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# UNIT 18 INSTITUTIONAL FINANCE, CONTRACT FARMING AND FOOD SUPPLY CHAIN

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## 18.0 OBJECTIVES

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After reading this unit, you will be able to:

- state the different sources of institutional finance to agriculture;
- explain the specific risks associated with agricultural lending;
- analyse the performance of leading institutions especially set up for the purpose of extending credit to agriculture over the last four decades;
- outline the other institutional initiatives and issues of significance on agricultural credit/development in India;
- discuss the concept and types of ‘contract farming’;
- appraise the performance of ‘contract farming’ in India and thereby identify the conditions necessary for its success; and
- define the concept of ‘food chain’ establishing its link to other crucial needs of agricultural development like ‘cold chain’, ‘value chain’ and ‘supply chain’.

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## 18.1 INTRODUCTION

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In the previous unit we read that the cooperatives were basically promoted to help meet the credit needs of the agricultural sector in order to free the poor farmers from

the exploitation by the usurious money lenders. We also noted that while the role of cooperatives was subsequently extended to many other areas, their primary role continued to be to address the credit needs of farmers. We also saw that one of the major objectives of nationalisation of commercial banks in 1969 was to extend more bank credit to hitherto neglected sectors like agriculture. In this unit, we will first take a look at the major factors which distinguish the agricultural sector, rendering them relatively riskier, in providing credit services. We shall then make an analysis of the efforts made in the direction of providing institutional finance to agriculture during the last three decades from 1980-2010. We will also study about some other institutional initiatives like micro-finance institutions (MFI) and issues of concern relating to institutional finance in India. Then we turn to a different institutional development in agriculture viz. 'contract farming'. This phenomenon developed in 1990s was in part meant to ease the situation on agricultural credit besides helping the farmers on other fronts like marketing and assured returns to output. We particularly focus on the types/performance of 'contract farming' system identifying in the process the conditions necessary for its efficient functioning. The importance of maintaining a healthy 'food chain' with due regard to the concerns of environment and equity has occupied the centre stage of policy planning and research in the recent decades. In this context, we will study the concept of 'food chain' with its associated elements on the institutional aspects of storage, transportation, information dissemination, value addition, price management, etc.

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## **18.2 INSTITUTIONAL FINANCE (IF)**

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Institutional finance (see 'key words'), in the context of agriculture, refers to credit extended by public agencies like cooperative societies or banks, regional rural banks (RRBs) and scheduled commercial banks (SCBs) for meeting the credit needs of agriculture. Being regulated institutions, besides charging regulated interest rates, under the broader national objective of 'social banking', quite often they charge concessional rates of interest to priority sectors like agriculture. The term social banking signifies the larger social obligation of promoting small enterprises and agriculture including 'food security' by meeting the credit needs of informal enterprises and peasantry (i.e. the large segment of poor and marginal farmers) who are bypassed by the mainstream commercial banking system. Financial institutions do face certain unique type of risks which arise mainly due to the specific nature and characteristics of the agricultural sector.

### **18.2.1 Risks Associated with Agricultural Finance**

There are certain unique risks in agricultural lending. These emanate from factors like:

- i) its politically sensitive nature due to which state intervention often results in rural financial markets (e.g. waiver of loans);
- ii) seasonal activity dependent on unpredictable factors due to which farmers have limited control over conditions of production with the resultant yield uncertainty;
- iii) high transaction costs both to lenders and borrowers due to little knowledge of heterogeneous farm households. This makes supervision of loans by lenders expensive/risky. There is also high opportunity cost to borrowers which includes transaction costs like transportation expense, fees & bribes, etc. proving a heavy burden particularly to poor farmers;
- iv) large number of farmers are unable to produce required loan collateral owing

to possession of few physical assets in many cases and face difficulty in demonstrating legal ownership of assets where they possess some assets; and

- v) integrated production/consumption needs of poor farmers makes them use up the money borrowed for production for purposes of consumption and social needs.

Due to the above factors/reasons, the risks associated with agricultural lending are especially distinguishable from other commercial lending activities.

### **18.2.2 Performance of Leading Credit Institutions in Agriculture**

A direct method of assessing the performance of institutional finance is to study the distribution of credit advanced to agriculture by the three leading institutions viz. Cooperatives, Regional Rural Banks (RRBs) and Scheduled Commercial Banks (SCBs). This would also tell us about the changes in their relative share of credit advanced over time. It is important to see the growth in the performance of these institutions as also for their aggregate performance. Table 18.1 presents the trends in the credit advanced by the three major types of institutions to agriculture over a period spanning close to three decades. The trends reveal the following.

