



IBPS

(Specialist Officer)

Agricultural Field Officer (Scale - I)

Volume - 5

(Pre + Mains)

Agriculture Finance, Marketing & Botany



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CHAPTER

Agriculture Finance

- Agriculture finance refers to the flow of credit, insurance, investments, subsidies, and institutional support required to carry out agricultural and allied activities.
- It is a critical input that influences productivity, technology adoption, diversification, and farmer resilience. Agriculture Finance can be dealt at both micro level and macro level.
- **Macro Finance**
 - ✓ It deals with the overall financing of agriculture at an aggregate level, focusing on raising funds, lending procedures, and the regulations of agricultural credit institutions.
 - ✓ It ensures efficient credit distribution within the agricultural sector at a national or regional scale.
- **Micro Finance**
 - ✓ It focuses on the financial management of individual farm units, examining how farmers allocate credit from various sources and plan its use within their farm.
 - ✓ It aims to help farmers manage their finances for sustainable growth and future needs.
 - ✓ Micro finance business comprises 5% of the economy.
 - ✓ These institutions do not give loans beyond Rs.50,000 to a single person and the average amount given per account by Non-banking Financial Institution-Micro-finance institutions is Rs. 16,194.
 - ✓ **It includes :**
 - **National Housing Bank:** It was set up in 1988 to refinance home loans and regulate housing finance companies.
 - **National Bank for Agriculture and Rural Development:** It was set-up in 1982 by a law to regulate credit support, institutional development and encourage innovative initiatives in rural sector.
 - **Small Industries Development Bank of India:** It was set-up in 1990 to promote, finance and develop small and medium enterprises and provide them easy finance up to a limit of **Rs. 1 Crore.**

Micro Credit

- Making **small loans to individuals who lack the necessary resources to secure** traditional credit is known as microcredit.

Characteristics of loan	Micro -finance	Micro- credit
Size of loan	Small	Small
Repayment of period	Short	Short
Sources of mobilization	Both external and internal	External
Repayment	Obligation if source external	Definite obligation to repay
Collateral	Not needed	May or may not be needed
Purpose of use	Flexible, consumption, income generation	Mostly fixed, limited scope for deviation
Scope of operation	Mostly group loans trickling down to individuals	Usually individual loans, though group loans might be given

AGRICULTURE CREDIT :-

Credit is broadly classified based on various criteria

1. Based on repayment period of loan

✓ Short-Term Finance (Crop Loan):

- These loans are to be **repaid within a period 6 to 18 months**.
- It is basically for seeds, fertilizers, labour, irrigation, electricity, pesticides.
- Kisan Credit Card (KCC) is the primary instrument.

✓ Medium-Term Finance:

- These loans are to be **repaid within a period from 18 months to 5 years**.
- It is for farm machinery, pump sets, livestock, borewells, fencing.

✓ Long-Term Finance:

- These loans fall due for repayment over a long time ranging from 5 years to more than 20 years or even more.
- It is for land development, irrigation structures, warehouses and storages.
- NABARD's Long-Term Irrigation Fund, Agriculture Infrastructure Fund.

2. Based on purpose

✓ Production loans

- These loans refer to the credit given to the farmers for crop production.
- Loans are repayable with **in a period ranging from 6 to 18 months** in lumpsum.

✓ Investment loans

- These are loans given for purchase of equipment whose productivity is distributed over more than one year.

✓ Marketing loans

- These loans are meant to help the farmers in overcoming the distress/forced sales and to market the produce in a better way.

✓ Consumption loans

- Any loan advanced for some purpose other than production is broadly categorized as consumption loan.
- These loans are seeming to be unproductive but indirectly assists in more productive use of the crop loans.

✓ Value Chain loans

- It is for Agri-startups, FPOs, contract farming, processors, supply-chain logistics.

Importance of Agriculture Finance :

- **Capital-intensive nature of modern agriculture:** Mechanisation, high-yield seeds, irrigation, fertilisers, cold chains, and post-harvest infrastructure requires upfront investment.
- **Supports shift to high-value agriculture:** Horticulture, dairy, fisheries, and commercial farming need more formal credit.
- **Risk mitigation:** It helps farmers withstand climate shocks, market volatility, and crop losses.
- **Enabling diversification:** The availability of credit facilitates shift from rice–wheat cropping to millets, pulses, fodder crops, and allied sectors.
- **Reduces dependence on informal sources:** It curbs exploitation by moneylenders; promotes formal financial inclusion.

Scale of Finance

- It is given as a range, as the cost of cultivation for a farmer practicing traditional methods of farming and that of a progressive farmer practicing modern methods of cultivation will differ.
- The lower value of the range corresponds to the requirement of the former while the upper value corresponds to the later.

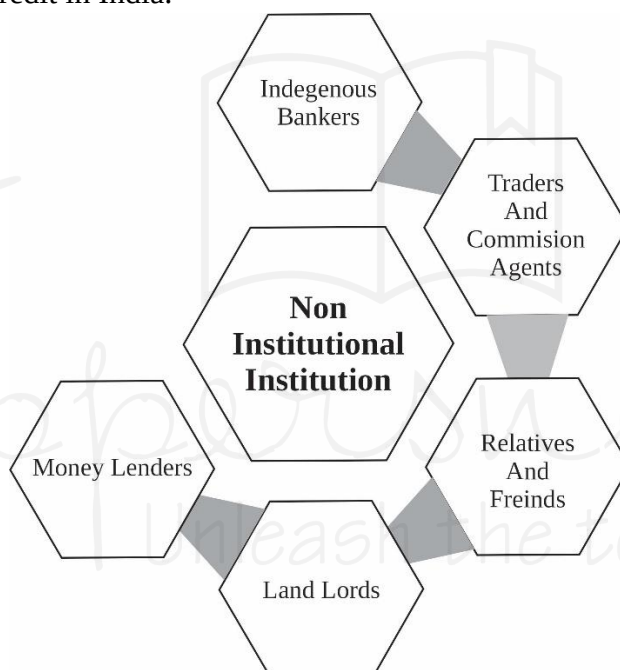
➤ **Factors influencing /affecting the scale of finance**

