

CHAPTER 1

INTRODUCTION

1.1 Role of Punjab's Agriculture in Indian Economy

Notwithstanding, the rapid decline in share of agriculture and allied sector in Gross State Domestic Product (GSDP) in Punjab, the sector continues to be a leading employment generator as about 61 per cent of the rural population is directly and indirectly dependent on it for their livelihoods. Punjab was one of the pioneer states in green revolution launched during mid-sixties with the help of high yielding varieties of seeds coupled with intensive application of fertilizers, pesticides and intensive usage of farm machinery, which made the country surplus in food-grain production from being food deficient. The state still plays a major role towards the production of food-grains in Indian basket. Punjab produces about 11 per cent of the total food-grains produced in India (Gol, 2015). The state is still engaged in ensuring food security of the nation as it contributes 41.5 per cent of wheat and 24.2 per cent of rice to central pool (GoP, 2015-16). It also accounts for 18 per cent of wheat, 11 per cent of rice, 75 per cent of *kinnows* and oranges and 10 per cent of cotton produced in India, despite the fact that it comprises only 1.53 per cent of the total geographical area of the nation (GoP, 2013-14). The state also possesses highest yield in crops like- paddy (39.5 quintals/hectare), wheat (50.2 quintals/hectare) and cotton (7.50 quintals/hectare) in India (GoP, 2015). In allied agricultural sectors such as dairying, Punjab produces about 7 per cent of the total milk produced in India (Gol, 2015).

1.2 Crises in Punjab's Economy

The Punjab's model of agricultural development is always considered as closely related with the green revolution and its development process is contemplated as the best suitable path for increasing productivity of major crops in the other parts of the country. But, this impression of development has not remained true after 1980's (Chand, 1999). During 1980's, green revolution started to show signs of deceleration in growth due to stagnation in yield level of major food-grain crops accompanied by increase in cost of cultivation and thus, agrarian crisis penetrated deep into Punjab's agriculture (Singh, 2007). The share of agriculture and allied sectors in the Punjab's state gross domestic product has decreased from 47.87

per cent in 1980-81 to about 21 per cent in 2015-16 (Singh, 2008; NABARD, 2015-16). Since the introduction of high yielding varieties, the monoculture of wheat and paddy crop rotation has altered the cropping pattern resulting in serious economic and ecological problems such as deceleration in productivity growth, overexploitation of groundwater resources and decline in soil fertility (Singh and Sidhu, 2004). The extreme form of the agrarian crises is now manifested in the form of farmer suicides. Thus, Punjab's agrarian model of development which was earlier recommended to be replicated in other states is now studied from the various perspectives of agrarian crises.

1.3 Horticulture Scenario in Punjab vis-à-vis India

The policy makers argue that in order to revive the agrarian economy of the Punjab, there is need to shift towards the demand driven horticultural crops from the supply driven traditional crops such as wheat and paddy (Gulati *et al.*, 2009). Such horticultural crops not only provide the additional employment opportunities, but also provide the regular flow of the income. Horticulture sector is contributing around 10 per cent of GSDP out of total contribution of crop husbandry in state's GSDP. Besides, these crops also have huge export potential. India is the second largest producer of fruits and vegetables (F&Vs) next to China (Gol, 2016). The total production of F&Vs in India is 86.28 million tonnes and 167.06 million tonnes from an area of 6.24 million hectare and 9.49 million hectare respectively in 2014-15. India has 5.05 per cent of gross cropped area (GCA) under F&Vs in 2012-13 (Gol, 2015). Punjab produces 1.74 million tonnes and 4.05 million tonnes of F&Vs from an area of 0.08 million hectare and 0.20 million hectare respectively (Gol, 2016). Thus, the contribution of Punjab in production of F&Vs in India stands at 2.28 per cent only. This is in sharp contrast to the contribution of food-grains in India, which stands at 10.87 per cent (Gol, 2015). However, there exist great potential in Punjab for the production of the F&Vs. It is evident from the fact that productivity of many F&Vs is of very high order as compared to that at India level (Table 1.1).