- The relative share of cooperative banks has declined from about 57 percent in 1980-81 to 18 percent in 2008-09. There is a corresponding increase in the share of commercial banks from about 40 percent to 72 percent during the period.
- The RRBs, which were launched in 1971-72 performed in a more stable manner. The share of RRBs in the total institutional credit to agriculture increased from about 2.4 percent in 1980-81 to 10.5 percent in 2008-09.
- In terms of growth rates between 1981 and 2009, the SCBs have registered a compound annual growth rate (CAGR) of 16.5 percent. The RRBs have performed better with a growth of 20.2 percent over the corresponding period. The performance of cooperative banks has been lower during this period with a CAGR of 9.7 percent.
- A degree of variation in performance during the intermittent periods has to be expected. Giving allowance to this, and considering the aggregate performance of each of the three type of institutions over the longer period of 1981-2009, the inter-institutional variations show the growing importance of RRBs and commercial bank's credit to agriculture.

**Table 18.1: Source-wise Distribution of Institutional Credit to Agriculture**

**(percentages)**

<b>Year</b>	<b>Cooperative Banks</b>	<b>Regional Rural Banks (RRBs)</b>	<b>Scheduled Commercial Banks (SCBs)</b>	<b>Total</b>
1980-81	57.2	2.4	40.4	100 (7538)
1990-91	35.9	6.0	58.1	100 (29316)
2000-01	50.3	7.9	41.8	100 (91654)
2008-09	17.9	10.5	71.6	100 (357531)
Growth Rate 1981-2009 (%)	9.7	20.2	16.5	14.2

Note: Figures within brackets in the last column are total credit advanced in crores of rupees.

Source: RBI/NABARD.

**Table 18.2: Relative Share (%) of Borrowing of Cultivator Households by Institutional/Non-Institutional Sources: 1951-2010**

Source of Credit	1951-52	1961-62	1971-72	1982	1992	2003
Non-Institutional	92.7	81.3	68.3	36.8	30.6	38.9
Institutional	7.3	18.7	31.7	63.2	66.3	61.1
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

**Source:** RBI for 1951-52 and 1961-62, and for later years NSSO, All India Debt and Investment Survey.

- The aggregate performance from all three type of institutions in terms of CAGR during the period 1981- 2009 is 14.2 percent, which is credible in terms of the quantitative performance of credit to agriculture, although it is less than the 18 percent target set by the government.

A question of interest in this context is to see whether there has been a decline in the burden of agricultural credit availed by the non-institutional sources. The data in this respect presented in Table 18.2 shows that there has been a steady increase in the extent of institutional finance to agriculture from a low share of 7.3 percent in 1951-52 to a high of 61.1 percent in 2003 although it was less than the 66.3 percent peak reached in 1992. The main reason for this decline is a set back to the pace of institutional credit by the financial sector reforms introduced during the post-1991 years. A committee appointed by the RBI (the Narasimham Committee, 1991) for reviewing the credit system with the larger social and redistributive objectives had recommended the winding up of priority sector preference to agriculture and small industry. Although the government did not accept its recommendations fully, for a period of close to a decade, the pace of expansion of rural bank branches suffered a set back. As a result, lending activities to agriculture suffered leading to an increased dependence of cultivators on informal credit. However, the severe agricultural crisis witnessed in the subsequent years compelled the government to relax the restrictions imposed during 1990s and in 2003-04 a policy of doubling of bank credit to agriculture was introduced. This contributed to an improvement in the disbursal of agricultural credit as evidenced from the growth performance of overall institutional finance (14.2 percent over 1981-2009).

### **18.2.3 Other Initiatives in IF**

#### **Priority Sector Lending and Agriculture**

One of the important policy initiatives in the post-nationalisation era of banking relates to the earmarking of 40 percent of bank lending to the ‘priority sector’. Priority sector includes agriculture, small enterprises, microcredit, retail trade, education loans and housing loans with certain ceiling. Of the 40 percent earmarked for the priority sector, agriculture’s share is 18 percent. Under priority sector lending, credit to agricultural sector includes loans sanctioned for different agricultural operations and in the case of small and marginal farmers, it includes loans for the purchase of land. Since mid-1990s there has been a set-back to meeting the target of 18 percent priority sector lending to agriculture. For instance, in 1996-97, the share of agriculture in bank credit declined to 12.4 percent and further declined to 11.0 percent in 2002-03 (Singh 2012). Though it increased in the years that followed, it never reached the 18 percent target set.

There have been a few other initiatives of institutional nature in facilitating the access to credit needs of agricultural class. For instance, a Rural Infrastructure Development Fund was established in 1995. One of the specific objectives of this fund was to enable the commercial banks (i.e. SCBs) which failed to meet the target of 18 percent credit mark (i.e. the share of agricultural credit in total SCB's lending) to deposit the balance in RIDF. The major objective of this fund was to raise resources to complete the ongoing rural infrastructure projects. Another initiative was the issuance of Kisan Credit Card (KCC) in 1999. The major objective behind this initiative was to overcome the rigidities inherent in the credit system and make the credit market more borrower-friendly by functioning in a flexible, hassle-free and cost-effective manner. The credit limits are, however, fixed on the basis of landholding size, cropping pattern and scale of finance. The factors which determined the scale of finance covered the entire credit needs for a full year including ancillary activities related to crop production like maintenance of agricultural machinery, electricity charges, etc. The KCC scheme has been implemented by all leading agricultural finance institutions like SCBs, cooperatives and RRBs. Another initiative of an institutional nature, once again involving all three leading institutional groups is the Self-Help Group – Bank linkage (SBL) programme. The objective of SBL programme is to provide thrift linked credit support to members of SHGs by getting loans in a reasonably short time at low cost. The programme has emerged as the largest 'micro-finance' initiative. The SBL programme enables banks to reduce their transaction costs and risk in delivering small loans. This initiative has greatly improved the outreach and credit flow to the poor. Being largely women's groups, the programme has encouraged financial inclusion of poor and asset-less. A distinctive feature of SBL is its high on-time recovery. In the context of agricultural finance, the SBL has a share of close to 80 percent of its members from the farming households.