1. **Type of the crop:** It varies from crop to crop
 2. **Nature of the crop-**With in the same crop between the local improved varieties and high yielding varieties (HYVs) the scale of finance will differ.
 3. **Season:** Scale of finance will differ with season for the same crop.
 4. **Type of land:** Based on the type of the land that is irrigated (or) dry the scale of finance will differ with the same crop. Ex: For chillies Scale of finance in irrigated land is Rs.17000-19000/- and in dry land Rs. 10000-12000/-
 5. **District/Area:** For the same crop the scale of finance varies from district to district.
- Scale of finance for prime crops of each district is fixed by a committee known as District Level Technical Committee (DLTC).
- **The members of DLTC constitute representatives of lead bank of that district, NABARD, local co-operative banks and commercial banks, officials of Department of Agriculture& Animal Husbandry etc.**

SOURCES OF AGRICULTRE CREDIT :

1. Non-Institutional Sources

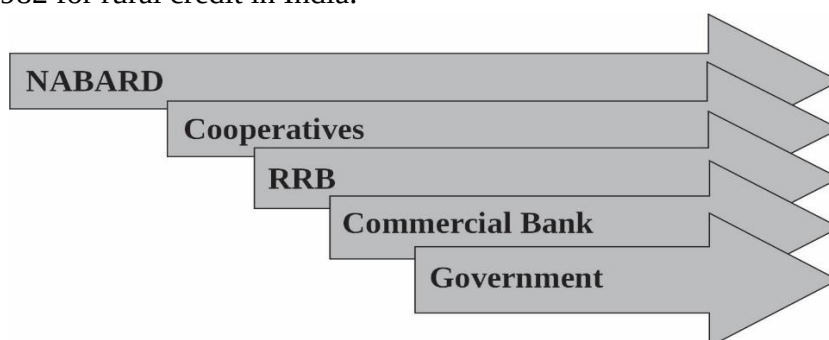
- ✓ The non-institutional finance forms an important source of rural credit in India, constituting around 40 percent of total credit in India.



- ✓ The interest charged by the non-institutional lenders is usually very high. The land or other assets are kept as collateral.

2. Instituional Sources

- ✓ National Bank for Agriculture and Rural Development (NABARD) is an apex institution established in 1982 for rural credit in India.



1. Rural Cooperative Credit Institutions

- ✓ The rural credit cooperatives may further be divided into
 - **Short-Term Credit Cooperatives:** The short-term credit cooperatives provide short-term rural credit and are based on a three-tier structure as follows
 - ☞ State Co-Operative Banks at apex level
 - ☞ District Central Cooperative Banks
 - ☞ Primary Agricultural Credit Societies (PACs) at grass root level institutions
 - **Long-term credit Cooperatives:** These cooperatives meet long-term credit of the farmers and are organized at two levels:
 - ☞ **Primary Agriculture land Development Banks (PALDBS):** These banks operate at the village level as an independent unit.
 - ☞ **Comprehensive Land Development Banks (CLDBs):** These banks operate at state level.

2. Commercial Banks

- ✓ A commercial bank is a financial institution that grants loans, accepts deposits, and offers basic financial products such as savings accounts and certificates of deposit to individuals and businesses.
- ✓ It makes money primarily by providing different types of loans to customers and charging interest.
- ✓ These hold the largest share of formal agricultural lending in India.

3. Regional Rural Banks (RRBs)

- ✓ RRBs were established in 1975 under the **RRB Act, 1976** to meet the needs of the rural poor.
- ✓ They combine the low-cost structure of cooperatives with the professional discipline and modern outlook of commercial banks.
- ✓ RRBs were set up based on the recommendations of the **M. Narasimham Committee**.
- ✓ They primarily serve **small and marginal farmers, landless labourers, rural artisans, small traders**, and other **weaker sections** of rural communities.

Key Schemes & Instruments :

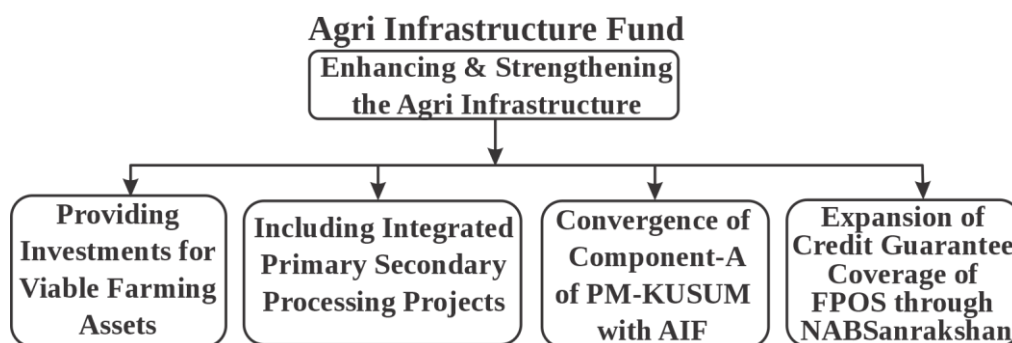
1. Kisan Credit Card (KCC)

- ✓ It is flexible revolving credit for crop loans.
- ✓ It covers short-term credit, consumption needs, and marketing costs. It also includes accident insurance.
- ✓ It has the target of Universal KCC for farmers, including dairy & fisheries.
- ✓ The KCC should normally valid up to 5 years and subject to annual review.
- ✓ The KCC will be deemed / considered as a non-performing asset (NPA) if it remains inoperative for a period of two successive crop seasons.

