

## Chapter 7

### Enhancement of Seed Potato Sector

This chapter presents the discussion of the previous findings and the required interventions which are very crucial for the enhancement of seed potato sector in Bhutan.

It is commonly recognized that small farms are potentially an important source of growth in agricultural production; in addition, small-scale agriculture has socio-economic advantages of improving income distribution, mitigating urban-rural migration, and enhancing and revitalizing village life and culture. But there are serious constraints to the transformation of subsistence and semi-subsistence agriculture to commercial agriculture, especially small-scale commercial agriculture. These constraints arise from problems of access to production inputs, services, information, and credit. Most small farmers are independent producers, who sell their produce individually and have little bargaining power with input suppliers and produce markets. Agricultural marketing is similarly underdeveloped, with overlapping marketing channels, inadequate infrastructure and price information, lack of post-harvest management expertise, inadequate storage and transportation facilities, poor packaging of produce. Small-farmers often lack the necessary production and marketing information. Even with sufficient information, they do not have enough financial resources and credit facilities are limited it is mainly due to a lack of collateral.

Government intervention and subsidies are often used to redress these problems. But in developing countries, public interventions and support policies are usually ineffective. In addition, government intervention and subsidies do not help to remove the obstacles mentioned above – they merely ameliorate symptoms without addressing causal factors.

Most of the farmers in Bhutan are smallholders who have a low bargaining position. Small scale farmers are often constrained in what they can produce by limited marketing opportunities, which often makes diversification into new crops very difficult. Lack of cash capital limits their ability to buy external inputs, so they are not able to adopt improved technology. Small scale farms are mostly inefficient users of agricultural inputs, so that per unit cost of production is relatively high. On the other hand, low bargaining power in marketing of their product results in a low farm gate price. Contract farming offers a potential solution to this situation by providing market guarantees to farmers and assuring supply to purchasers.

The basic notion of contract farming is not new to Bhutanese farmers. Since the inception of seed industry, National Seed and Plant production Program in 1984, production of seeds and planting materials were done through contract growers. The success of National Seed and Plant Production Program has been directly related to the system of contract farming. The future survival of seed industry in Bhutan will depend on strengthening the system of contract farming and extending it to Bhutanese farmers in the remote villages too. The fact is that contract farming, as currently practiced by DSC, is woefully inadequate in the services provided to farmers especially inputs supply. Indeed, contract farming as currently practiced in Bhutan by DSC can be called quasi-contract farming, since most of the beneficial elements of contract farming are surprisingly missing.

Contract farming holds great potential for rural development (Rehber, 1998), especially when it is integrated into the national economy. In addition to legislative arrangements, there needs to be wide-ranging improvements in government services to agriculture, market infrastructure, information, farming technology, and farmers' skills. As for the farmers, they need to be organized into groups or co-operatives that can use economies of scale in bargaining, co-ordinating supply, and accessing credit and other support services. Resource-poor farmers, particularly, need support in organizing producer groups in order to increase their negotiating power and benefit from increasing commercialization of agriculture.

Contract farming is not a panacea to solve all the related problems of agricultural production and marketing systems associated with the impending transition from subsistence to commercial agriculture in Bhutanese situation. But contract farming is probably the most effective way for the small-scale farmer to obtain easier access to credit, inputs, information, technology, and product markets. Contract farming, therefore, should be seen as an integral part of rural development and promoted to improve agricultural performance in Bhutan. Major aspects which required special attention and intervention for the development of seed potato sector are discussed below.

### **7.1 Provision of inputs on credit**

As most farm households in developing countries have limited financial resources, access to credit is often crucial in determining who will be able to cultivate high value crops. In Bhutan, small farmers are restricted in their access to formal loans by their inability to satisfy lender collateral requirements. Bhutan Development Financial Corporation provide seasonal loan and charge 13% interest which small farmers can not afford to pay back and there was lot of defaulter. More over BDFC usually require collateral valued at two to three times the loan principal. Now the Group Guarantee Lending Scheme (GGLS) have been established by BDFC to minimize the defaulter. According to Watts (1994) and Clapp (1994), contracting farmers can reduce production costs and increase production and income as a result of their use of new technology and their access to company inputs.

