a great extent represents urban demand, is met by imports from India (Figure 1). The demand for rice is increasing in both urban and rural areas (FAO, 1994).

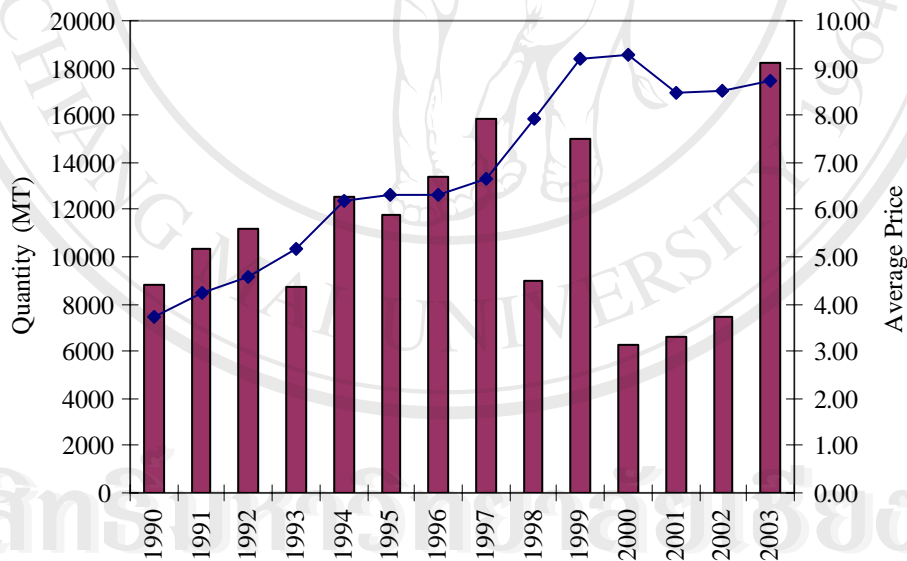


Figure 2.1. Quantity of rice imported through Food Corporation of Bhutan and the trend in average price, 1990-2003

Source: Agricultural Marketing Section (AMS), 2004

2.4 Economics of rice

Budgets are one of the simplest yet the most widely used techniques in economic analysis. Enterprise budgets enable to evaluate costs and returns of production process (Flinn et.al. 1991). Wangdi and Swinkels (2000) used enterprise budgeting to find the profitability of rice in Lingmeyteychhu Watershed. Their findings revealed that the returns to land was Nu. 24,714 per hectare and the average returns to labour at Nu. 143 per day. They found that the total average production cost for rice to be about Nu. 25,000 per ha and the cost of milled rice at Nu.13.90 per kilogram.

Net returns in the medium and low altitude zones are higher than in the high-altitude zone. The net returns are highest in the medium altitude. The considerable differences in the net returns among the high, mid and low altitude zones are driven mainly by the yield differences (Shrestha, 2004).

FAO (1990) reported that the returns to land are satisfactory in the dry sub-tropical zone, which is a reflection of a higher yield level achieved in this zone. In the other zones, returns to land are either negative or just positive. Low yields coupled with high labour requirement are the main determinants, with high wage rates in the warm temperate zone also being a major influencing factor. Under purely commercial conditions, rice production at a low level of production would not be a viable enterprise. However, under the subsistence and semi-subsistence conditions that exist in Bhutan, farmers are clearly prepared to work for returns less than the prevailing wage rates in order to meet their household food requirements.

In Bhutan, labour shortages are regarded as key constraints to increasing agricultural production and incomes. Employment opportunities imply that returns to labour are often higher outside of agriculture. Small field size and terrain limit the scope of mechanization. Bhutan's relatively high labour cost and less favourable growing conditions go to show that the production of traditional crops such as cereals become less attractive once subsistence requirements are met. Responding to

perceived labour shortages therefore implies the introduction of cropping patterns with less marked seasonal labour peaks and diversification into crops for which labour returns are higher (Department of Planning, 2000). Labour intensity of operations is high and labour shortage is acute (Ghimirey 2002). It takes 205 labour days to grow one hectare of rice against an Asian average of 75-100 labour days (Wangdi and Swinkels, 2000). Ghimirey (2000) also reported that acute labour shortages are experienced during the seasonal peaks like paddy transplanting, paddy harvesting and threshing. Majority of farmers however overcome these difficulties with very effective systems of labour exchange.