2. Interest Subvention Scheme (ISS)

- ✓ It is primarily for Indian farmers, providing subsidized loans at a low effective interest rate (around 4%) by paying option of the interest directly to banks.

3. Agriculture Infrastructure Fund (AIF) (2020–2032)



- ✓ A ₹1 lakh crore financing facility has been introduced to support the development of post-harvest infrastructure such as warehouses, grading and sorting units, cold chains, and primary processing centres.

4. PM-KISAN

- ✓ An income support of ₹6,000 per year is provided to farmers, which helps reduce their dependence on credit for meeting working-capital needs.

5. Rural Infrastructure Development Fund (RIDF)

- ✓ It is a NABARD-managed fund for states to build irrigation, rural roads, and bridges.

6. FPO Support – Equity Grant & Credit Guarantee

- ✓ Encourages collectivization for better credit access and scale advantages.

Data :

- Agriculture accounts for around 15-18% of the total institutional credit in India.
- Although 80% of India's farmers are small and marginal, they receive less than 50% of the formal sector credit.
- Digital agricultural lending is expanding rapidly, growing at a CAGR of 35-40%, largely due to fintech participation.
- Formal institutions meet only 35-40% of rural credit requirements, making informal lenders still a significant source of finance in rural areas.

Challenges in Agriculture Finance :

1. Structural Issues

- ✓ Small landholdings provide low collateral, creating a high perceived risk for lenders.
- ✓ Fragmented land records and pending mutations make loan assessment difficult for financial institutions.
- ✓ Heavy reliance on consumption loans disguised as crop loans.

2. Systemic Challenges

- ✓ Over-concentration of bank lending in a few crops like rice, wheat, sugarcane.
- ✓ Under-financing of allied sectors, value chains, post-harvest infra.
- ✓ High NPAs in the agriculture sector lead to more cautious lending by banks.
- ✓ Cooperative credit structure weaknesses (dual control, limited capital).

3. Farmer-Side Issues

- ✓ Low financial literacy & poor documentation.
- ✓ Lack of access to insurance and risk management tools.
- ✓ Limited awareness of credit products beyond KCC.

Agricultural Credit and Indebtedness in India :

- Over 50% of agricultural households in India were indebted in 2018. The average outstanding loan per household rose to **₹74,121 in 2018**, up from **₹47,000 in 2013**.
- According to the Economic Survey 2022-23, the average monthly income of an agricultural household in 2018-19 was ₹10,218, marking a 59% increase from ₹6,426 in 2012-13.

Causes of High Indebtedness	Measures to Improve the Situation
➤ Using Credit for Domestic Purpose ➤ Inadequate access to low-cost financing is at the root of rural misery.	➤ Access to affordable credit ➤ Agricultural Loans with Gold as Collateral ➤ Restricting Farm Loan Waivers ➤ Credit Guarantee Plan for Agriculture, example Kisan Credit Card Scheme and PM Kisan Yojana.

➤ The ability of rural poor households to provide assets as collateral is a major determinant of their access to institutional lending. ➤ Factor of Social Identities ➤ High input costs ➤ Fluctuating commodity prices	➤ Increasing Credit to Allied Activities, for example, PM SAMPADA yojana to promote food processing industry is a welcome step and it provides credit to associated allied sectors as well. ➤ Land Consolidation ➤ Disparities on credit access across states.
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Reforms & Way Forward :

1. **Digitisation of land records (DILRMP)** for transparent collateralisation.
2. **Satellite monitoring & AI-based credit scoring** to reduce information asymmetry.
3. **Extending KCC to all allied sectors** (dairy, fisheries, sericulture, poultry).
4. **Strengthening PACS (Primary Agricultural Credit Societies):**
 - ✓ Integrating PACS with Core Banking.
 - ✓ Expanding PACS into multi-service centres enables them to provide inputs, storage facilities, and marketing services to farmers.
5. **Promoting Value-Chain Finance:**
 - ✓ Linking FPOs with banks to ensure formalisation of the economy.
 - ✓ Tripartite agreements in contract farming to reduce the role of middle-man's.
6. **Developing Weather Derivatives & Crop Insurance Integration** for risk mitigation.
7. **Shift from subsidy-driven to investment-driven finance**, especially long-term infra.
8. **Green Finance for Agriculture:**
 - ✓ Climate-smart agriculture, solar pumps, micro-irrigation, carbon farming.
 - ✓ India needs **\$20–30 billion/year** climate-agriculture finance by 2030.

Agriculture Cooperation

- The Government of India recognized, based on the recommendations of the AIRCSC headed by Sri Gorwala, that cooperatives were an effective means to enhance agricultural credit and promote rural development.
- Consequently, cooperatives received significant financial support from the Reserve Bank of India, along with strong encouragement and assistance from both central and state governments for their expansion and growth.

Role of Cooperatives for Indian Farmers

1. Marketable Surplus:

- ✓ Agricultural cooperatives help overcome the limitations of small and fragmented landholdings and low individual output.
- ✓ They enable bulk handling, transportation, and marketing of produce, ensuring better and more remunerative prices for food grains and industrial raw materials.

2. Market Reach:

- ✓ Through collective strength, cooperatives allow farmers to exercise better control over supply and marketing channels.
- ✓ They help farmers access wider markets and secure fair prices for their produce.
- ✓ Cooperatives also enhance farmers' creditworthiness, improving their ability to market surplus produce at higher returns.