An yet another institutional initiative of relatively recent origin is the emergence of Microfinance Institutions (MFIs). Although largely like SBL, MFIs differ in many respects like: (i) they do not operate under government template, (ii) they do not have social mobilisation, (iii) are purely profit-oriented organisations which see the institutional vacuum in the rural credit market as a pure business opportunity, etc. They operate through NGOs (i.e. non-governmental organisations) which form self-help groups with the sole objective of lending money to small borrowers and recover them in a time-bound manner. They are especially known for employing coercive recovery procedures. The operation of MFIs are limited to places where the SBL programmes are successful. The MFIs have spread deep into the rural areas particularly where there are inadequate institutional credit facilities. Their functioning is opposite to the spirit of social banking and are of late termed as 'money lenders in a new garb'.

#### **18.2.4 Critical Issues and Role of State**

Decline in Share of Credit to Small/Marginal Farmers: During the period 1981-2002, the number of marginal farmers in total area operated has increased. But their share of credit, though has also increased, has increased in the same proportion of the area operated by them. This has contributed to their share of bank credit disbursed (to the share of area operated by the small/marginal farmers) to decline from 1.02 in 1982 to 0.41 in 2003. The corresponding ratio for farms of more than five acres has increased from 1.08 to 1.48. The decline in the share of credit of small/marginal farmers calls for urgent steps to improve their overall share in the total credit disbursed.

Regional Disparities: There are also large regional disparities in the credit disbursed. The southern region account for nearly one-third of the total agricultural credit disbursed

although they account for less than one-fifth of total farm households in the country. Five states viz. Andhra Pradesh, Uttar Pradesh, Tamil Nadu, Karnataka and Maharashtra account for more than 50 percent of bank credit. In contrast, the share of northeast and eastern region in credit is much lower. For instance, Bihar's share in agricultural credit is a mere 2.4 percent while its share in the total number of farmer households is 8 percent. Half the Indian States/Union Territories have a share of below one percent in credit. This uneven flow of agricultural credit across states in India needs rectification. Low credit-deposit (C-D) ratios are observed for the districts of north-eastern, eastern and central regions with the southern region having the high C-D ratio.

Role of State: The specific features of agriculture, which makes it riskier for IF to effectively service the sector, calls for special effort on the part of government to enable the financial markets to serve the farming sector and rural population more effectively. More specifically, the role of state should include the following functions.

- Improve the basic rural infrastructure like roads, electricity, communication, marketing infrastructure, irrigation, etc. by increasing the financial allocation in the first instance and improving the monitoring of the projects sanctioned in the second;
- Assist the provision of 'public goods' such as information, facilities for HRD and agricultural research;
- Institute an appropriate financial system which: (i) reduces the transaction costs of effective financial intermediation and increase the access of farmers to financial services; and (ii) facilitate the development of appropriate loan collateral by establishing relevant land records and tenurial titles along with the setting up of regulatory bodies to support the financial institutions;
- Facilitate term lending operations of primary financial intermediaries through strengthening the second tier or apex financial institutions; and
- Develop risk management mechanisms such as crop insurance and loan guarantee schemes wherever they are economically justified and can be administered in a cost effective manner.

**Check Your Progress 1** [answer in the space given in about 50 words]

1) What are the major public institutions engaged in advancing credit services to agriculture?

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2) How is 'high transaction cost' a factor to influence the advancing of agricultural credit adversely?

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3) How do you rate the performance of cooperative banks (vis-à-vis the RRBs and the SCBs) in meeting the credit needs of agriculture during the post-reform years i.e. during 1991-2010?

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4) Which particular factor is responsible for the declining performance of institutional finance to agriculture during the 1990s? To what extent there is an improvement in this regard in the post-2000 years?

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5) What are the two major objectives behind the setting up of RIDF?

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6) What was the major objective behind the introduction of KCC scheme in 1999?

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7) What are the specific features of the SBL programme that has enabled it to emerge as the largest micro-finance initiative?

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8) How are MFIs different from the SBL programme? Why have the MFIs become unpopular in recent years?

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- 9) Which state/regions have lagged behind in the share of institutional credit to agriculture? What are the indicators that suggest this disparity?