FAO (1994) reviewed the Accelerated Food Production Program (AFPP) and pointed out that based on the economic analysis carried out by AFPP, the production of the import substitution crops of rice, wheat and oilseeds is not economically viable compared to the production of horticultural crops for export. They concluded that the promotion of cereals and oilseed crops, which compete for the same resources, as export crops would result in lower farm incomes, lower export revenues and less economic growth.

2.5 Bhutan's Food Self-sufficiency Policy

According to the Ministry of agriculture (MoA), 2000, the Royal Government of Bhutan has been pursuing the policy of food self-sufficiency since the 5th Five Year Plan (1981-87). This consistency shows the political commitment to provide enough food to the citizens. The Royal Government adopted this policy because accessibility to food should be ensured at all times for a mountainous and land locked country. Some of the major reasons for implementing the food self-sufficiency policy are as listed below:

- The country has more than 80 per cent of the population in rural areas where food is the first priority and food shortages are recurrent.

- With improved social facilities and increased income, the population growth rate is high. Enough food has to be produced to feed the increasing population.
- A large non-farming community has emerged due to urbanization, diversification of the economy, and limited arable land
- The food requirement also diversified and increased when the number of expatriate workers increased ever since the 1st Five Year Plan, which started in 1961.
- The Bhutanese food habit is changing, consuming more and more rice. Some areas that were traditionally living on other cereals have now switched to rice

However, there is no agency or a program that is responsible for the procurement, grading, packaging and distribution of local rice and as such the policy lacked the support of the distribution program, which is a very critical aspect of the food security. The Food Corporation of Bhutan only deals with the import and distribution of food grains and other commodities. There are several reasons for the policy to have critical support of such distribution, as paddy is not grown uniformly in the country.

Pradhan (2003) noted that the Royal Government has adopted a policy of food security through a two-pronged strategy: by increasing production of cereals to achieve at least 70 percent self-sufficiency and by promoting exportable cash crops and use the revenue earned to offset the cost of food imports. A significant number of households face seasonal grain deficit. The deficit emerges mainly in May to July, when agricultural activity involving tilling, planting and weeding is intense. These are also the months when the poor farmers feel the grain shortage more acute, because the harvest is still sometime away and there is no margin for accumulation of stocks to tighten them over.

2.6 Rice self-sufficiency policy

The Food and Agriculture Organisation (FAO) in its technical report on Accelerated Food Production Programme in 1990 reported that the achievement of food self-sufficiency at the farm level is the main aim of the majority of the Bhutanese farmers. The very strong preference for rice in most parts of the country, and the resulting high level of rice consumption per capita, has led to most food purchases being in the form of rice. The cheap imported rice from India has also encouraged this trend. Food deficits in rural areas are therefore normally rice deficits. Given this food deficit situation, it is therefore easy to understand why small farmers, in particular, give high priority to their subsistence crops and the achievement of food self-sufficiency. The rice preference, coupled with the evidence that many farmers are not able to meet their household demand, indicates that farmers, especially small and medium farmers already have a strong incentive to increase rice output.