Table 1.1
Productivity of Fruits and Vegetables (in metric tonnes/ha)

Fruits and Vegetables	Punjab	India
Citrus	20.7	10.3
Mosambi	8.0	11.6
Mango	16.05	8.35
Orange	21.6	10.4
Guava	22.0	13.7
Litchi	15.1	7.0
Peas	10.50	9.43
Onion	19.65	16.03
Potato	25.39	21.79
Tomato	24.59	21.99

Source: Gol, 2014; Gol, 2016

Horticultural commodities are susceptible to both production and price risks and the lack of risk-mitigating measures such as crop insurance and uncertain market situations further compound these risks. Since 1948, only government bodies have been controlling the F&Vs trade under market regulation Act in India. The traditional marketing of F&Vs is quite complex and risky phenomenon in India as there is high transaction cost due to small marketable surplus, lack of transparency in pricing policy, lack of infrastructure for grading, non-availability of cold chain, poor linkages within marketing channel and thin and fragmented markets as compared to food-grains that results into massive post-harvest losses and quality deterioration (Gandhi and Namboodiri, n.d.; Mittal, 2007; Grover *et al.*, 2012; Singla, 2012). The chain of intermediaries in the marketing of F&Vs is long and leads to very small fraction of every rupee of profit to the farmer (Pingali and Khwaja, 2004). Further, minimum support prices (MSP) and regulated markets for paddy and wheat acts as a major deterrent for farmers to shift from traditional cereal crops to high value crops (Joshi *et al.*, 2006; Gulati *et al.*, 2009). Thus, farmers will shift their cropping pattern in favour of high value crops only if they realize assured price and market for their produce. Realizing these problems in traditional F&V markets, a model Agricultural Produce Market Committee (APMC) Act was first circulated to states during 2003 for contract farming agreement.

Though 20 states have amended the legislation, only 12 have so far notified rules for its implementation. Though Punjab has enacted a separate law i.e. 'Punjab Contract Farming Act, 2013', yet, the government has not implemented it (Gol, 2016; Gol, 2017). Thus, the governments have realized the need to create separate markets for perishable produce. In this context, the alternative institutional arrangements such as contract farming can play a vital role to minimize production and market constraints through the provision of financial and technical assistance along with quality inputs associated with high value crops (Da Silva, 2005; Chand and Singh, 2016).

1.4 Concept of Contract Farming

Contract farming is an arrangement between farmers and agro-processing and/or marketing or exporting firm for the production and marketing of agricultural produce under advance agreement, the essence of such agreement is to timely purchase the pre-determined quantity and quality from the farmer at pre-determined price (Eaton and Shepherd, 2001; Singh, 2002; Bellemare, 2012; Sharma, 2016). The terms of contract vary from crop to crop and region to region. It specifies about the quantity to be procured, price, inputs, technical guidance and credit facility to the farmer. It can also be described as a midway between independent farm production and corporate farming (Singh, 2005). Under contract farming buyer has a substantial control over the raw material production without any landownership. In contract arrangements there is an organized connection between product and factor markets as the contracting firms require definite quality of product and for it there is requirement of specific inputs (Singh, 2002). Virtually, every commodity such as crops, livestock, aquaculture and forestry can be produced under contract farming for industrial raw material as well as for human and animal consumption (UNIDROIT, 2014).

Contracting firms are relatively large processors, exporters or supermarket chains; rarely small-scale traders or even wholesalers execute pre-planned contracts with the farmers. As to start contract farming operation, firms have to create a network of trained field agronomists who guides the farmers about crop operations along with monitoring compliance and organizing the collection of harvest. Due to large fixed cost associated with contracting only large firms have a bigger incentive to

ensure a steady supply of raw materials, availability of credit and greater capacity to absorb risk associated with offering a fixed price (Minot and Ronchi, 2014).

In many developing countries, contract farming is playing an increasingly important role and there has been long debate about its impacts in these countries. Critics of contract farming believe that firms use contracts to transfer production risk to farmers. For others, contract farming is a way for small farmers to involve into growing markets for processed foods in domestic and foreign markets (Narayanan, 2013). The government of India's national policy on agriculture has also assigned a key role to the private sector through promotion of contract farming. Contracting is perceived as the risk distribution measure between the farmer and the buyer, where farmer takes on the risk associated with agricultural production and buyer bears the risk of marketing and distribution (Rangi and Sidhu, 2007; Singh, 2007). So, there is considerable interdependence between the two parties and the transfer of risk is not always equitable. Thus, basic purpose of adoption of such a policy is to provide a proper linkage between the farm and the market by giving farmer an assured price and procuring the farm produce on the one hand and insuring timely and adequate input supply to the agro-based and food industry on the other.