As per the DSC policy, DSC will be giving the seed to CSGs on subsidized (buying) price in cash and carry system. The farmers realized that they would get the seeds at a cheap price if they could afford to go for cash and carry system. But, they expressed their inability to enjoy such subsidy because they would not have cash particularly during the planting season to purchase seed. Therefore, although the cash and carry system is cheaper, they still prefer to avail seed from DSC on credit basis. The CSGs do not see the subsidy on seeds as an incentive to them because of their financial constraints during the planting season. Though the supply of seeds on credit

is expensive, yet they prefer to go for credit supply, as they need not pay in cash. Regarding the accumulation of CSGs dues, the farmers stated that it was the weakness on the part of DSC to recover the dues from the CSGs. Therefore, the farmers feel that it was unfair on the part of DSC to introduce cash and carry system just to avoid accumulation of dues.

It is revealed from the literature review on contract farming that the companies/firms provide all the necessary inputs for the production on credit basis to the contract growers. The provisions of inputs on credit are very important as the growers will not have money to purchase all the inputs for production, which otherwise will led to production failure and low quality produce. It is necessary for Ministry as well as DSC to revisit the policy looking at the present scenario of seed quality and quantity handled by DSC and the numbers of growers participating in seed production program. The contract farming ethics needs to be adopted by DSC to retain and attract more seed growers. As mention before the CSGs are vital partner to DSC as 85-90% of seed volumes are produced through the CSGs. DSC alone cannot meet the domestic demand and if the seed business with Indian state is materialized the CSGs will have very big role to play.

## **7.2 Strengthening of technical competency**

Efficient production requires that growers have information about the optimal cultivation techniques: when and how to apply chemical, when to water, weed, rotate crops, etc. Efficient production also requires that growers have information about the needs of the firm: when it requires a supply of raw product; what chemicals are permitted in the production process to meet export standards; and what are its desired crop characteristics, such as texture, shape, size, flavor, color, variety, etc. The prime advantage for growers is the expectation that firm will undertake to purchase all produce grown, within specified quality and quantity parameters, often at pre-determined prices. Contracts can provide growers with access to a wide range of managerial, technical and extension services that otherwise may be unobtainable. Small-scale growers are frequently reluctant to adopt new technologies because of the

possible risks and costs involved. In contract farming, private agribusiness will usually offer improved methods and technologies because it has a direct economic interest in improving growers' production to meet its needs. In many instances, the companies provide their own extension support to contracting growers to ensure production is according to specification. Lesson learn in Thailand, during the survey on contract farming project 2004, carried out by Agribusiness division, Multiple Cropping Center, Chiang Mai University it was found that companies are placing their field staffs in the production site to advice and support the growers. Skills the farmer learns through contract farming may include record keeping, improved methods of applying chemicals and fertilizers and knowledge of the importance of quality and of the demands of export markets. The returns that growers receive for their crops on the open market depend on prevailing prices and their ability to negotiate with buyers but contract farming can, to a certain extent, overcome this price uncertainty. Frequently, companies indicate in advance the prices to be paid and these are specified in the agreement.

Growers who multiply seed need to be thoroughly trained in all aspects of seed multiplication and seed business. This would promote growers' ability to understand and articulate the basic principles of seed multiplication and identify markets for the seed.

In case of contract farming in Bhutan the technical backup to the growers are lacking due to the shortage of staff in the company, which had lead to crop failure, non compliance of growers to contract agreement thus leading to huge debt to the growers. It is apparent and important to support the growers with all necessary information to have efficient production from the growers, which will help the company to avoid outstanding dues with the grower. The procedure adopted in other countries with regards to contract farming needs to be followed by DSC to make the contract farming system successful in Bhutanese farming which will help to enhance the income of farmers and subsequently help in rural development.

### 7.3 Expansion of seed potato market

As already stated above that potato is main the cash crops for the Bhutanese farmers of high altitude (>2500 m). Due to the agro ecological advantage seed potato production can be possible in most of the potato growing areas of Bhutan.

#### 7.3.1 Improve domestic market

The Seed Replacement Rate (SRR) in Bhutan is very low as majority of the potato growers still source their seed potatoes from the informal seed sector. Once the farmers are aware about the benefit of using quality seed the demand for seed will increase. It is estimated that only about 5-7% farmers use certified seeds of improved varieties annually, which means the Seed Replacement Rate (SRR) in Bhutanese agriculture is around 6% for cereals. In case of Potato it is around 10% (assessed by RNR RC-East). Other important factor to increase the seed demand could be to encourage private traders in the seed potato business.