The Department of Agriculture (DoA), in 2003 stated that the policy objective for the 9th Five Year Plan (FYP) was to attain the national rice self-sufficiency level of 60 percent through the additional domestic production and to improve and sustain the food production for rural communities. Considering the population growth rate of 2.5 percent, the 60 percent self-sufficiency would be achieved by the end of the 9th FYP if Bhutan could produce an additional rough rice of 39,154 tons. The DoA also believes that farming activities are the concerns of the farmers and they need not be pushed into a certain direction of the operation but rather be pulled towards production objectives of national interest. It believes in creating conducive environment condition for an efficient and sustainable use of existing resources as the task of the government and to produce the required goods as the responsibility of the farming community. Some of the strategies set up by the DoA to increase rice production in the country are as follows:

- Identification of potential areas under each district and block and setting clear production targets;

- Intensification of the already cultivated area through the use of improved seeds, fertilisers, and improved technology generation and its effective dissemination;
- Provide subsidy and price support to encourage farmers to use improved seeds, fertilisers and more importantly to engage them in rice production;
- Provide market and access to market for surplus rice;
- More suitable rice varieties for wet sub-tropical zone should be developed and possibility for double cropping in this zone should be explored and with short duration varieties.
- Improved seed and fertiliser should be made available to all needy households at reasonable price in required quantity, quality and time by creating effective mechanism.

Wissink (2004) on the other hand argued that Bhutan should leave the goal of food self-sufficiency completely as it is conflicting with the principles of trade liberalisation especially when Bhutan is negotiating for accession to the World Trade Organisation (WTO). He further recommended that Bhutan has no comparative advantage in bulk rice production and so should not force its farmers to produce rice. Instead the farmers should be allowed to convert their paddy fields into orchards if farmers feel that they can earn more.

The Ministry of Agriculture (MoA) in its Food Policy Analysis in 2000 argued that the pursuit of domestic self-sufficiency is regarded nowadays as a potentially high cost and socially inefficient method for achieving the supply side of food security. It is pointed out that self-sufficiency is neither a necessary nor a sufficient condition for the achievement of food security. It is not a necessary condition, since imported supplies can be used to cover the varying gap between domestic production and consumption. It is not a sufficient condition because even with self-sufficiency there may be significant categories of the population facing food insecurity due to lack of food entitlement.

In view of the policy objective of maintaining a minimum of 70 per cent self-sufficiency in food grain production of cereals, in particular rice, the major staple in the country, will be given priority support. This support, if necessary would include subsidies and infrastructure development. Support to other cereals would be dependent on the role and significance of the crop in the food basket of the local area. Horticulture will be promoted as a means of enhancing household incomes and generating revenue to cover import costs (MoA, 2004). With only about 12.6 per cent wet land out of the total arable agricultural land (7.7 per cent), there is little scope for horizontal expansion of rice cultivation. There is a decrease in the flat rice land with rapid development and the target of 60 per cent self-sufficiency in rice can only be achieved by increasing the production per unit area (DoA, 2003). Meeting this long term objective of 60 per cent self-sufficiency in rice is not likely in the future as the country continues to be handicapped by the limited land available for cultivation (National Environment Commission, 1998).

The Ministry will continue to give priority to the supply of inputs as it is important that the right inputs reach the right clients at the right time. Generation and/or supply of inputs through private parties will be encouraged and facilitated. Where necessary the government establishments responsible for the generation/supply of inputs will be maintained. The possibility of establishing a chain of 'One-Stop Shops' catering to all the basic input requirements of farmers at all *dzongkhags* and run at non-profit self-sustaining scheme by the farmer cooperatives would be explored (MoA, 2004).

2.7 Food subsidy

According to the MoA, 2000, consumer subsidies in Bhutan are only applied to imported supplies of rice (and wheat), while this has lower budgetary costs for the government than subsidising all rice, but it clearly has adverse effects on producer prices and incentives for increasing domestic production. It creates economy wide price distortions.

2.8 Pricing policy

Pricing policy issues in Bhutan have been debated mainly in relation to food grains. In case of food grains, particularly rice, serious consideration was given to supporting output prices for domestic rice production. An indication of the likely costs and the difficulty of administering such support prices for paddy, above that of neighbouring India, prompted the government to discard the objective of total rice self-sufficiency. Instead a 70 percent self-sufficiency in rice by the year 2002 was adopted with emphasis on the promotion of improved technological practices and intensified cultivation measures (Dorjee, 1995).

