

Unit



Basic Farm Management



INTRODUCTION

Of the two words in farm management, farm literally means a piece of land where crops and other enterprises are taken up under a common management and has specific boundaries, and management means coordinating and effectively utilising available resources such as material, machinery, manpower, money, methods and markets (the 6Ms principle). In other words, farm management is the art of managing a farm successfully, as considered on a scale of profitability. Farm management has its own importance in commercial as well as in subsistence type of agriculture all around the world. This unit will help you understand the basics of farm management and the tasks of a farm manager

Tasks of a Farm Manager

An efficient farm manager must be concerned with the costs and returns of the agricultural production system. The farm manager must be able to recognise the efficient use of limited generative resources in farm production to meet aims and maximise profit. The farm manager must also be able to respond to financial

setbacks that happen from both within and outside the farm.

Vegetable Farm

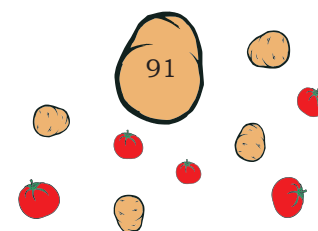
Growing commercial vegetables or production of quality vegetable crop seeds along with raising nurseries for commercial purposes are what constitute a vegetable farm. Commercial vegetable production is an important constituent of a farm. Producing fresh vegetables means marketing them immediately after harvest due to their perishable nature. However, this gives easy and fast farm income.

Specialised techniques, and all seed norms and regulations as per the Seed Act, 1960, need to be followed for quality seed production of vegetable crops. The production of certified seeds of notified varieties can improve the farm income as these can be sold to farmers, government agencies, etc. A hi-tech nursery to raise vegetables under protected structures can also bring good remuneration to the farm. Thus, all these aspects should be incorporated in any new farm establishment.

SESSION 1: FARM MANAGEMENT AND SELECTION CRITERIA OF VEGETABLE CROPS

For a profitable farm, it is important to consider the following farm resources.

- **Land management** is of utmost importance in the production process. Agronomists and soil scientists check the land for intensity of land use, fertility of soil, levelling and bunding, drainage and irrigation, weed management, etc.
- **Labour management** refers to the total amount of industrious work per man per unit time. The higher the labour efficiency, the greater are the returns from farming. Farm labour can be classified into four categories:
 - (i) Farm manager's labour,
 - (ii) Farm family's labour,
 - (iii) Permanently hired labour, and
 - (iv) Casual hired labour.



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The first three categories constitute the permanent labour force available on the farm. This is a fixed resource due to general lack of mobility. The fourth category is a variable input and can be hired when needed.

Financial management

Judicious management of finances of a farm business is important to increase the income of the farm. This part of the farm management pertains to the acquisition and use of capital.

Machinery management

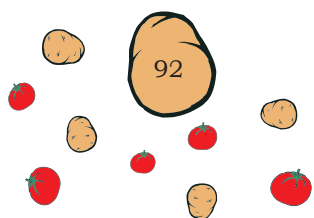
Mechanisation of select farm operations is key to the successful implementation of a farming system based on intensive use of yield increasing technology and multiple cropping. Mechanisation remarkably increases output and labour productivity in a farm.

Building management

With the advancement of production technology, the importance of buildings has increased because the number of implements, machines, processing, storage, etc., has increased. Like with the other resources, marginal investments made on farm buildings will bring the highest returns to the farm.

Different Farm Buildings or Structures

- **Farm office** belongs to the farm manager or farmer. It should be located at the centre of the farm for proper supervision. The office must be connected to the main road and located on high ground for proper drainage. The source of water supply and electricity should be provided accordingly.
- **Farm implements and vehicle shed** should be near the office building. Enough space should be provided for both the implements and the tractors and trolleys.
- **Storehouse** is used to keep fertilisers and related sources at an appropriate and safe place.
- **Pack house** is a space for packing any produce.



- **Threshing floor** is a safe and protected area where threshing operations can be done after harvesting.
- **Processing unit** is also an important structure for cleaning and grading of seeds. Many vegetable seeds may require to be graded in uniform size and shape.
- **Structure for storage of farm produce** is essential as, after grading and packing of the produce, the produce has to be stored till it is sold.
- **Nursery raising structures** should have polytunnels or polyhouses or nethouses or lath houses or cold frames, etc. These structures can be constructed as per the requirement and investment capability.