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### 18.3 CONTRACT FARMING (CF)

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The concept of contract farming (CF) is not entirely new to Indian agriculture. In its earliest application, during the colonial period, it was tried in the production of cash crops like tea, coffee, rubber, etc.. Later, beginning with the introduction of the system in tobacco cultivation in Andhra Pradesh in 1920s, its application was extended through the decades with varying response from farmers. While the pre-independence efforts were mostly arrangements to exploit the small peasantry, the post-independence attempts centred around some innovative farm-forestry schemes. In this, the cultivation of poplars in the northern states of India is especially notable for good farm response and success. In its operational features, the method of CF was varied from loose buying arrangements to simple purchase agreements, supervised production with input provision, tied loans/advance with risk coverage, managed production with input provision, etc. In its true perspective, therefore, it is an evolution of competitive production and marketing practices.

#### 18.3.1 Contract Farming: Concept and Types

Contract farming is defined as a system for the production and supply of agricultural or horticultural products that involves a forward contract between producers/suppliers and buyers. The contract is a commitment by the cultivator to provide an agricultural commodity of a certain type, at an agreed time, price, and quantity to a committed buyer, usually a large company. According to the contract, the farmer is required to plant the contractor's crop on his land, harvest and deliver to the contractor a certain amount of produce. The terms are based on an anticipated yield and contracted acreage. A typical contract is one in which the contractor supplies the material inputs as also the technical advice required for cultivation with the farmer supplying land and labour. In the current context of economic liberalisation and global market integration, contract farming is increasingly considered as a solution to the problems of Indian agriculture particularly by major international donor agencies, multinational companies and the government. It is argued that private sector participation will be promoted through contract farming and land leasing arrangements will allow accelerated technology transfer, capital inflow and assured markets for crop production, especially for oilseeds, cotton and horticultural crops.

**Types of Contract Farming:** Distinction is made in literature on contract farming between two types of models viz. direct procurement model and open-source intermediation model. The former relates to a kind of farm-firm linkage in terms of procurement of raw materials for production and their subsequent marketing. A



corollary of the latter is the bi-partite/tri-partite model in which the terms of exchange are more explicitly defined.

### **Direct Procurement Model**

Under this, there are different models of farm-firm linkage ranging from simple marketing agreements, to risk sharing, forward marketing and futures contracting. The objective of all these arrangements is to keep the 'supply chain' moving for which the processors and retailers choose to source their raw material supply from small traders or directly from farmers instead of government regulated markets. Such procurement is preferred due to its lower transaction costs and avoiding the quality problems associated with procuring from government regulated markets. A distinctive feature of such arrangements is that there is generally no contractual tie-up with the farmers. Produce is purchased from the traders/farmers subject to the satisfaction of the quality criteria. Many corporate retailers like Reliance, Spencer's, and Food Bazaar are adopting this model at present. However, direct procurement from farmers can be done only in states which have amended their Agricultural Produce Marketing Committee (APMC) Act, on the lines of the proposed Model Act 2003, permitting the buyers to purchase directly from producers. In states that have not amended their APMC Act, purchases are made through government regulated markets. Of late, however, there are instances where some retailers and processors (e.g. Field Fresh, Pepsico, and Nijjer) have entered into contractual buyback arrangements with the farmers specifying the quantity, quality, and a pre-agreed price. Some of these also provide back-end support to farmers like extension services, provision of seed and other inputs and credit facilities (with the costs adjusted in final payments made to farmers). Such backward linkages are driven by the size and quality requirements of the market and the need to ensure smooth and regular supply of a product to meet the quality standards. This trend is indicative of the changing competitive conditions under which uncertainty of raw material supply are making the companies feel vulnerable to their business.

### **Open-Source Intermediation Model**

In the open-source intermediation model, provision of information about market prices, crop, good cultivation practices, etc. are provided to farmers. The main objective is to bridge the knowledge and information gap that exists at the farm level and also supply inputs to farmers without any 'lock-in' agreement. Research and development activities lose their effectiveness unless they reach farmers' fields with the effectiveness further depending on suitable extension services. This is the underlying motive for companies to take initiatives under this model. The open-source intermediation model offers the potential for a specific supply line to take effect at a subsequent point of time.