Crissman, 1989 and Della Vedova and Brieva (1995) provide a model, with major limitations, to estimate the annual seed requirements, where;

$$TSD_j = A_j \times S_j \times R_j$$

Where:

TSD<sub>j</sub> = the total seed demand for variety j (mt)

A<sub>j</sub> = the area (ha) planted in variety j

S<sub>j</sub> = the seed rate (mt ha<sup>-1</sup>) for variety j

R<sub>j</sub> = the seed renewal rate for variety j

Following model to project the seed potato demand for Bhutan; Crissman, 1989 and Della Vedova and Brieva (1995)

$$TSD = A \times S \times R$$

Where:

TSD	= the total seed potato demand (mt)
A	= the area planted = 4,080 ha
S	= the seed rate = 3 mt ha <sup>-1</sup>
R	= the seed renewable rate = once every three years

#### **Estimate of annual seed potato demand in Bhutan**

$$TSD = 4,080 \text{ ha} \times 3.0 \text{ mt ha}^{-1} \times 0.33 = 4,040 \text{ mt}$$

Allowing for the recommended seed rate and the seed renewable rate, the annual estimate of total seed potato demand in the country for the domestic market is approximately 4,040 mt, which is more than ten times higher than the average seed potato sold by DSC in the last five years (389 mt).

However, the effective seed demand will be much lower than the total demand since majority of the farmers (80%) depend on informal seed sector for their seed potato. Nevertheless, through proper awareness campaign and promotion - the demand for quality seed potatoes will increase. The farmers need to be educated about the benefit of using certified quality seed and encourage the farmers to use certified seed for their production.

The effective seed demand (ESD<sub>j</sub>) emphasizes the difference between the farmers desire to purchase seed and their ability to do so. While, this is exceedingly complex, given the multiple numbers of factors those are influencing the farmers' decision to purchase a particular variety. Crissman, 1989, has sought to simplify the equation by multiplying the total seed demand (TSD<sub>j</sub>) by the proportion of seed

sourced from the informal seed sector ( $ISS_j$ ) (which includes the seed retained by the farmer) and to subtract that from the total seed demand;

$$ESD_j = TSD_j - (TSD_j \times ISS_j)$$

Where:

$ESD_j$  is the effective seed demand for variety  $j$  (mt)

$ISS_j$  is the proportion of seed of variety  $j$  sourced from the informal seed market.

$$ESD_j = 4,080 \text{ mt} - (4,080 \text{ mt} \times 80\%) = 4,080 - 3,264$$

$$\text{Effective Seed Demand} = 816 \text{ mt}$$

DSC is not even meeting half of the effective domestic seed demand, which implies existence of market potential for DSC, both in terms of domestic as well as export.

The farmers need to be informed about the benefits obtained from the use of certified seed through extension program. Government should encourage the private traders in seed potato business.

### 7.3.2 Explore international market for seed potato

The free trade agreement with India and advantage of the Bhutanese agro-ecology environments offers excellent opportunity and potential for seed potato production and export to India. The recent survey carried out by Bhutan Potato Development Program in the Indian states indicates that there is huge demand for the Bhutanese seed potato especially in West Bengal and Assam. The potato that are auctioned by the farmers through Food Corporation of Bhutan as ware potatoes are also used as seed by the Indian. It was confirmed during the recent fields visit and interviewing the traders and growers in Falakatta in West Bengal, India.



Table 7.1: Estimates of seed potato demand for West Bengal &amp; Assam.

	West Bengal	Assam	Assumptions
Area under potato cultivation	296,322 ha	79,170 ha	
Seed rate	3.9 mt ha <sup>-1</sup>	3.9 mt ha <sup>-1</sup>	30% higher than seed rate used in temperate regions
Seed renewable rate	0.50	0.50	Seed changed every alternate year
Total seed potato demand	577,830 mt	154,380 mt	
Total seed potato demand for West Bengal and Assam			732,210 mt

*Source: MoA, 2004.*

Using the same model and the total area under potato cultivation in the Indian states of West Bengal and Assam for the year 2002, the total seed potato demand for the two Indian states is 732,210 mt. It will be highly significant even if Bhutan could meet 1% (7,322 mt) of the seed potato market of the two states.

#### 7.4 Pricing policy for seed potato

The affordability of seed is the most determining factor for success of any seed industry. However, the price is intricately related to the cost of production. Thus it is necessary to assess the consumers' needs, affordability of target consumers, create consumers' awareness and obtain feedback before production planning and putting price tags on the products.