Crop Planning

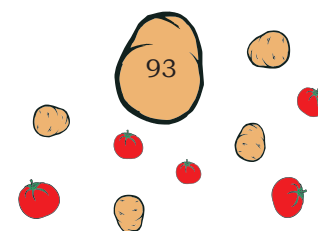
Selection of vegetable crops

Vegetable crops are selected on the basis of soil and climate of the area. Accordingly, vegetables are divided into three groups:

- **Summer or spring summer season vegetable crops** are brinjal, muskmelon, watermelon, long melon, snap melon, round melon, bottle gourd, bitter gourd, snake gourd, ash gourd, ridge gourd, sponge gourd, pumpkin, summer squash, winter squash, cucumber, okra, tomato, chili, cowpea, cluster bean, amaranths, Indian spinach, pointed gourd, etc.
- **Rainy season vegetable crops** are okra, brinjal, chili, bottle gourd, bitter gourd, snake gourd, ash gourd, ridge gourd, sponge gourd, pointed gourd, ivy gourd, cow pea, cluster bean, etc.
- **Winter or autumn winter season vegetable crops** are cabbage, cauliflower, broccoli, radish, carrot, turnip, beet, spinach, onion, garlic, peas, fenugreek, lettuce, potato, etc.

Cropping System

This refers to cropping pattern interactions on a farm with farm resources, other farm activities and production techniques. The yearly sequence, arrangement of a crop in streaks and uncultivated land in a given area is called cropping pattern.



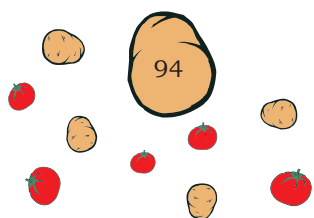
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Land resource in India is very limited. It is 0.12 ha per capita, which will further diminish by the turn of this century due to the population increase and fragmentation of land holding, resulting in lower production.

Moreover, a mere 3% of our total arable land is, at present, under vegetable cultivation. Realising the huge gap between demand and supply of vegetables, there is a suggestion to increase more area under vegetable cultivation, but it is difficult to get such horizontal expansion in vegetable cultivation in this situation. The total production per unit area can be increased by increasing the yield per unit area by using high yielding varieties, adequate and scientific crop management practices and increasing cropping intensities.

The following methods are recommended to increase cropping intensity.

- **Crop rotation** is a system of growing different crops in a regular sequence on the same land repeatedly for a period of two, three or more years. Here, the cropping sequence cycle takes more than one year to complete.
- **Succession cropping** is when, in a year, two or more crops are grown in succession on the same land. This system is generally followed in most market-oriented farms, where the aim is to keep the high-priced land occupied with cash crop for most part of the year.
- **Relay cropping** system is when the growing span of two crops overlap for a short period of time. In this system, the succeeding crop is sown on the same piece of land before the harvesting of the preceding crop in the same year.
- **In intercropping**, two or more crops are grown together or simultaneously in alternate rows or on the same land in the same season. The crops may or may not be sown or planted and harvested at the same time. It is mainly aimed at increasing the yield of the companion crop without reducing the yield of the main crop.



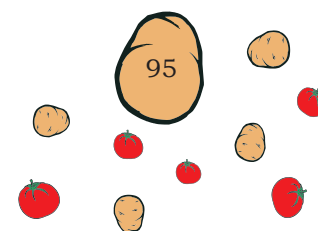
When these cropping sequences are practiced in a farm in an orderly manner for two, three or more years, the cropping system is called crop rotation.

Succession cropping

1. Vegetable cowpea (June to October); mid-season cauliflower (October to January); onion (January to May).
2. Pumpkin (October to February); okra (February to May); brinjal (May to October).
3. Potato (October to January); onion (January to May); okra (May to October).
4. Early radish (August to October); French bean (November to February); bitter gourd (February to June); amaranthus (June to August).
5. Cabbage (August to November); tomato (November to February); ridge gourd (February to June); cowpea or rice bean for green manure (June to July).
6. Early cauliflower (July to October); brinjal (October to March); amaranthus (March to June).
7. Early tomato (August to December); onion (December to May); green manure crop (June to July).
8. Brinjal (July to November); pea (November to February); cucumber (March to July).
9. Sweet pepper (November to February); taro (February to July); bitter gourd (July to November).
10. Chili (October to April); okra (April to August); spinach (August to October).
11. Late tomato (late December to April); okra (April to August); hyacinth bean (August to December).
12. Radish (October to December); watermelon (December to April); brinjal (April to October).
13. Elephant foot yam (March to October); pumpkin (October to February).
14. Bottle gourd (October to February); okra (February to July); Radish (July to October).