3. Collective Strength:

- ✓ Individually, small farmers may lack the capacity to expand irrigation or improve land productivity.
- ✓ Cooperative farming provides access to larger pooled resources - land, labour, capital, and inputs - thereby increasing overall production capacity.

4. Better Price Realization:

- ✓ Cooperatives improve the competitiveness of small and marginal farmers.
- ✓ By pooling resources and knowledge, they strengthen bargaining power, facilitate access to new markets and technologies, and reduce costs, leading to better price realization.
- ✓ Well-organized farmers can form a collective voice to represent their interests and access services at affordable costs, leading to better productivity, sales, and profits.

5. Government Interaction:

- ✓ Cooperatives simplify administrative dealings between farmers and the government.
- ✓ They facilitate activities such as tax collection, subsidy distribution, and dissemination of improved farming practices.
- ✓ This strengthens their bargaining power in matters like price fixation and subsidies.

6. Knowledge Sharing:

- ✓ Cooperatives play a key role in educating farmers about efficient farming practices, such as balanced fertilizer use and improved water management.
- ✓ They also help farmers adopt new technologies in agriculture.

7. Credit Facilitation:

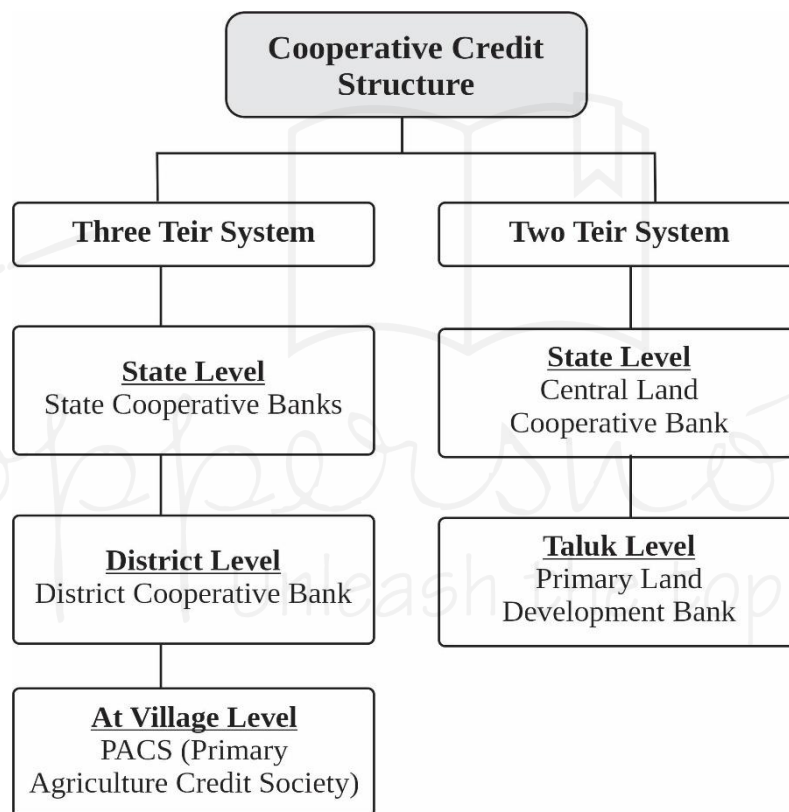
- ✓ Cooperatives provide farmers with access to financial resources for purchasing inputs and equipment.
- ✓ They ensure availability of credit at reasonable interest rates.

8. Income Generation:

- ✓ Cooperatives support the development of storage facilities like warehouses to prevent distress sales.
- ✓ They promote market linkages through platforms like e-NAM.
- ✓ Encourage value addition and diversification into allied activities such as poultry, beekeeping, and fisheries.

Cooperative Structure

- The cooperative system in India is organized into:
 - ✓ **Three-tier structure** for short-term and medium-term credit
 - ✓ **Two-tier structure** for long-term credit
- However, in states like Bihar, Jammu & Kashmir, Maharashtra, and Uttar Pradesh, a **unitary structure** exists, where the system is centralized at a single level.



State Cooperative Banks (SCBs)

- State Cooperative Banks are the apex credit institutions at the state level. District Central Cooperative Banks (DCCBs) and Primary Agricultural Credit Societies (PACS) function as their members.
- SCBs supervise member institutions, mobilize and allocate financial resources, and act as a link between the Reserve Bank of India (RBI) and PACS.
- **Functions of SCBs:**
 - ✓ Assist state governments in formulating development plans related to cooperatives
 - ✓ Coordinate activities between cooperatives and the government
 - ✓ Frame and implement uniform credit policies for cooperative development in the state
 - ✓ Act as a “bankers’ bank” for DCCBs
 - ✓ Provide financial support and assistance for smooth functioning of DCCBs

District Central Cooperative Banks (DCCBs)

- DCCBs serve as an intermediary between State Cooperative Banks and Primary Agricultural Credit Societies (PACS).
- They perform regular banking functions such as accepting deposits, collecting bills, and handling cheques and drafts, along with providing credit to eligible borrowers.
- Their area of operation may extend from a taluk to a district, though in many cases it is limited to the taluk level.
- Membership is open to individuals as well as cooperative societies within their jurisdiction, including marketing societies, consumer societies, farming societies, urban banks, and PACS.
- **Functions of DCCBs:**
 - ✓ Supervise and inspect the working of PACS and ensure their efficient functioning
 - ✓ Provide guidance and leadership to PACS
 - ✓ Undertake non-credit activities such as supply of seeds, fertilizers, and essential consumer goods
 - ✓ Provide necessary credit to member societies
 - ✓ Accept deposits from both member societies and the general public