1.5 Rationale of Contract Farming

Need for emerging agricultural marketing practices such as contract farming has its beginning in the demand and supply disequilibrium that agriculture faces, where farmers have to dump their produce for the want of buyers on the one hand and agro-based industries face difficulties in procuring quality raw material on the other (Dhillon and Singh, 2006). Further, agri-business companies in India can not own and cultivate land for their raw material requirements due to Ceiling on Land Holding Act (Singh, 2005). Thus, the agri-business firms have only option to procure their specific quality-quantity raw materials from the farmers is contract farming. Further, contracting with small farmers gives positive image to the company as it may work for the betterment of farmers and helps it to qualify for funding (Baumann, 2000). Thus, the contract farming can be considered as a way out to accomplish the demands of both the farmers and the companies.

Contract farming in the context of Punjab is seen as one of the ways to abate agrarian crises as it may enable the producers to maximize their profits by reducing costs. Thus, the prevalence of contract farming in Punjab is associated with the profit maximizing and cost reducing factor in the deep penetrated agrarian economy. Consequently, contract farming is not only considered as a solution for abating state's agrarian crisis, but also a way-out to consumer's diversifying diets. With the advent of liberalization reforms in 1990s, the food demand structure of India has been shifted away from cereals towards high value products and processed food. The share of high value food products in food expenditure has increased from 30.4 per cent to 57.14 per cent in rural areas and from 45.4 per cent to 64.94 per cent in urban areas over the period of 1983 to 2011-12 (Gol, 2014a; Birthal, n.d.). These changes take place due to increase in female work participation rate, higher disposable income, urbanization and increasing awareness about product safety standards (Pingali and Khwaja, 2004; World Bank, 2008; Grover *et al.*, 2014; Sharma, 2016). Moreover, due to rapidly change in consumer's taste preferences especially regarding the timing of production and marketing of crops gave an enumerative stimulus for the synchronization of production, processing and distribution (Singh, 2005). These dramatic transformations in the lifestyle of India have also created a space for agri-business.

1.6 Practice of Contract Farming

Due to diverse nature of contract farming, there is possibility of diverse outcomes even when crops under contract are same and similar contracting conditions. Key and Runsten (1999) argue that firms can choose to contract for different reasons and their motivations will reflect in the type of contract adoption. Different contract models are available to farmers and agri-business firms according to the number of parties involved, sharing of the risks, specification of contractual terms, etc. (Singh, 2007; Sharma, 2008).

From the production decisions point of view, there exist two types of contracts:

- i. **Limited management contracts:** There is not any real guarantee for the price. The farmer enters into contract agreement to get some inputs.

- ii. **Full management contracts:** The farmer has to follow conditions specified under the contract and in turn, the farmer gets guaranteed market for his produce (Rehber, 2007).

The conventional approach classifies the contracts into market specification, resource providing and production management (Key and Runsten, 1999; Rehber, 2007; Bijman, 2008; Will, 2013; Sharma, 2014).

- i. **Market specification contracts:** These contracts are pre-harvest agreements that connect the firm and the farmer to a particular set of conditions governing the sale of the crop. These conditions often specify about price, quality and timing of the delivery of produce. The farmers have right on most of the decisions related to farming activities and farm assets.
- ii. **Resource providing contract:** In this type, some of the inputs are provided by the firm with certain conditions along with managerial help and supervision. Price of farm produce is generally based on spot markets.
- iii. **Production management contracts:** A firm holds a complete control over the production as the farmer are bond to follow particular production method or input regime usually in exchange for a marketing agreement or resource provision.

Singh (2007) has classified contracts into three types on the basis of firm's objectives:

- i. **Procurement contracts:** In this type of contract, only sale and purchase conditions are specified.
- ii. **Partial contracts:** Some of the inputs are provided by contracting firm and produce is procured at pre-agreed price.
- iii. **Total contracts:** This type of contract exist when a contracting firm supplies and manages all the inputs on the farm and the farmer becomes just a supplier of land and labour.

Contract farming usually follows one of the five broad models; depending on product, resources of the sponsor and intensity of the relationship between the farmers and the sponsor (Eaton and Shepherd, 2001).

- i. **Centralized model:** It is often called outgrower scheme. This is a vertically coordinated model, where the sponsor purchases the crop from large number of small farmers and markets the produce after processing or

packaging. Such models are generally associated with tree crops, annual crops, poultry and dairy.