Note: To make such multiple cropping successful, cucurbit seeds should be raised in polyethylene packets. Before starting them during winter, the seedlings should be raised under a polyethylene house or shed to avoid cold injury. Such deviation from the normal growing

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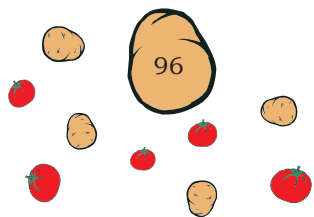
season is profitable from the point of view of marketing the produce. In the plains of West Bengal, good quality fruiting in tomato can be extended up to April if planted in late December (refer to point no.11).

Relay cropping

1. **Potato and pumpkin:** potato is harvested in March and pumpkin seeds are sown in the last week of January. After harvesting potato, pumpkin is continued up to June.
2. **Brinjal and ridge gourd or bitter gourd or watermelon:** brinjal is grown between September and February. Seedlings of cucurbit grown in polyethylene packets are to be planted in December and continued up to April.
3. **Bitter gourd and okra:** bitter gourd is grown during October to February. Pre-germinated seeds of okra are to be sown in January and continued up to May.
4. **Bottle gourd or summer squash and bush type vegetable cowpea:** cucurbits are grown during January to May following the ridge and furrow method. Cowpea seeds are sown in the beds between two furrows in April and continued up to July.
5. **Cabbage and watermelon/cucumber:** cabbage is grown from late October to the first week of February. Cucurbit is started with the seedlings in polyethylene packets from December. Then they are planted and continued up to April.

Intercropping

1. **Cabbage + radish:** cabbage is the main crop. The companion crop radish is of short duration and harvested early.
2. **Tomato + radish + lettuce:** tomato is the main crop and is to be grown at a higher spacing of 75–90 cm of the companion crops. Radish is harvested 50 days and lettuce 80–85 days after sowing. So, enough space is left after harvesting the companion crops to continue tomato successfully up to 150 days after planting. In this intercropping, tomato must be staked and trained.

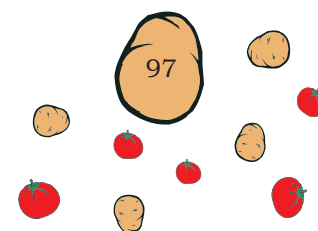


3. **Cucumber + cabbage or cauliflower:** cucumber is the main crop and is sown in October with a view to capitalise on the advantage of early harvest in spring. Cabbage or cauliflowers are grown in the interspaces successfully for the initial 80-day period.
4. **Carrot + peas:** carrot, the main crop grows slowly for the initial 45 days. Early pea varieties like Arkel from which the first picking of pods can be done 55–60 days after sowing, can successfully be grown in between for a period of 85 days, at the time of the last harvesting of peas. The plants should be uprooted and earthing up of carrot done simultaneously. Carrot is continued for 130–135 days after sowing.
5. **Tomato+spinach:** spinach can be grown successfully in between tomato for a duration of 75 to 80 days. Harvesting of spinach by uprooting the entire plant starts 35 days after sowing.
6. **Pointed gourd+spinach or radish or early cauliflower:** the vine or root cutting of the main crop, pointed gourd, is planted in October, on the side of a raised bed of 2.5 to 3 m width. The initial growth of the regenerated vine is slow due to the comparatively low temperature at this time. A short duration crop (75 to 80 days) can be grown profitably as a companion crop in the beds. Pointed gourd is continued up to August-September. In case of two successive crops, ratooning is done in October enabling the companion crop to grow again.

Principles for Arranging the Cropping Sequence

The economic effect of crop rotation, succession cropping and relay cropping depends on the set of crops. However, there should be a definite plan in arranging the cropping sequence based on the following principles.

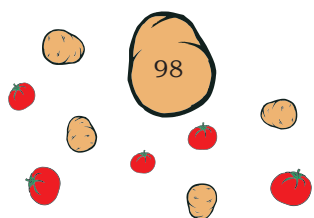
1. Repetition of the crops that have common diseases and pests should be avoided. For example, solanaceous crops should be avoided in the rotation when there is a problem of fusarium wilt and bacterial wilt in tomato and brinjal. Many serious diseases and pests can be controlled by scientific



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crop rotation. For example, club root of cabbage and other crucifers caused by the fungus *Plasmodiophora brassicae* can be effectively controlled by keeping the land free from cruciferous crop for a period of at least three years.