### **PPP-Models**

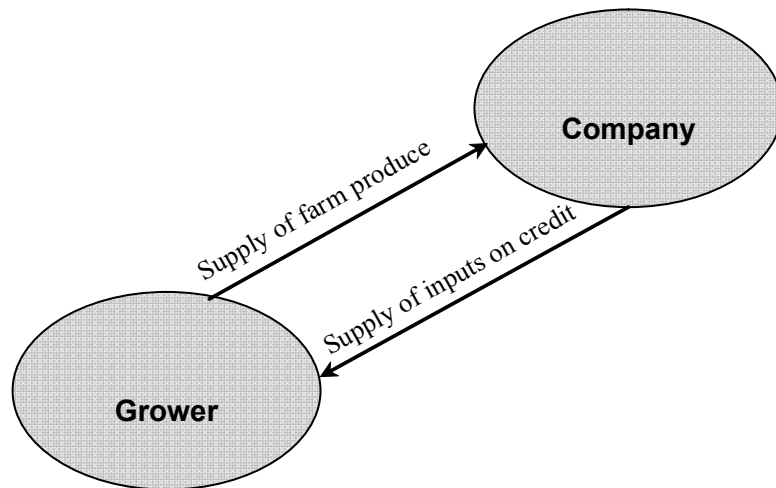
Rural business or "agri-hubs" under the PPP-model (i.e. public-private partnership model) between panchayats and the private sector) are a variant of the open-source model. Under this, the corporate companies provide input services for farmers with an assured market for the produce under a contract. Several private sector players are engaged in developing the concept of business hubs to reach out to farmers (e.g. *DSCL Hariyali Kisan Bazar*, *TATA Kisan Kendras*, *Godrej Aadhaar*, *ITC e-Choupal*, *Choupal Sagar*, etc.). The scale of these operations are, however, small in comparison to the needs of farmers in rural areas. The advantage of 'agri-hubs' is the potential provided for 'one stop shopping' for farmers with inputs like quality

seeds, technology, credit, extension and insurance services, etc. provided to the farmers by a single source.

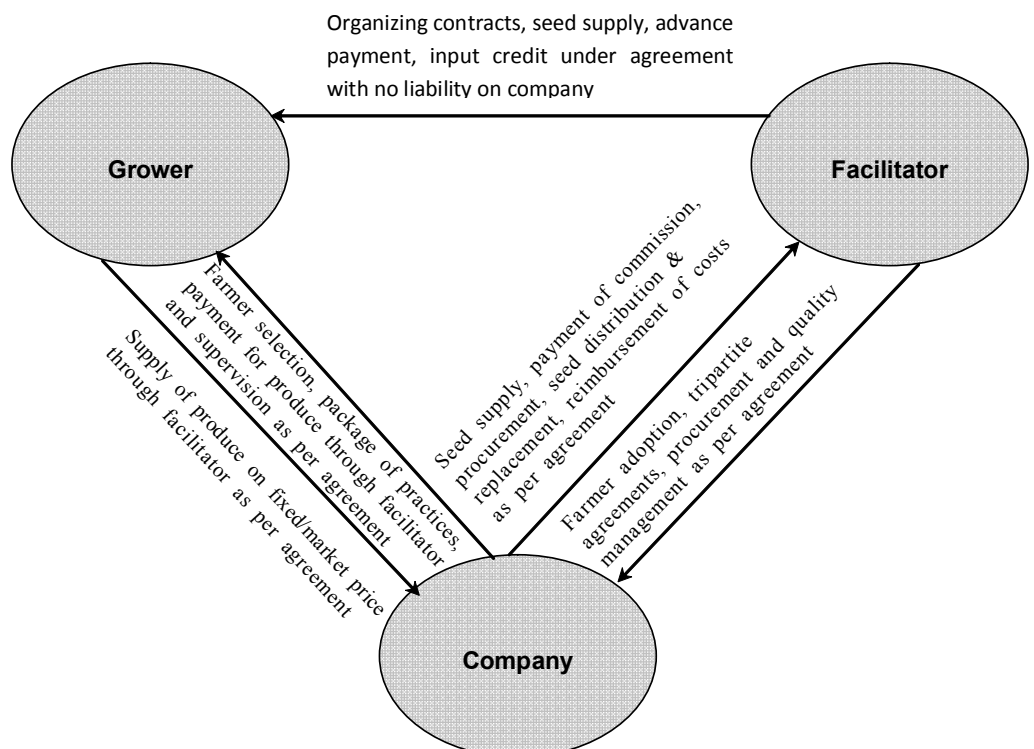
**Bi-Partite and Tri-Partite Models**

The bi-partite model is a contract exclusively between the company and the farmers. Figure 18.1 presents the direct link between the grower-farmer and the company where the company provides inputs such as seeds, fertilizer, pesticides, etc. on credit. The final product is purchased at a fixed price by the company. This kind of arrangement exists in the case of Field Fresh, Pepsico and Nijjier in India. A variant of this model is the tri-partite model where a facilitator/middleman is involved between the grower and company. The intermediary plays a key role in facilitating the transaction. FLI (Pepsi) Potato in Maharashtra and Karnataka are examples of this kind of an arrangement. Figure 18.2 indicates how the three parties involved in a contract contribute to enhancing the ‘supply chain’ of agri-produce.