- ii. **Nucleus estate model:** This model is a variant of centralized model where sponsor also manages plantation. A core estate and company is established and the farmers in the surrounding area grow crops on a part of their own land that they sell to the company for processing. Nucleus estate model is often used in Indonesia and Papua New Guinea for oil palm and other crops (Singh, M.P. 2007).
- iii. **Multipartite model:** In case of multipartite model, statutory bodies and private companies jointly participates with the farmers. This type of model can have separate organizations for the responsibility of credit provision, production, processing and marketing (Rehber, 2007).
- iv. **Informal model:** The model includes simple and informal contracts between individual entrepreneurs or small companies on a seasonal basis particularly for fresh F &Vs.
- v. **Intermediary model:** There exist individual collectors or farmer committees between the farmers and the companies. In this type of model, there is not any direct linkage between the sponsor and the farmer. In Indonesia, this model is practiced and is termed as plasma.

Another classification of the contract farming models is based on the number of parties involved. These models are bi-partite, tri-partite, quad-partite and five-partite (Singh, 2005a).

- i. **Bi-partite model:** It involves only two parties- the firm and the farmers.
- ii. **Tri-partite model:** In this model, besides the firm and the farmers, a third party- bank is involved for credit facility to the farmers. The payment of the produce to the farmers is also facilitated through the bank.
- iii. **Quad-partite model:** Under this model, a fourth party viz. agri-input supplier is involved to provide seeds to the farmers, payment of which is facilitated by the banks. These payments are deducted by the banks from the payments of output.
- iv. **Five-partite model:** Under this model, along with firm, farmer, bank and agri-input company, local *arthiya*/commission agent/input dealer as a franchisee is also involved as an agri-facilitator.

Another set of contract farming models are distinguished on the basis of the role of the government. Several companies have practiced this model in Punjab.

- i. **Direct contract farming:** The companies had a direct contract with the farmers without any involvement of government agencies. The companies are responsible for providing extension services and procuring the farm produce directly.
- ii. **Indirect contract farming:** The government plays a significant role in enforcement of contractual arrangement. In Punjab, companies operated through the intervention of Punjab Agro Foodgrains Corporation (PAFC) come under this model. The contract in most of the cases was written but without any legal obligations both on the part of the companies as well as the farmers. Most of the firms provide seeds to the farmers at a market price and in some cases the companies also provide necessary machinery either at nominal charges or free of cost (Kumar, 2006).

1.7 Research Gap

Several studies (Kumar, 2006; Singh, 2007; Singh, 2009; Sharma, 2016) especially in the context of Punjab have analysed the problems and prospects of contract farming. Though the studies have examined the procurement operations of the contract farming companies, but still some of the important aspects of the procurement such as quality and quantity norms, rejection rate, transportation cost, etc. and how the procurement procedure of the firms differs in case of existence and non-existence of open market for high value crops are not covered at large. There exist much diversity among contracting firms about the procurement operations and linkage building with the farmers as the contracting practice differs from crop to crop. Recently, some of the domestic firms in Punjab have introduced new crops through the contract farming. No specific attempt has been made in the earlier studies in the context of new crops. Most of the earlier studies largely focused on single potato crop. Thus, an attempt has been made to explore the contract farming potential of the new crops introduced by some of the new contract farming companies besides exploring the efficiency of production, diversification potential of the crops and factors influencing farmer's participation which is not covered in the earlier studies at all. Further, no attempt has been made to study the impact of contract farming in vegetable production on the farm

income using econometric techniques in Punjab and furthermore, its effect on employment in rural economy. No study has tried to find the role of contract farming in diversification in the context of Punjab, which is facing severe agrarian crisis. Besides, the study will also examine the technical efficiency in the production of vegetables under contract farming, which will help to further maximize output with a given set of inputs. Finally, if contract farming has a pro-poor impact in the state, the study will attempt to justify such programmes on equity grounds as there have been no studies relating to this aspect in Punjab's agrarian economy.