2. Generally, the relation of individual crops to their predecessors must be taken into consideration. Vegetable crops of different families grow well after the growth of a majority of the crops. A number of vegetable crops, like onion, spinach, tomato, etc., are good forerunners for the other crops if compatibility conditions are fulfilled.
3. Raise deep-rooted crops after the shallow-rooted crops. Deep-rooted vegetable crops, like pumpkin, tomato, peas, beans, carrots, etc., are able to use nutrients extracted from the deep layers of the soil. So these crops should be rotated with crops having shallow roots on the same piece of land. Shallow-rooted crops are onion, leafy greens, lettuce, cucumber, etc.
4. Heavy feeding crops, like cabbage, cauliflower, potato, brinjal, etc., that have high nutrient requirement should be followed by lowfeeding crops like okra, cucumber, lettuce, pumpkin, etc., that have a comparatively low nutrient requirement.
5. Crops that efficiently utilise the organic manure residues should be grown after the crop that does not utilise them fully. For that matter, immediately after the addition of organic matter to the soil, cucumber, pumpkin, summer squash, cabbage, leek, etc., should be grown. This should be followed by root crops that can utilise the organic residues fully.
6. Leguminous vegetable crops should be included in the cropping sequence. This not only upgrades the protein status of the farm produce but also enhances soil fertility.
7. Green manure crops should be accommodated in the rotation to increase the organic matter status in the soil.



8. Crop rotation without applying fertilisers maintains organic matter in the soil but does not maintain high productivity levels. A combination of crop rotation and judicious fertiliser application produces the highest yields and maintains the highest soil organic matter levels.

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Important considerations for intercropping

1. Crop compatibility in the mixed stand.
2. Growth behaviour of the crops and efficient use of light by the crops in mixed stand.
3. Time of sowing or planting of the crops.
4. Space required by each crop at various stages of growth.
5. Assured supply of water and nutrients.
6. Assured management practices.

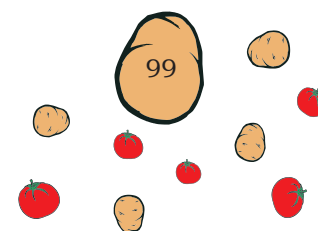
Advantages of intercropping

1. High return from per unit land area. The main objective of intercropping is to increase the yield of the component crop without reducing the yield of the main crop.
2. The total yield from the same area under intercropping is much higher than the sole crop yield.
3. Better use of growth resources.
4. Better control of pests, diseases and weeds.
5. Effective guard against market risks as different crops are harvested from the same land.
6. Economy of space.

Financial Management

Economics of vegetable production

Financial management is concerned with productivity, that is, use of and income from production resources. Specifically stated, the production economics includes, combination of farm enterprises, method of production, size of the farms, returns to scale, leasing, production possibilities, farming efficiency, use of credit and capital, risk and uncertainty, which affects decision making.



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Cost of production

The cost refers to the total amount of funds used in production. The nature of production and the prices thus determine the cost structure. Cost of production involves both cash cost items and non-cash items. Cash costs are when resources, such as fertilisers, fuel oil, casual labour, etc., are purchased and used immediately in the production process. Non-cash costs consist of depreciation of farm implements, equipment, buildings, etc., and payments made to the farmer themselves or family labour, management and owned capital.

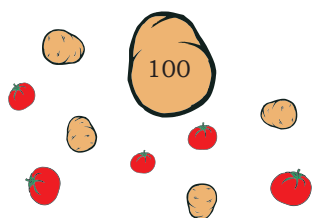
Categories of cost

Several kinds of costs are involved in even the simplest production process but the two major categories of costs are fixed costs and variable costs.

1. **Fixed costs** are those that do not change with the amount of output and are incurred even when there is no production. Fixed cash costs include land taxes, interests, insurance premiums, annually hired labour, permanent labour, electricity charges, etc. Non-cash fixed costs include depreciation on buildings, machinery, interest on capital investments, cost of family labour and cost of management.
2. **Variable costs** are the cost of using variable inputs. They vary with the level of production. The higher the production the more will be the variable costs. It includes items, such as seeds, fertilisers, casual labour, insecticides, fuel consumption, etc.
3. **Total costs** is the sum total of fixed costs plus variable costs. Total costs are required for computing net revenue. Net revenue is equal to total revenue less total costs. During the planning period, all inputs are variable.

Farm Record Keeping

It is the art and science of recording various farm details and business dealings in a regular and systematic manner so that their nature, extent and financial effects can be readily ascertained at any time of the year.



Advantages of farm records and accounts

1. **Means to higher income:** to obtain higher income farmers must have exact knowledge about the present, potential gross income and operating cost.
2. **Basis for diagnosis and planning:** diagnosis of management problems is the pre-requisite of sound planning. Data and accounts provide the necessary information needed for such a diagnosis. It is also a way to improve the risk bearing ability of a farmer.
3. **Basis for credit acquisition and management:** properly kept records and accounts can demonstrate and authenticate the production and income potential and credit worthiness of the farmer.
4. **Guide to better home management:** records and accounts provide information on the farm household economy. This is particularly important in Indian conditions where the farm and home management are so closely integrated. It is the basis of research conducted in agricultural and production economics.
5. **Basis for government policies:** various state and central government policies, such as land policies, price policies and crop insurance, etc., need a farmer's feedback for their more practical viability. That is when these records and accounts are helpful in obtaining the correct data for examining and developing sound policies.