The pricing of seed potato is based on the highest average price for three months from the auction yard (July, August and September). Since, the seed price is not fixed the growers do not know how much they will be getting for their produce. The Bhutanese potato price and the market are governed by the Indian market. The growers are not satisfied with the price paid by DSC based on the auction yard price and they suggested to DSC to fix the price as per the production cost. They repeatedly pointed out that cost of production of seed potato is higher than general production, so

the price for seed potato grown by the growers should be more and I personally feel they are right as they need to invest for quality seed production. The situation is very complicated in seed potato pricing as the matter of fact that when the buying price of seed potato increase the selling price of seed potato will also increase accordingly and the general growers cannot afford to buy the certified seed as it will be costly. This is because Indian market is playing a key role to govern the market situation and there is not much demand for seed potato with in the country. So, DSC needs to explore market for seed potato in India/Bangladesh to have better export and compensate the growers.

### **7.5 Formation of seed grower groups**

The contract farming system has to be seen as a partnership between agribusiness and growers. Good service delivery by the company is a precondition for successful contract farming. Company must therefore take responsibility for coordinating production and marketing activities well. Managers must ensure the transparency of all interactions with the growers and they must ensure that growers understand both their own obligations and those of the company.

The farmers considered formation of seed groups and register with DSC as “Seed Village Scheme” a good idea. But, they showed certain reservations when they were asked to form seed groups. At Bumthang farmers said that they will form a groups but it needs to be monitored and supported by DSC. The Phobjikha and Sephu valley farmers felt that at the moment it is not necessary to form seed growers groups immediately under the following situations.

- a. The prices offered by DSC fluctuate every year depending on the price at the auction yard.
- b. There is no problem in marketing their potato. Any ordinary farmer is now able to sell his/her potato through auction yard without any risk and hassle though there is fluctuation in prices, which is governed by the market force in India.

- c. DSC buys only the seed sized tubers and therefore, some time it is difficult to sell big and small tubers when the quantity is lesser than a truckload.
- d. Grading of tubers is a tedious job and is not economic in view of farm labour shortage and high labour cost.
- e. Group members may not cooperate and show interest to continue once the group is formed. But, they agreed to try from next year.
- f. Once the Group is formed the farmer fear that some negligence by one member will spoil the group reputation (lack of trust)

In contract farming the default of growers can have negative impact to the company in terms of business as well as in financial situation. The growers default in contract farming arrangements can be reduced by following interventions:

- a) **Organizing Growers' Associations:** Peer pressure within the group screens out potential defaulters and can reduce the risk of default. In addition, economies of scale can be realized in the delivery of services, thereby reducing costs. Growers will also benefit by having a stronger hand in negotiations with companies.
- b) **Good communication and close monitoring of growers:** Good communications help to foster good company-farmer relations and a sense of trust, which has a positive effect by reducing strategic default. Group members can monitor each other where there is a need to ensure quality and traceability of produce, and to prove due diligence throughout the chain.
- c) **Range and quality of services offered:** The better and broader the range of services offered, the closer the relationship between farmer and the company, and more the farmer stands to lose by breaking the relationship.

#### **7.6 Improve stakeholders relationship**

Formal linkages between partner organizations are essential for the establishment of effective system for agricultural knowledge generation, exchange and dissemination. Building these linkages is a complex task that requires sustained

efforts, and the participation of its partners at key stages in the planning process is very vital for the success.

It is very crucial to recognize other key stakeholders importance and need to understand the roles and responsibilities of each in the process of development. All the stakeholders should cooperatively link in order to improve the mechanism in a coordinated and systemic way, which benefit the consumer and community as a whole.