**Figure 18.1: Bipartite CF Model**



**Figure 18.2: Tripartite CF Model**



### 18.3.2 Limitations of CF: Conditions for its Success

Theoretically, farmers stand to gain from contractual agreements that provide lower transaction costs, assured markets, and better mechanisms to deal with risks/uncertainty. On the other hand, contracting firms have the advantage of more assured supplies and reasonable control over quality. However, in practice, there are practical problems that emerge in agricultural contracts resulting in losses to both farmers and firms. For instance, most of the contracting agreements are verbal or informal in nature. Even in case of written contracts, quite often they do not provide the legal protection in India of the kind that exist in other countries. In other words, the market and mechanisms to facilitate the drawing up of and enforcement of such contracts needs to still mature in the Indian context. Lack of enforceability of contractual provisions result in their breach by either party. There have been instances of farmers in India refusing to sell to contracting firms when the market prices exceeded the contract price, and of firms refusing to purchase contracted quantities, or pay the contracted price, due to market conditions. Further, neither the contracting firm nor the farmers are keen to contest these issues in a court. Most often, therefore, it is the mutual understanding and faith that drives contractual relationships.

Among the different state government experiences in contract farming (CF), the case of Punjab (where the state has argued in favour of CF as being the best means of crop diversification) is worth noting. Many of the recent corporate interest in Punjab agriculture is in basmati farming which is one of the great water-guzzlers and thus ecologically disturbing. Thus, amidst the question of ecological disturbance and the challenge for sustaining the natural resources like water and soil, the experience of the state in CF is mixed. While the contract farming in Punjab is argued to have generated more employment opportunities due to the labour intensity of most vegetable crops (as compared to the traditional crops like wheat or paddy), there are instances of farmers in Punjab having become increasingly resentful of a system that has put them under the total control of corporations which will decide not only the crops grown but also the procurement price. There are growing incidents of the pre-determined prices being reduced on the pretext of inferior quality of the crop which has added to such resentment. There are also instances of wage levels having been pushed down to subsistence level due to increased competition for work. In spite of these ups and downs, the Punjab experience of contract farming is generally considered to be among the more successful in India.

Contract farming arrangements are criticized for being biased in favour of firms and large farmers, exploiting in the process the limited or poor bargaining power of small farmers. In such situations, a suggested viable approach is to form clusters of small farmers that can give the benefit of scale effect and also enhance the bargaining power of the farmers. Success in developing contracting models, or other forms of farm-firm linkages that are effective for small holders, is thus a key challenge to small holder participation in contract farming models in Indian agriculture. Important conditions for the success of CF practices, from the point of view of small producers, include: (i) increased competition for procurement (instead of a single buyer in the case of a bi-partite or tri-partite model), (ii) guaranteed market for farmer produce, (iii) market information to increase the farmers' bargaining power with companies, and (iv) larger volume of transaction through groups of farmers. In this context, you may recall the successful experiments of CF in Karnataka and Maharashtra by the small/marginal farmer segment about which you studied in section 5.5 of Block 2 of this course before.

**Check Your Progress 2** [answer the questions in about 50 words in the space given]

- 1) Do you think the experience of ‘contract farming’ is new to India? In its true perspective, in what words would you state the real essence of the CF system?

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- 2) What benefits are expected to result by CF practices particularly in the present context of global market policies pursued?

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- 3) What is the main objective behind the ‘open-source intermediation model’ of CF? What underlying motive can you identify for the corporate sector’s proactive action in driving themselves through this approach?

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- 4) What advantage is experienced by the farmers in the agri-hub practice under the PPP model of CF?

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- 5) Mention the four conditions that are considered important for the success of CF system in India.

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## 18.4 FOOD SUPPLY CHAIN

The term food supply chain refers to the network of food-related business enterprises through which the food products move from the point of its production to its ultimate point of consumption. The six typical links in the food supply chain may be identified as: inputs, producer, processor, distributor, wholesaler, retailer and consumer. Recall that in Unit 16 (section 16.2) we studied that the length of the ‘channel’ between the producer and the consumer, should be minimum in order that the producer’s returns are the maximum. Thus, the requirements of an efficient food chain would integrate itself with the maximum welfare of the producer (as also the consumer as he too gets the best price advantage), if the food supply chain is optimum like: farmer → retailer → consumer. This optimality of chain length can be starkly contrasted with the existing food supply chain links in India as: farmer, village agent at taluka level, market agent at mandi level, wholesaler, semi-wholesaler, retailer and consumer. Indeed, with so many intermediaries grabbing their share, it is no surprise that an Indian farmer is estimated to get only 28 percent of what the final consumer pays for their products. This also explains why despite India being the leading world producer in many products, in particular being in the top most rank with regard to fruits and vegetables (vide section 2.5, Unit 2), the share of India in the export market for processed horticultural produce is less than 1 percent (compared to 70 percent in US/Brazil, 78 percent in Phillipines, 83 percent in Malaysia, etc.). This poor status is attributable to the low status of post-harvest Indian management practices which requires us to pay more attention to areas of: grading, packaging, pre-cooling, storage and transportation facilities. In this, the role of ‘cold chains’ is crucial.

A distinction could be made in the food supply chain between retail supply chain and value supply chain. If a commodity reached the consumer in the same form as produced by the farmer, without any processing, it could be called as retail supply chain. An example is a tomato consumed as a vegetable by the final buyer. If a commodity produced by a farmer reaches the consumer after processing, it could be seen as a part of value chain, because processing adds value. An example is tomato ketchup bought by a consumer, which carries value addition to the tomato produced by the farmer. These two types are discussed below.