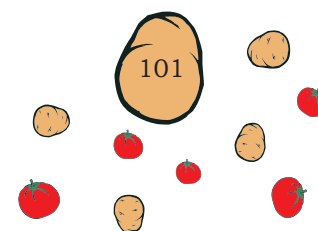
Principles of Book Keeping or Accounting

There are two systems of farm accountancy— double entry system, and single entry system.

Double entry system is a method of recording each transaction in the account books in its two-fold aspects. It means two entries are made for each transaction in the same set of books, one as a debit entry and the other as a credit entry.

The theory of double entry is that every business transaction involves two parties— one for receiving the goods or services and the other for giving them. Therefore, every transaction is entered at two places, for credit and for debit.

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Advantages of double entry system

1. The system provides for complete personal and impersonal records, which include assets, liabilities, gains or losses. Thus, the nature and value of the possessions can be ascertained.
2. It furnishes ways and means for checking arithmetical accuracy because two entries are made for each transaction.
3. The system provides detailed information regarding the business. Classified records of all transactions will show combined overall results of a given policy.
4. The system provides for automatic checks to prevent mistakes.
5. It affords an easy and ready reference to details of accounts.

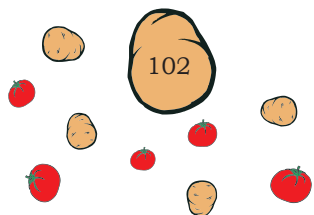
Single entry system is a system, which ignores the double effect of transactions. Only personal accounts of debtors and creditors are kept, and impersonal accounts are ignored altogether. It is, therefore, relatively imperfect. Its results are less reliable, and its accuracy cannot be tested by means of a trial balance, which is possible under the double entry system alone.

Types of farm records

The farm record system has three parts: physical farm records, financial farm records and supplementary farm records.

Physical farm records are related to the physical aspects of the operation of a farm business. The records include:

- (i) Map of the farm, soil and contour, etc.
- (ii) Preparation of charts on physical efficiency
- (iii) Records on utilisation of land
- (iv) Records on crop production and disposal
- (v) Daily work record diary, labour records
- (vi) Machinery use records
- (vii) Stock/register, etc.
- (viii) Casual and hired labour records



Financial farm records are mainly related to the financial aspects of the operation of a farm business. The records include:

- (i) Farm inventory
- (ii) Farm cash accounts or farm financial accounts
- (iii) Classified farm cash accounts and annual farm business analysis
- (iv) Balance sheet for net worth statement

Supplementary farm records include

- (i) Capital assets sale register
- (ii) Cash sales register
- (iii) Credit sale or purchase register
- (iv) Wage register
- (v) Funds borrowed or repayment register
- (vi) Farm expenses register.
- (vii) Non-farm income record

Practical Exercise

Activity 1

Demonstrate different cropping patterns of vegetable crops

Material required

Writing material, practical file

Procedure

1. Visit a field where vegetable cropping pattern is followed, such as the Krishi Vigyan Kendra, Agricultural Institute or a farmer's field.
2. Differentiate between crop rotation, relay cropping, inter cropping and succession cropping with suitable examples.
3. Note the following observations in the Table given below.

S.No.	Location	Cropping pattern (including crops in cropping pattern)	Growing season	Remark	Picture

4. For each cropping pattern write two examples based on tuber crops.
5. Discuss advantages of vegetable cropping pattern.

Activity 2

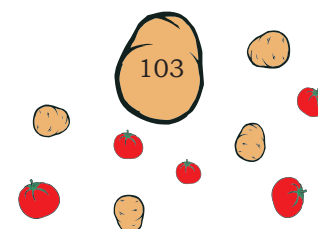
Work out benefit cost ratio for any one tuber crop

Material required

Writing material

Procedure

1. Decide on a potato crop to work out benefit: cost ratio.
2. Collect the primary data of expenditure to raise a particular crop.



- Place the data in Table 1 to find out the variable cost and fixed cost.
- Calculate benefit: cost ratio with the help of the given formula and Table 2.
- Compare the benefit: cost ratio of a particular crop with the group.