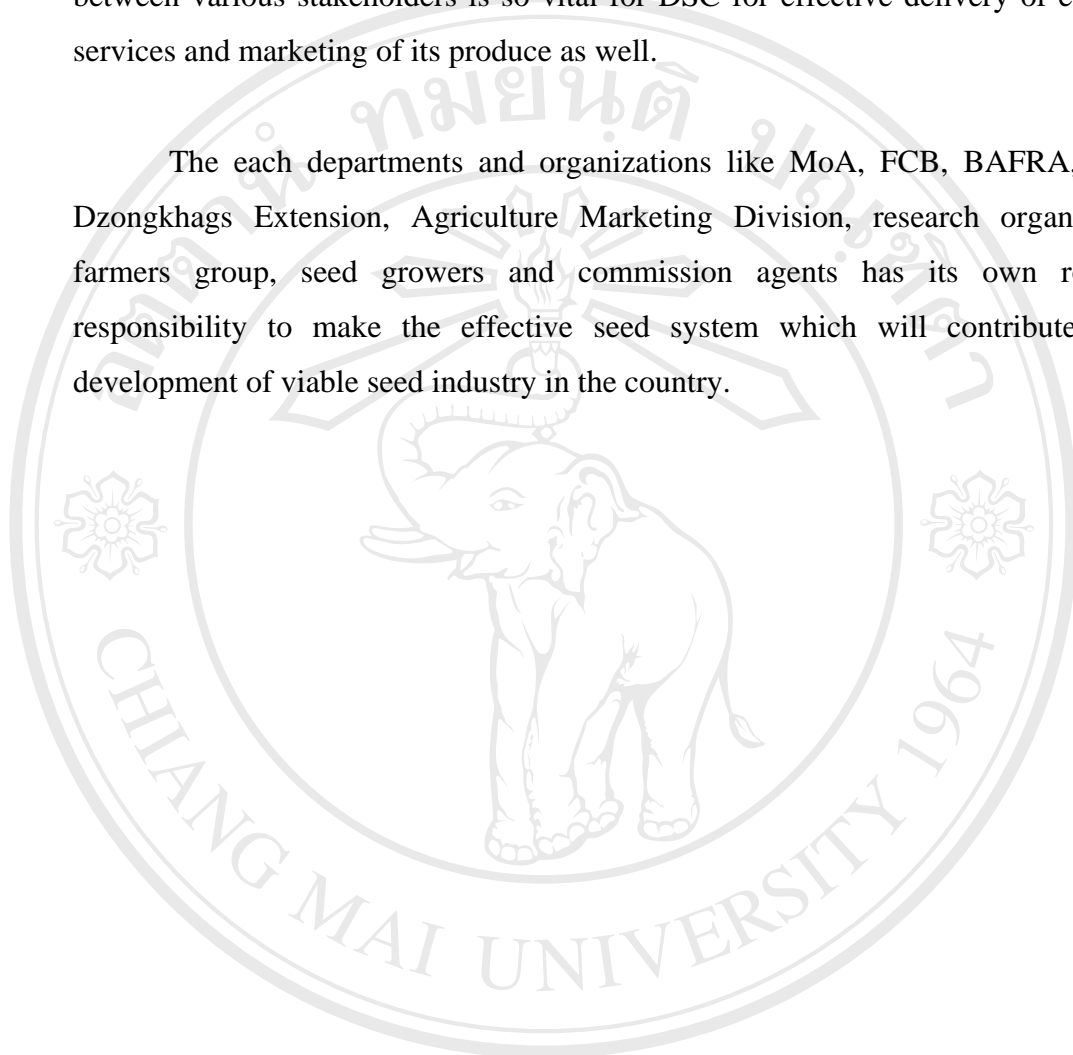
Effective linkages need to be developed between farmers and service providers and purchasers of agricultural produce to strengthen support services for small farmers. At present such linkages are either nonexistent or very weak. A number of factors govern the development of these linkages such as the external environment in which farmers and service providers operate as well as the nature of product and processing involved, viz., (i) poor transport which limits trade; (ii) lack of telecommunication facilities which place spatial limits on business and raise risks and costs; availability of utilities which determine the type of processing that is possible; and (iii) if contracts are unenforceable and unprotected, transactions may be restricted to kin and longstanding relationships of trust, excluding majority of business opportunities and shifting innovative initiatives.

To be successful in the business good relationship need to be developed with all the relevant organizations. DSC needs to develop linkage with relevant government agencies like MoA, FCB, BAFRA, BPDP, Extension, Agriculture Marketing Division, Research Organizations, farmers group, seed growers and commission agents. The well coordinated efforts from all the stakeholders can mobilize attention and resources needed to address critical bottlenecks and opportunities to develop the system. Facilitating linkages, better understanding of business can help to motivate farmers, and help to develop marketing and business skills that will link up with other relevant stakeholders.

Seed potato production and marketing in Bhutan is poorly developed and the market is currently monopolized by the few Indian traders at Phuntsholing. The high

level of perishability and lack of appropriate storage facilities has significantly influenced the degree of price uncertainty in the potato market. Promotion of linkage between various stakeholders is so vital for DSC for effective delivery of extension services and marketing of its produce as well.

The each departments and organizations like MoA, FCB, BAFRA, BPDP, Dzongkhags Extension, Agriculture Marketing Division, research organizations, farmers group, seed growers and commission agents has its own role and responsibility to make the effective seed system which will contribute to the development of viable seed industry in the country.



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