Primary Agricultural Cooperative Credit Societies (PACS)

- Primary Agricultural Credit Societies (PACS) were established under the Cooperative Societies Act, 1904, based on the Raiffeisen model.
- These societies operate at the village level and provide short-term and medium-term credit to farmers.
- In addition to credit, they also supply agricultural inputs and essential consumer goods, and assist in planning and implementing agricultural development programmes.
- **Functions of PACS:**
 - ✓ Obtain timely and adequate funds from DCCBs and provide credit to members
 - ✓ Mobilize local savings through share capital and deposits from villagers
 - ✓ Monitor proper utilization of credit by borrowers
 - ✓ Supply fertilizers, seeds, and pesticides to farmers
 - ✓ Provide agricultural machinery on a hire basis
 - ✓ Participate in socio-economic development programmes of the village
 - ✓ Assist farmers in marketing their produce
 - ✓ Provide storage facilities and marketing-related finance
 - ✓ Supply essential consumer goods like rice, wheat, sugar, kerosene, and clothing at fair prices

Two-Tier Structure (Long-Term Credit)

Central Land Development Bank (CLDB) :

- The Central Land Development Bank is the apex institution in the two-tier cooperative credit system for long-term finance.
- It provides long-term loans to Primary Land Development Banks (PLDBs) and their affiliated branches.
- Members include PLDBs, branches of CLDBs, and sometimes individual entrepreneurs.

Central Land Development Bank (CLDB)

- The Central Land Development Bank functions as the apex institution in the two-tier cooperative credit structure for long-term finance.
- Institutions like NABARD and the Life Insurance Corporation (LIC) subscribe to its debentures.
- NABARD acts as a refinancing agency, and CLDB serves as a link between NABARD and the government in long-term credit operations.

Functions of CLDB:

- Supervises, inspects, and guides the functioning of Primary Land Development Banks (PLDBs)
- Raises funds by issuing debentures

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- Promotes thrift among members by mobilizing savings and encouraging capital formation
 - Provides long-term loans to member banks for purposes such as:
 - ✓ Redemption of old debts
 - ✓ Land development
 - ✓ Purchase of machinery and equipment
 - ✓ Development of minor irrigation facilities

Primary Land Development Banks (PLDBs)

- PLDBs operate at the local level (earlier at the taluk level, now often at the development block level).
- All landowners are eligible for membership and can avail loans by mortgaging their land.
- The main borrower is classified as an 'A' class member, while others with interest in the mortgaged property are enrolled as 'B' class members.

Functions of PLDBs :

- Provide long-term credit to farmers for land development and improvement of agricultural productivity
- Offer loans for minor irrigation, land purchase, and repayment of old debts
- Finance purchase of tractors, machinery, and equipment
- Provide loans for construction of farm buildings
- Mobilize rural savings

Different Types of Cooperatives

Credit Cooperative

- A credit cooperative is a financial institution owned and controlled by its members, who pool their savings and provide loans to each other at low interest rates.
- It mainly serves poor and low-income groups by offering accessible financial services.

Marketing Cooperative

- Marketing cooperatives are associations of producers formed for the collective marketing of their produce.
- They help members gain the benefits of large-scale operations, which individual farmers cannot achieve due to small marketable surplus.

Consumer Cooperative

- These cooperatives are formed to supply goods to consumers at reasonable prices.
- They purchase products in bulk directly from producers at wholesale rates and sell them to members, eliminating middlemen. **Examples:** Super Bazar, Apna Bazar

Processing Cooperatives

- Processing cooperatives are engaged in processing agricultural and allied products.
- Institutions like NCDC support such cooperatives (e.g., for food grains, plantation crops, and oilseeds) through financial assistance.

Cooperative Warehousing

- These are storage facilities owned and managed by cooperative societies.
- They provide economical warehousing services to members, helping avoid distress sales and maintain product quality.

Farmers' Cooperatives

- These are organizations where farmers pool their resources for mutual benefit. They include:
 - ✓ **Service cooperatives:** Provide inputs, credit, and services to individual farmers
 - ✓ **Production cooperatives:** Pool land, machinery, and labour for joint farming

Multi-Purpose Cooperative Society (MPCS)

- These cooperatives are established to fulfill multiple objectives such as credit, marketing, production, and consumption.
- They provide a wide range of services including credit, seeds, fertilizers, agricultural tools, and even support in health and sanitation.

Farmers Service Societies (FSS) / Farmers Service Cooperative Societies (FSCS):

- FSS was established in 1971 based on the recommendations of the National Commission on Agriculture (NCA) to serve weaker sections such as small and marginal farmers, agricultural labourers, and rural artisans.
- These societies provide integrated credit and development services.
- **Functions of FSS:**
 - ✓ Provide short-term, medium-term, and long-term loans to weaker sections
 - ✓ Supply necessary agricultural inputs and technical guidance
 - ✓ Promote allied activities such as dairy, poultry, fisheries, and farm forestry
 - ✓ Improve agricultural marketing arrangements
 - ✓ Mobilize savings and deposits from rural communities through incentives

Important Cooperative Organisations Related to Agriculture

1. National Cooperative Union of India (NCUI):

- ✓ The National Cooperative Union of India (NCUI) is the apex organization representing the entire cooperative movement in India.
- ✓ It was established in 1929 as the All India Cooperative Institutes Association and was renamed NCUI in 1961.
- ✓ **Objectives:**
 - Promote and develop the cooperative movement in India
 - Educate, guide, and assist people in adopting cooperative principles
 - Strengthen and expand the cooperative sector
 - Act as a representative body expressing cooperative viewpoints