Table 1: Variable cost and total cost of cultivation of (crop name)

S. No.	Variable cost			Total (Rs/ha)	Fixed cost (Rs/ha)	Total cost (Expenditure) (Rs/ha)
	Quantity	Rate (Rs)	Amount (Rs)			

Table 2: Economics of tuber crop.....production

S. No.	Expenditure (Rs/ha)	Gross monetary return (Rs/ha)	Net monetary return (Rs/ha)	Benefit: Cost ratio

Check Your Progress

A. Fill in the blanks

- Costs involved in production process are _____ and _____.
- A system of entry that ignores the double effect of transactions is called _____.
- A method of recording each transaction in the account books in its two-fold aspects is known as _____.
- A type of unit that is an important structure at a farm for cleaning and grading of vegetable seeds is called _____.
- After grading, packing of the produce, the _____ structures are essential until selling.

B. Multiple choice questions

- Which of these is a winter or autumn winter seasonal vegetable?
 - Melons
 - Carrot
 - Squash
 - Gourds
- Which of these vegetables grows in the summer season?
 - Gourds
 - Fenugreek
 - Carrot
 - Cabbage

3. Growing different crops in a sequenced season on the same land is called _____.
 (a) multi cropping (b) crop rotation
 (c) mixed farming (d) sequence cropping
4. The succeeding crop sown/planted before the preceding crop is ready for harvest is called _____.
 (a) relay cropping (b) crop rotation
 (c) intercropping (d) succession cropping
5. An example of supplementary farm record is _____.
 (a) farm inventory (b) cash sale register
 (c) farm cash accounts (d) All of these

C. Subjective questions

1. Define farm management. Describe the different farm resources.
2. What is a vegetable farm? Describe the farm buildings.
3. Write short notes on
 (a) Succession cropping
 (b) Relay cropping
 (c) Intercropping
 (d) Crop rotation
4. Discuss the double entry system and its importance.

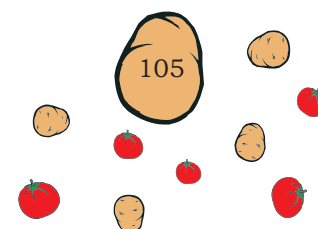
D. Match the columns

A	B
1. Wage register	a. Soil map
2. Fix cost	b. Farm inventory
3. Variable cost	c. Supplementary farm records
4. Financial farm records	d. Land taxes
5. Physical farm records	e. Pesticides

SESSION 2: BASIC MARKET INFORMATION

Concept of Market Information

Market information system is also known as market intelligence system (MIS). This system is generally used to collect, analyse and disseminate information regarding demand and supply of any agricultural commodity keeping fluctuating prices in mind, and other needful information. Basic market information plays a vital role in agri-horti industries and floral supply chain. To get a better price in the market it is essential for farmers and traders to have market information regarding the demand and supply of



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any commodity so that they get a good price for their produce. There are some sources that provide this basic market information.

Importance of Market Information

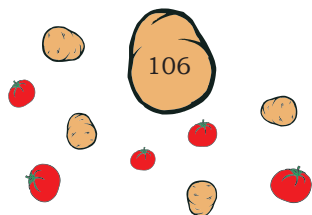
All the sectors whether run individually or by a group, depend on market information to work out their marketing needs.

1. **Farmers** uses market information for improving their decision-making powers to decide when, where and through whom produce should be sold and bought.
2. **Middleman** uses market information to plan the purchase, storage and sale of commodities. This information helps the middleman decide whether to sell the commodities in the market immediately or to stock it for some time before making a sale.
3. **Government** uses market information to formulate agricultural policies related to import-export regulations and administered prices. It also helps the government to make decisions related to support price.
4. **General economy** the regulation of price of agricultural products for the development of a competitive market helps in the growth of the economy.

Collection and Dissemination of Market Information

The collection and dissemination source of market information are as given below.

- State Agriculture Marketing Department
- State Agriculture Marketing Board
- Fund Department
- Directorate of Economics and Statistics
- Personal contact
- Post and telephones
- Newspaper
- Magazines
- Government agencies or experts
- Price bulletins



Agencies Involved in Agricultural Marketing

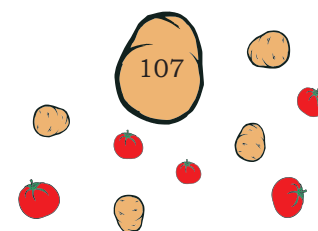
1. **National Agriculture Cooperative Marketing Federation of India Limited (NAFED)** was established on October 2, 1958 to organise, promote and develop marketing, processing and storage of agricultural and horticultural produce, and to facilitate import and export and wholesale or retail trade. It also facilitates, coordinates and promotes the marketing and trading activities of cooperative institutions.
2. **National Bank for Agriculture and Rural Development (NABARD)** was established on July 12, 1982 to promote sustainable and equitable agriculture and rural development through financial and non-financial interventions, innovations technologies and institutional development.
3. **Agriculture and Processed Food Products Export Development Authority (APEDA)** was established under the Agricultural and Processed Food Products Export Development Authority Act in December 1985. The Act came into effect from February 13, 1986. The main work of APEDA is to fix standards and specification for the scheduled product for export import.