By policy, the government does not favour price support or subsidy, but certain subsidies on transport, farm machinery are unavoidable. In any case, the use of price support to increase production is limited due to trade relations with India. A particular issue of some relevance to pricing policy is the sale of quota rice by Food Corporation of Bhutan (FCB) at prices below the open market prices. This is a concern that it may undermine the price incentive for local production. It should also be noted that if the FCB rice is cheap, the quality is commensurate with the price (MoA, 2000).

2.9 Agricultural Input Policy

The common organizations involved in the coordination of production, procurement and supply of most inputs are Druk Seed Corporation (DSC), Agricultural Mechanisation Centre (AMC), National Plant Protection Center (NPPC), Bhutan Development Finance Corporation (BDFC) and Commission Agents (CAs). The government appointed CAs to enhance efficiency in the supply of inputs to the farmers. The CAs receive 10 per cent commission from the government on the sale of inputs received from the input supply agencies.

According to the MoA (2000) substantial subsidies on input supplies were given in the early plan periods to encourage adoption of modern and improved

farming methods. However, such subsidies have been largely phased over the years. This policy has been adopted to minimize distortions and also to minimize the burden of financial resources of the government. Subsidies for land development, soil fertility development, seeds and seedlings, breeding stocks and fertilizers have all been removed in the Seventh Plan after a substantive review of the schemes during the Sixth Plan Period.

In principal, the Royal Government of Bhutan, does not intend to provide price support nor subsidies. The main exception is that of transport subsidy for chemical fertilizers and a significant subsidy on agricultural tools and machinery. Mechanisation is being subsidized as it is felt that the severe farm labour shortage warrants such a policy.

The policy of the government now is to promote commercialization and privatization of all possible government interventions. The input supply services are the most appropriate domain of the private sector that can respond quickly to the demands of the market. The main purpose of commercialization is to improve efficiency, and to promote private sector in the country. However, the private sector has not been proactive, and possibly because of four reasons:

- Private sector is not developed
- Private sector is risk averse because of limited capital and experience
- Domestic market is limited
- Development of related infrastructure is not developed

The agricultural tools and machine are subsidized according to the mechanization policy pursued by the government. The Bhutanese farming is characterized by drudgery and subsistence, and there is limited scope of bringing more areas under cultivation. The farm mechanisation policy is to make more labour saving devices/machinery to farmers to enable reduction in farm labour requirements. The policy objective emerged from the problems of labour scarcity coupled with labour intensity of farm operations to increase crop production. However, there have

been some changes in the policy. The revised policy discontinued price subsidy on equipment imported from India, restructured the Agricultural Mechanization Center, discontinued paddy mechanization program and discontinuation of in-country manufacturing activities.

The pricing method for equipment recommended and adopted by the MoA is to 'use the real value of the machinery based on the price prevailing in the region'. This method was thought to be more appropriate since the Bhutanese farmers have access to all these markets if the grant aid ceased. Almost all tools and implements are sold at a higher price than the comparable prices in India.

The policy followed by the Royal Government of Bhutan (RGoB) has seen some changes over the years. Earlier the government had provided subsidy for the inorganic fertilisers and later switched over to cash and carry system. The government instead decided to provide transport subsidy and commission for the Commission Agents. This has greatly helped the availability of those inputs especially in the study areas. The policy of the government is to achieve 60 percent self-sufficiency in rice and also to ensure food security in the country. However, this policy of self-sufficiency in rice is not very clear among different stakeholders of the government. The Planning Commission says that priority has to be given to the fruit crops in which Bhutan has a higher comparative advantage while the Department of Agriculture has this policy as one of the major goals for the ninth Five Year Plan. However, the policy of farm mechanization through the provision of subsidy has helped the farmers, but this has been concentrated mostly in the district of Paro. There is yet to be a lot of improvement to be carried out in the field of farm mechanization.