2. National Cooperative Development Corporation (NCDC):

- ✓ NCDC was established in 1963 through an Act of Parliament as a statutory corporation under the Ministry of Agriculture & Farmers Welfare. Its headquarters is in New Delhi.
- ✓ **Functions:**
 - Plans, promotes, and finances programmes related to production, processing, marketing, storage, export, and import of agricultural produce and food items
 - Supports cooperatives dealing with notified commodities such as fertilizers, insecticides, agricultural machinery, lac, soap, kerosene, textiles, and rubber
 - Assists in supply of consumer goods and development of activities like poultry, dairy, fisheries, sericulture, and handloom
 - Finances projects in rural industrial cooperative sectors and services such as water conservation, irrigation, micro-irrigation, agri-insurance, agro-credit, rural sanitation, and animal health
 - Provides loans and grants to State Governments for supporting primary and secondary cooperative societies, and also directly finances national-level and multi-state cooperative societies

- NCDC can directly finance projects under its various schemes, subject to fulfilment of prescribed conditions.
- It possesses in-house technical and managerial expertise in areas such as cooperation, financial management, MIS, sugar, oilseeds, textiles, fruits and vegetables, dairy, poultry, fisheries, handlooms, civil engineering, and refrigeration, which helps cooperatives in project formulation and implementation.

3. National Agricultural Cooperative Marketing Federation (NAFED):

- ✓ NAFED was established in 1958, with its headquarters in New Delhi. It is the apex organization for cooperative marketing in India.
- ✓ **Functions of NAFED:**
 - Facilitates, coordinates, and promotes marketing and trading activities of cooperative institutions in agricultural and related commodities
 - Undertakes and promotes inter-state and international trade on its own or on behalf of member institutions and government agencies
 - Engages in purchase, sale, import, export, and distribution of agricultural, horticultural, and forest produce
 - Supplies agricultural inputs such as seeds, fertilizers, manure, machinery, and processing equipment
 - Acts as an agent for government or cooperative institutions in procurement, storage, and distribution of agricultural and allied products
 - Establishes storage facilities independently or in collaboration with other agencies within India or abroad
 - Collaborates with international agencies and foreign organizations for the development of cooperative marketing, processing, and related activities for mutual benefit
 - Undertakes marketing research and disseminates market intelligence

Challenges Faced by Cooperatives in India

1. **Regulation and Supervision:** Fragmented regulatory framework and dual control lead to weak and inconsistent supervision
2. **Governance and Management:** Poor governance practices result in mismanagement and instances of fraud
3. **Capital Adequacy:** Difficulty in maintaining adequate capital limits growth and operational stability
4. **Credit Risk Management:** Lending to small borrowers with limited credit history increases risk of defaults
5. **Technology and Innovation:** Lack of investment in modern technology reduces competitiveness
6. **Competition:** Strong competition from commercial banks and fintech firms affects sustainability

Other Government Initiatives for the Cooperative Sector

1. **Financial Support:** Government provides financial assistance (around ₹1.5 lakh annually per farmer through various schemes) to ensure income security
2. **Formation of 10,000 FPOs:** Aims to enhance farmers' bargaining power, reduce costs, and increase income through aggregation and scale benefits
3. **Fertilizer Subsidy:** Around ₹10 lakh crore allocated in recent years to ensure affordable fertilizers for farmers
4. **Multi-State Cooperative Societies (Amendment) Act, 2022:**
 - ✓ Enhances transparency and accountability
 - ✓ Introduces Cooperative Election Authority, Ombudsman, and Development Fund
 - ✓ Ensures representation of women and SC/ST members

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5. **Government e-Marketplace (GeM):** Online platform for marketing goods and services of MSMEs and cooperatives
 6. **Dairy and Fisheries Support:** Welfare schemes promote dairy and fisheries development through cooperative models
 7. **Cooperatives as Business Model:** Effective in post-harvest processing, storage, and packaging
 8. **Use of Technology:** Promoted through initiatives like Digital India, BharatNet, and e-Governance
 9. **Computerisation of PACS:**
 - ✓ Target to computerize ~63,000 PACS using ERP-based common software
 - ✓ Integration with NABARD via State and District Cooperative Banks

Cooperatives play a crucial role in strengthening agriculture by providing credit, inputs, market access, and technical knowledge. They enhance farmers' income, promote rural development, and contribute significantly to the overall growth of the agricultural sector.



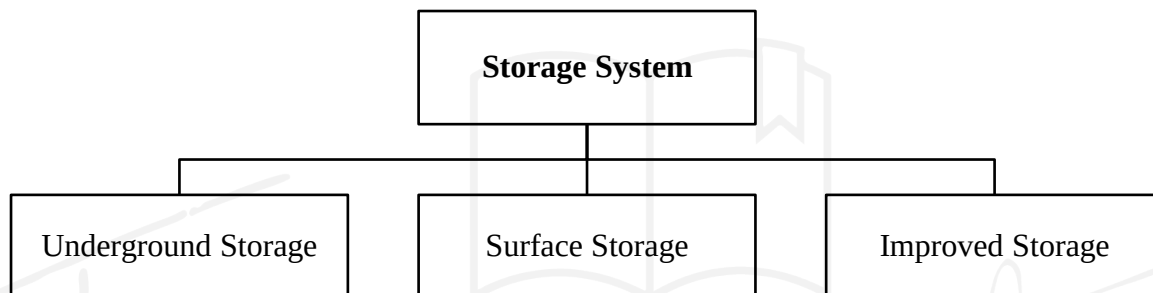
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CHAPTER