Demand and Supply of Vegetables

In economics, demand and supply helps to determine the price of goods sold in the market. To a large extent, it relies on the competition among buyers as well as sellers. If there are more buyers they bid against each other and raise the price because the demand of goods is more and supply is less, On the other hand, if there are more sellers or more supply then the sellers bid against each other and lower the price. The equilibrium is when all the bidding has been done and nobody has an incentive to offer higher prices or accept lower prices.

The concept of demand

The quantity demanded of a good or vegetable in a given time is the total amount of goods or vegetables that the buyers would choose to purchase under the given conditions. The conditions are:



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- Price of the vegetable
- Price of complement
- Income and wealth
- Preferences
- Quantity
- Expectations of future prices

The law of demand: when the price of a good rises, and everything else remains the same, the quantity of the good demanded will fall.

The concept of supply

The quantity supplied is the total amount of goods or vegetables that sellers would choose to produce and sell under the given conditions at a given time. The given conditions include:

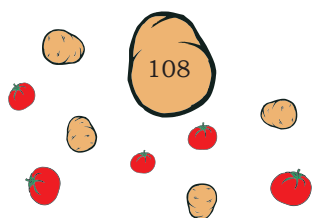
- Price of the vegetable
- Price of factors of production (labour, capital)
- Price of alternative products the farm could produce
- Technology
- Productivity
- Expectations of future prices

The law of supply: when the price of a particular good rises, then the quantity of that good supplied will also rise subject to all other things remaining the same.

Price fluctuation

The normal supply of vegetables is directly related to people's livelihood and social stability. Smooth price of vegetables is important for social development. The management strategies to control fluctuations in the price of vegetables are as follows:

- Establishing and improving the channels of information transmission.
- Making production and marketing information symmetrical.
- Balancing supply and demand.
- Actively promoting the industry standardisation of vegetables.
- Reducing the intermediate links.
- Curtailing the circulation cost of vegetables.



- Regulating the 'green channel' of vegetables.
- Preventing uptick in the prices of vegetables in the 'last mile'.
- Cracking down on the vegetable speculation behaviour to ensure healthy development of the vegetable market.
- Actively giving play to the role of the government.
- Building vegetable protection system.

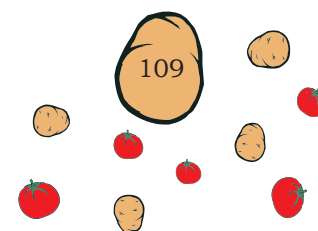
The quality and quantity may be affected by climatic factors, such as drought, frost, rain, heat, etc., at the production levels, which, in turn, influence the availability. Other than this, insect pest and diseases also affect the production. The price of fresh produce is also influenced by the time of the purchase, as products outside or at the beginning or end of the season might be more expensive than in the middle of it.

Interdependencies among product categories influence the final price. Factors, such as variety, size, packaging, maturity of the product, organoleptic quality, promotional activities, the demand for specific growing practices, such as organic production, etc., also influence the price of fresh vegetables at the demand level. All these elements influence the price. Furthermore, logistical constraints or the place of purchase (supermarket, hard-discount and grocery store) also influence the final price. Finally, one should consider the overall economic situation and purchasing power, the demand for competing products, changes in consumer demands and so on.

Marketing System of Vegetable Crops

Marketing of vegetables comes with a lot of constraints due to their high perishable nature, seasonal market arrivals and bulky nature. Assembling and subsequent marketing of the produce is still a struggle due to lack of proper storage facilities and quick transport systems. Very often, producers are forced to dispose of their produce at a nominal price when there are seasonal gluts due to these bottlenecks. Another major defect in vegetable marketing is the involvement of several intermediaries, who dominate the trade and reap a

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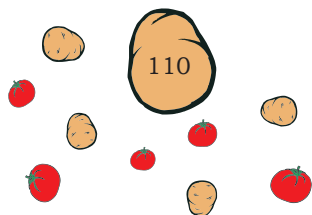
huge profit. Consequently, the producer's margin in the consumer's price becomes low. In vegetable marketing, the following four channels are predominant.

1. Producer → Commission agent → Wholesale trader → Retailer → Consumer
2. Producer → Wholesale trader → Retailer → Consumer
3. Producer → Commission agent → Wholesaler → Consumer
4. Producer → Retailer → Consumer
5. Producer → Consumer

A majority of the produce is marketed through channel 1 and 2. Channel 4 operates only when the producing area is situated near big markets or *haats* or cities. Vegetables are generally marketed in big hotels or other establishments through Channel 3.