1.8 Research Questions

- 1) What are the procurement strategies adopted by the contracting firms?
- 2) Do the procurement operations differ across companies for the newly contracted crops?
- 3) Are the companies covering production and marketing risks of the produce contracted by the company?
- 4) What are the criteria adopted for selecting the area and the farmers by the contracting firms?
- 5) What are the socio-economic characteristics of farmers who participate in the contract farming?
- 6) How does the production costs and returns differ among contracting and non-contracting farmers for same/alternative crops?
- 7) Does contract farming raise the income of participating farmers?
- 8) What is the degree of small farmers' participation in contract farming schemes?
- 9) What compels the exclusion and inclusion of the farmers in contract?
- 10) What are the major constraints faced by the farmers in linking with the contracting firms?
- 11) Is there any difference in the cropping pattern among contract and non-contract farmers?
- 12) What is the labour absorption capacity of contract crops?
- 13) Is there any role of contract farming in farm diversification?

1.9 Objectives of the Study

- 1) To examine nature of contracts and procurement operations of the contract farming firms.
- 2) To compare socio-economic characteristics of the contract and non-contract farmers.
- 3) To analyse costs and returns among contract and non-contract farmers for the same/alternative crops.
- 4) To examine factors determining the farmer's participation in contract farming.
- 5) To analyse role of contract farming in farm diversification and employment.
- 6) To examine technical efficiency in crop production across contract and non-contract farmers.
- 7) To study the perceptions of the farmers and the firms regarding the practice of contract farming system; and
- 8) To suggest suitable policy measures to revive the state's agrarian economy in the presence of contract farming.

1.10 Hypotheses

Based on the issues identified, the study makes the following presumptions:

- 1) Contract farming firms exclude small and marginal farmers and work with the large farmers due to the diseconomies of scale associated with the small and marginal farmers.
- 2) Contract farming creates socio-economic differentiation among farmers due to selectivity biasedness.
- 3) Firms avoid making formal contracts with farmers to avoid production risk.
- 4) The contract farmers are more efficient in the production of crops than the non-contract farmers as they grow contracted crops under the supervision of the company.
- 5) Farmers are not willing to shift towards contract crops since traditional crops are more remunerative and have assured government supported price mechanism in comparison to the contracted crops.
- 6) Labour absorption capacity in farm operations of vegetables under contract is more as compared to traditional crops.

1.11 Scope of the Study

Since the agrarian economy of Punjab is facing crises in the form of declining income, declining water table in central region, water logging in south western region and indebtedness due to monoculture of cropping pattern, thus the policy makers are looking at some of the alternatives to revive the economy. Horticultural crops are usually considered as substitute for the traditional crops grown in the state. But, lack of assured price and market act as a major deterrent for the farmers to shift towards the perishable crops. In this regard, the practice of contract farming is looked as an alternative to enhance the income of the farmers, shift away from traditional crops and creating new markets for the producers, as various provisions under contract aim at reducing production and market risks for both the farmers and the companies. Therefore, the study in this context will explore emerging models of linking with the farmers adopted by the domestic and international firms. The study has implications for both small and marginal farmers and agricultural labourers, who are the worst sufferers due to the ongoing agrarian crisis. Thus, the study will not only expand the extant literature, but it will also help the policy makers to design model for the diversification mechanism in the presence of contract farming.

1.12 Organisation of the Thesis

Chapter 1 introduces the theme of the study. It brings out the relevance and objectives of the study to be examined. Chapter 2 discusses about the theoretical and empirical perspectives of contract farming existing in literature. The chapter is divided into key themes to explain the analytical studies relevant to each theme. Chapter 3 enumerates the data sources and methodology used in the study. It also elaborates various techniques used to analyse the data. Chapter 4 examines the nature of contract between the firms and the farmers and analyses procurement operations of the firms and strategies of the firms for choosing the area and the farmers. Chapter 5 discusses the socio-economic characteristics of contract and non-contract farmers. Various characteristics such as operational holding, leased-in and leased out practices, allied farm and non-farm income, farm implements, education, age, household size pattern are compared across both the categories. Chapter 6 compares the cropping pattern and diversification across contract and non-contract farmers. The chapter also discusses about the

production and marketing costs across both the categories. Chapter 7 focuses on various factors affecting the contract participation and also compares the technical efficiency in crop production across contract and non-contract farmers. It also addresses the labour absorption capacity of contract and non-contract crops. Chapter 8 brings out various benefits and problems in production and marketing process of the contract farmers based on their perceptions. Chapter 9 summarizes the major findings and conclusions of the study. It accentuates the policy measures for the revival of Punjab's agrarian economy in the presence of contract farming.