Storage and Warehousing

- Storage is an important marketing function which involves **holding and preserving goods from the time of production until they are consumed.**
- It ensures a **continuous supply of goods** in the market from production to consumption
- It protects the **quality of perishable and semi-perishable goods** from deterioration
- For goods with **seasonal demand** (e.g., woollen garments), continuous production and storage are necessary
- It helps in **price stabilization** by balancing demand and supply
- It facilitates the performance of **other marketing functions**
- It provides **employment and income opportunities** through price advantages

Types of Storage



Underground Storage Structures

- Underground storage structures are **dug-out structures similar to wells**, with sides plastered using **cow dung** or lined with **stones or cement**.
- They may be **circular or rectangular** in shape
- Storage capacity depends on the **size of the structure**
- **Advantages:**
 - ✓ Safer from external damages like **theft, rain, and wind**
 - ✓ Space can be **temporarily used for other purposes** with minor adjustments
 - ✓ Easier to **fill due to gravity**

Surface Storage Structures

- Foodgrains in surface storage structures can be stored in two primary ways:
 - ✓ **Bag Storage**
 - ✓ **Bulk Storage**

1. Bag Storage

- ✓ Each **bag contains a defined quantity**, making it easy to buy, sell, or dispatch
- ✓ Bags are easier to **load or unload**
- ✓ Allows for **separation of lots**, with identification marks on each bag
- ✓ Bags identified as **infested** during inspection can be **removed and treated easily**
- ✓ **Sweating** of grains doesn't occur since the bag surface is exposed to the atmosphere

2. Bulk or Loose Storage

- ✓ **Exposed surface area per unit weight** of grain is less, reducing the danger of damage from external sources
- ✓ **Pest infestation is lower** due to almost airtight conditions in the deeper layers
- ✓ The **Government of India** has promoted **improved storage facilities** at the farm level

Improved Grain Storage Structures

➤ Improved grain storage is categorized into two types:

- ✓ For Small Scale Storage
- ✓ For Large Scale Storage

1. For Small Scale Storage

- ✓ **PAU Bin**
 - Made of **galvanized metal iron**
 - Capacity ranges from **1.5 to 15 quintals**
- ✓ **Pusa Bin**
 - Constructed using **mud or bricks**
 - **Polythene film** embedded within the walls for better protection
- ✓ **Hapur Tekka**
 - A **cylindrical rubberized cloth** structure
 - Supported by **bamboo poles** on a **metal tube base**
 - Has a **small hole at the bottom** to remove grain easily

2. For Large Scale Storage

- ✓ **CAP Storage (Cover and Plinth)**
 - **Construction of brick pillars** up to a height of **14 inches** from the ground
 - **Wooden crates** are fixed into the grooves of the pillars for stacking food grain bags
 - **Quick construction:** Can be fabricated in less than **3 weeks**
 - **Economical solution** for large-scale storage
- ✓ **Silos**
 - Used for **bulk grain storage**
 - Grains are **unloaded via conveyor belts** and mechanically moved to the storage structure
 - Each silo can hold around **25,000 tonnes** of grain

Warehousing

➤ Warehousing are scientific storage structures especially constructed for the protection of the quantity and quality of stored products.

Importance of Storage

1. Scientific Storage

- ✓ Protects products against quantitative and qualitative losses through necessary preservation methods.

2. Financing

- ✓ Warehouses help meet financial needs by issuing warehouse receipts. Nationalized banks provide credit (75-80% of the value) based on warehouse receipts.

3. Price Stabilization

- ✓ Storage helps in stabilizing prices by managing supply and demand effectively, particularly post-harvest.

4. Market Intelligence

- ✓ Warehouses offer market information services to those storing produce.

Working of Warehouses

1. **Acts:** Warehouses operate under the Warehousing Acts passed by the Central or State Government.
2. **Eligibility:** Anyone can store notified commodities in a warehouse by agreeing to pay specified charges.
3. **Warehouse Receipt (Warrant):** This receipt is issued by the warehouse manager/owner, detailing the warehouse name, location, date of issue, commodity description, weight, grade, and value.
4. **Use of Chemicals:** Produce is preserved scientifically and protected from pests using methods like fumigation and dusting, at the cost of the warehouse.
5. **Financing:** The warehouse receipt acts as collateral for credit.
6. **Delivery of Produce:** The warehouse receipt must be surrendered before withdrawal of goods. Partial withdrawal is allowed after paying storage charges.

Types of Warehouses

1. On the Basis of Ownership

- ✓ **Private Warehouses:** Owned by individuals or large businesses, used for storing their own and sometimes others' products.
- ✓ **Public Warehouses:** Owned by the government, used for public storage.
- ✓ **Bonded Warehouses:** Located at ports or airports, where imported goods are stored until customs duties are paid. These warehouses are licensed by the government.

2. On the Basis of Type of Commodities Stored

- ✓ **General Warehouses:** Used for storing most agricultural commodities.
- ✓ **Special Commodity Warehouses:** Designed for specific commodities like cotton, tobacco, wool, and petroleum.
- ✓ **Refrigerated Warehouses:** Used for perishable commodities like fruits, vegetables, meat, and fish, where temperature is regulated.

Warehousing in India

1. Central Warehousing Corporation (CWC)

- ✓ Established in 1957, CWC offers safe and reliable storage for over 120 agricultural and industrial commodities.
- ✓ **Functions:**
 - Acquire land and build godowns.
 - Run warehouses for various commodities.
 - Serve as a government agent for distribution and purchase.
 - Provide transport facilities.

2. State Warehousing Corporations (SWCs)

- ✓ Each state in India has its own warehousing corporation.
- ✓ SWCs help store food grains and other commodities and are a joint venture between the state government and the Central Warehousing Corporation.

3. Food Corporation of India (FCI)

- ✓ Established under the Food Corporations Act 1964.
- ✓ FCI manages the storage of food grains to maintain buffer stocks and ensure food security in India.