### 18.4.1 Retail Supply Chain/Cold Chain

Cold chain could be seen as a part of the retail supply chain. Cold chain are a logistic system of providing a series of facilities ideally required for maintaining the right storage conditions for perishable items. Such facilities are required to be established from the point of origin to the point of consumption in the entire food supply chain. The chain needs to start at the farm level and cover up to the consumer level. A well organised cold chain reduces spoilage, retains the quality of the harvested products and guarantees a cost efficient delivery to the consumers. The main feature of the cold chain is that if any single link is missing or weak, the whole system fails. The logistics of infrastructure of a cold chain can be identified as: pre cooling facilities → cold storages → refrigerated carriers → packaging → warehousing → information management system (i.e. traceability and tracking).

It is estimated that about 30 percent of fruits and vegetables grown in India get annually wasted due to gaps in cold chain. This results in instability in prices with the farmers not getting the expected returns. This has the potential to result in rural impoverishment and farmers’ frustration. Combined with other inadequacies of markets

and price management, it is estimated that India wastes more fruits and vegetables than it consumes. You would have studied in the recent newspapers (May, 2012) that due to bumper crops but poor matching storage facilities, India is forced to export food grains at a massive subsidy burden to the exchequer. This means that while attention to pre-harvest practices has been accorded its due share, the post-harvest issues have been neglected. The operating cost of Indian cold storages are estimated at \$60 per cubic meter per year, as compared to less than \$30 in the developed countries. Further, while the energy expenses makes up for about 28 percent of total expenses of Indian cold storages, it is just about 10 percent in the developed countries. While these factors have made the setting up of cold storage economically unviable in India, it is estimated that about 30 to 35 percent of losses can be reduced by transporting the freshly harvested fruits and vegetables in 'refrigerated containers' (see 'key words'). The total number of refrigerated containers (as opposed to the less efficient refrigerated trucks) required in India is estimated at about 20,000. It is also estimated that every 1 percent reduction in wastage of fruits and vegetables would translate to a saving of 0.13 billion US dollars. Further, a stage-wise break-up of this loss is estimated as: poor handling – 30%; poor storage – 30%; poor transportation – 30%; intermediaries – 5% and; lack of knowledge about better preservation techniques – 5%. With right policy support for investments made in establishing the required infrastructure to reduce this post-harvest loss, the welfare of nearly 50 percent of our labour force engaged in agriculture can be improved. This is the crucial social angle of the issue which should receive the attention of the government at this current juncture in Indian agriculture.

#### **18.4.2 Value/Supply Chain**

Indian agriculture is lagging behind in realising its potential from agro processing. This is evident from the low 7 percent value addition in Indian food products as compared to 23 percent in China. As outlined above, a beginning should be made by making the required public investment (facilitating to attract further private investment) to remove the food/cold chain deficiencies. Further, the direct sourcing of products to the retailers must be facilitated by the required modification in the APMC Act in those states where it has not been done yet. Although there are more than 27,000 food processing units in the country, with 95 percent of them in the cottage industry sector with low investment, the units work at minimal capacity due to their inability to exploit the technological developments. This is posing a stumbling block in meeting the internationally required phyto-sanitary standards. Further, the taxes imposed by the government and the cost of packaging form a major chunk of the expenses incurred by the small entrepreneur. The laws are unattractive and hindering for the entry of big buyers who can develop and assure a steady business for the small processing units. In short, notwithstanding the rationale for the current debate on allowing the multinational companies into the retailing business in India, an acceptable model for promoting the agricultural development in line with the current demands of the sector is urgently required. It is important that the small and marginal farmers should be enabled to reap the benefits of the ongoing retail boom. The FMCG (fast moving consumer goods) companies which are eager to source their produce from small and marginal farmers and leverage their brand equity, must be facilitated to take part in market development within the confines of an appropriate regulatory framework. This is required both for the development of Indian agriculture in line with the current policy of market orientation, as also to ensure the concerns of distributive equity of the growth linked inclusive development model under debate.

**Check Your Progress 3** [answer questions 2-6 in about 50 words in the space provided].

- 1) Fill in the blanks:
  - a) An Indian farmer is estimated to get ..... percent of the final price paid by the consumer. This is in stark contrast with the corresponding ..... percent in U.S./Brazil, ..... percent in Phillipines and ..... percent in Malaysia.
  - b) As per estimates, ..... percent of fruits and vegetables grown in India gets annually wasted.
  - c) The operating cost of Indian cold storages per cubic meter per year is ..... as compared to ..... in the developed countries.

2) Define the term 'food supply chain' mentioning its six typical links.

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3) State the advantages of a well organised cold chain system identifying the logistics of its infrastructure.

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4) Mention the present (2012) crisis arising out of bumper food harvest in India and identify the underlying cause for this paradoxical situation.

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5) What would you identify as the crucial 'social angle' of the current state of Indian agriculture?

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6) Mention the two critical fronts on which facilitating public policy is urgently required to improve the efficiency of value/supply chain's functioning in Indian agriculture.

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## 18.5 LET US SUM UP

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The term institutional finance in the context of Indian agriculture, defined in a restrictive sense, includes public bodies like cooperative credit societies, scheduled commercial banks and RRBs specifically set up to meet the credit needs of Indian agriculture. Considering the performance of these three major agencies over a fairly long term time period of 1986-2010, with an aggregate average annual growth of close to 18 percent in the quantum of credit extended, the performance of institutional finance to Indian agriculture cannot be considered poor. Also, besides these public agencies, there are many other initiatives which would indirectly contribute to improving the status of institutional agricultural finance to Indian farmers. These include the setting up of RIDF, KCC, SBL-programme, etc. While these measures have facilitated to an extent, they are still short of the actual need. This, combined with the competitive environment generated by the pursuing of open market policies, has rendered the situation for the large small and marginal farmer segment extremely vulnerable to volatile market conditions. To ease the situation on this front, the concept of contract farming, which in its varying forms was under practice for decades even before independence, has been tried out in many states of India in the recent past. Although its experiences are mixed, that there is a fair degree of success in its application in some states is worth noting. More importantly, it is critical to focus upon establishing the conditions ideally required for its efficient functioning. These include: (i) generating increased competition by allowing more players to function in the market; (ii) improving market information system to increase the farmers' bargaining power with companies, (iii) enlarging the volume of transaction of small/marginal farmers by group or collective action, etc. Improving the critically needed infrastructure like 'cold storage' would reduce the wastage in perishable commodities like fruits and vegetables which is estimated to be a significant 30 percent of total production. This, combined with the inadequacies on the food/supply chains, is greatly hindering in realizing the full value of our significantly improved production in quantitative terms. Focusing, therefore, on the efficient practices of post-harvest stages of agricultural production is critically needed. This would go a long way in increasing the current negligibly low share in the export market for agro-products from India.

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## 18.6 KEY WORDS

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- Institutional Finance** : In its extended scope, the Task Force on Credit Related Issues of Farmers, GoI, 2010, in its definition of 'institutional finance' includes financial institutions of private sector also. Such institutions included are: (i) user owned institutions like SHGs; (ii) new generation thrift and cooperative societies registered under the more liberal cooperative laws, not-for-profit NBFCs (i.e. non-bank finance companies) and other not-for-profit NGOs.
- Contract Farming** : Is a system for the production and supply of agricultural or horticultural products. It is a forward contract between producers/suppliers and buyers under which there is a commitment by the cultivator to provide an agricultural commodity of a certain type, at a time and



price, and in the quantity required by a known and committed buyer.

**Cold Chains** : Are a logistic system of providing a series of facilities ideally required for maintaining the right storage conditions for perishable items.

**Refrigerated Containers** : Are standard Twenty Foot Equivalent Unit (TEU) size transport vehicles with 0.24 million sq. metres of solar PV panels fixed on their roof tops to ensure independent power grid for their operation. For the Indian terrain conditions, these are considered more efficient than the convention refrigerated trucks.

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## **18.7 SUGGESTED REFERENCES FOR FURTHER READING**

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- 1) ICAR/IFPRI/USDA (2008), Contract Farming in India: A Resource Book, A Product of Indo-US Knowledge Initiative on Agriculture, An Online Resource Book [[http://www.ncap.res.in/contract\\_%20farming/index.htm](http://www.ncap.res.in/contract_%20farming/index.htm)].
- 2) Government of India (2010), Report on the Task Force on Credit Related Issues of Farmers, MoAg., June.
- 3) Surjit Singh (2012), Recent Experience in Agriculture Finance in India: Concerns for Small Farmers, Institute of Development Studies, Jaipur.

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## **18.8 ANSWERS/HINTS FOR CYP EXERCISES**

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### **Check Your Progress 1**

- 1) See Section 18.2 and answer.
- 2) See Section 18.2 and answer.
- 3) See Section 18.2.2 and answer.
- 4) See Section 18.2.2 and answer.
- 5) See Section 18.2.3 and answer.
- 6) See Section 18.2.3 and answer.
- 7) See Section 18.2.3 and answer.
- 8) See Section 18.2.3 and answer.
- 9) See Section 18.2.4 and answer.

### **Check Your Progress 2**

- 1) See Section 18.3 and answer.
- 2) See Section 18.3.1 and answer.
- 3) See Section 18.3.1 and answer.
- 4) See Section 18.3.1 and answer.
- 5) See Section 18.3.2 and answer.

**Check Your Progress 3**

- 1) See Section 18.4 and 18.4.1 and answer.
- 2) See Section 18.4 and answer.
- 3) See Section 18.4.1 and answer.
- 4) See Section 18.4.1 and answer.
- 5) See Section 18.4.1 and answer.
- 6) See Section 18.4.2 and answer.