4. Warehousing Development and Regulatory Authority (WDRA)

- ✓ Established in 2010 under the Warehousing (Development and Regulation) Act, 2007.
- ✓ WDRA regulates warehouses and promotes orderly growth in the warehousing business.

New Initiatives under WDRA

e-Kisan Upaj Nidhi

- An online platform for farmers to obtain post-harvest loans by pledging their Electronic Negotiable Warehouse Receipts (e-NWRs).
- A joint initiative of the Department of Food and Public Distribution, WDRA, NABARD, and the Department of Financial Services.
- This platform improves farmers' access to finance by enabling easier pledge finance against stored commodities.

Cold Storage in India

- India stands as the largest producer of fruits and the second-largest producer of vegetables globally.
- However, the per capita availability of these products remains low, primarily due to post-harvest losses, which account for about 25% to 30% of production.
- This loss is attributed to the perishability of these products, leading to quality deterioration by the time they reach consumers.
- Perishability results in several marketing challenges such as high costs, market gluts, price fluctuations, and other related issues.
- To address these challenges, the government of India introduced the **Cold Storage Order, 1964** under Section 3 of the **Essential Commodities Act, 1955**.
- This order aims to ensure that cold storage conditions are maintained scientifically and efficiently to safeguard against losses and to facilitate the development of the cold storage industry.
- The **Agricultural Marketing Advisor** to the Government of India is the licensing authority for cold storage facilities.
- These facilities can help mitigate distress sales, thereby ensuring better returns for producers.

Status and Potential of Cold Storage in India

- While India has vast potential in agricultural production due to its diverse agro-climatic conditions and improved agricultural practices, the lack of adequate cold storage and cold chain infrastructure remains a significant bottleneck.
- Although the production capacity is gradually rising, cold storage facilities are often limited to specific commodities like potatoes, oranges, apples, grapes, pomegranates, and flowers. This leads to poor utilization of available storage capacity.
- There is a significant opportunity to expand and diversify cold storage facilities in India to enhance the value of agricultural produce, reduce wastage, and meet growing domestic and export demands.

Storage of Foods and Storage Conditions

- Low temperature storage is a common and effective method to preserve foods and other commodities.
- It slows down the activities of microorganisms, which are the primary agents of spoilage, including bacteria, yeasts, and molds.
- While low temperatures do not destroy these microorganisms like high temperatures do, they significantly reduce their activity, helping to prolong the shelf life of stored goods.
- The required storage temperature depends on the type of product and the duration of storage, which can be categorized into short-term or long-term storage.

Types of Products and Their Storage Requirements

- 1. Live Products at the Time of Storage:** Examples include fruits and vegetables. These products are kept alive during storage, with the goal of reducing the natural enzyme activity to slow down ripening and maturity.

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2. **Processed Non-Living Foods:** Products like meat and fish, which are no longer alive and have been processed, require more careful storage methods to prevent spoilage. The best method for long-term storage of these items is freezing, with temperatures kept below -15°C .
 3. **Commodities Benefiting from Controlled Temperature Storage:** Products such as beer, tobacco, and khandsari benefit from storage at controlled temperatures to maintain their quality and extend shelf life.

Best Preservation Methods

- **Live Products:** For live products, the best preservation method is to maintain their liveliness while reducing enzyme activity.
 - ✓ This helps in delaying the ripening or maturing process, ensuring the product stays fresh for a longer time.
- **Non-Living Processed Foods:** The preservation of non-living foods is more challenging, as these products are more susceptible to spoilage.
 - ✓ The most effective long-term preservation method for items like meat and fish is freezing, followed by storage at temperatures below -15°C .
- By storing foods at the appropriate low temperatures, spoilage is minimized, ensuring that products remain fresh and safe for consumption over extended periods.

Cold Storage for Fruits and Vegetables

- Only certain fruits and vegetables benefit from freezing, but careful control of storage temperature and humidity is crucial.
- Deviating from the recommended levels can lead to the deterioration of the product, or even total loss.
- **Fruits and Vegetables Storage:** Some fruits and vegetables, such as apples, tomatoes, and oranges, should not be frozen. Maintaining a precise temperature is necessary for their long-term storage.
- **Controlled Atmosphere (CA) and Modified Atmosphere (MA):** These methods are often used for fruits and vegetables to regulate their storage conditions, helping to preserve freshness and quality.
- **Dairy Products:** Dairy products, being derived from animal fats, are non-living foodstuffs and can suffer from oxidation and breakdown of fats, causing rancidity. Packaging dairy products to exclude air (and therefore oxygen) can extend their shelf life.

Cold Storage Technology

- Cold storage units use refrigeration systems to maintain the desired environment for commodities.
- **Two Main Refrigeration Systems:**
- **Vapour Absorption System (VAS):**
 - ✓ **Cost:** VAS systems are more expensive upfront but offer economic operational costs.
 - ✓ **Operation:** VAS uses ammonia as the refrigerant, with water serving as the absorber. This system operates without a compressor, making it more energy-efficient.
- **Vapour Compression System (VCS):**
 - ✓ **Most Common:** VCS is the most widely used refrigeration system, where a refrigerant undergoes a cycle of evaporation and condensation, transferring heat from the storage space to the condenser.

Refrigerants in Cold Storage:

- Refrigerants are vital for cooling and maintaining the temperature in cold storage.
- They work by absorbing heat at lower temperatures during evaporation and releasing it at higher temperatures during condensation.
- **Freon** was once a common refrigerant but due to its environmental impact, its use is being phased out.
- **Ammonia** is now increasingly used, especially for horticultural and plantation products in cold storage, as it is more environmentally friendly and effective.