Marketing through cooperatives is inadequate in our country. It is urgently felt that more horticultural producers' cooperative marketing societies should be established at the village and district levels to control the activity of the intermediaries and to regulate vegetable marketing. At present, NAFED, several state tribal cooperative corporations headed by TRIFED and primary cooperative marketing societies have taken up procurement and marketing of potato, onion and ginger. Besides NAFED, about 12 states and central level societies and more than 275 primary marketing societies are directly engaged in the marketing of vegetables. Horticultural Producers Marketing and Processing Society (HOPCOMS), Bangalore, Nilgiris Cooperative Marketing Society, Udthagamandalam, Nilgiris Vegetable Growers Cooperative Marketing Society, Udthagamandalam, Nasik District Potato and Onion Growers Cooperative Association are some of the other cooperative agencies rendering their services in the marketing of vegetables. The National Horticulture Board has started providing information regarding the prevailing prices of vegetables at various wholesale markets on a daily basis.

The existing systems need to be streamlined and monitored. The facility of the cooperative societies should be extended to the grass root level. Moreover, closer coordination among the Agriculture Marketing Board,



National Horticulture Board and State Department of Agriculture or Horticulture should formulate an action plan for marketing of vegetables.

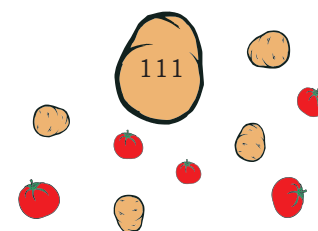
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Defects in the vegetable marketing system

- Poor transport facilities and almost complete lack of refrigerated transport network makes it difficult to send perishable products like vegetables to distant markets in a good condition. It is found that most of the post-harvest losses in the produce occur during transportation and distribution.
- Lack of storage facilities often results in surfeit. In this situation, the growers are forced to sell their produce even at throw away prices.
- Preponderance of intermediaries in the marketing channel lowers the producer's profit.
- There is no provision to fix floor prices, even for some important vegetables, therefore, producers are often cheated by the clever middlemen.
- Lack of grading and quality control system.
- Concept of consumer packaging is practically unknown in the domestic markets.
- Absolute lack of coordination between production targets of the state agriculture department and action plan of the marketing directorate.
- Primitive methods of selling, like secret sale, private negotiation, under cover, etc., are very much in vogue.
- Government and other cooperative marketing agencies' participation in vegetable marketing.
- Lack of pre-cooling, refrigerated transportation, chill cold storage and frozen cold storage.

Transportation in Marketing

It has been estimated that one-third of the vegetables get spoilt between the farm and the transit and another one-third before it reaches the consumer. In our country, transportation network for perishable commodities like vegetables is very weakly developed. The concept of refrigerated transport for vegetables is yet to be developed.



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This spoilage happens in transit due to inadequate as well as loose packaging. In this situation, an efficient and a cost-effective transit network should be provided in the potential vegetable growing areas. Rail transport is 8-10 times more efficient than road transport with respect to the use of energy for the movement of the same tonnage. Unfortunately, long distance transport of vegetables is mostly done by road because rail transport has not yet proved to be dependable for vegetables in our country. Therefore, it becomes necessary to modify the long distance transport carriages by introducing refrigeration, more ventilation and by improving quick loading and unloading systems.

Fresh vegetables are normally exported by air from Mumbai. Onion, potato, garlic, sweet potato and elephant foot yam are exported by ship. Some onions are also exported from Porbandar in Gujarat, Chennai and Nagapattinam ports in Tamil Nadu by ship. Thiruvananthapuram and Delhi are the other airports from where vegetables are exported. Kuwait Airways, Saudi Air Lines and Air India are the major airlines, which transport vegetables. Fresh vegetable exports other than onions are allowed freely under the 'Open General License' (OGL). Onion is exported through NAFED. Private traders can also export onion by becoming associates of NAFED.

Practical Exercise

Activity 1

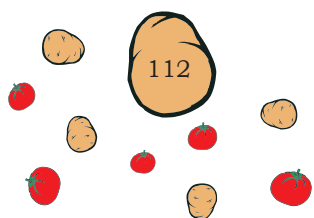
Marketing system of vegetable crops

Material required

Writing material, practical notebook

Procedure

1. Visit a nearby vegetable market or *mandi*.
2. Note down the various types of vegetables available in the market.
3. Observe the functions of different marketing channels.
4. Note down the various activities of marketing channels.
5. Note down the price variation between the producer, wholesale trader, retailer and consumer.



6. Calculate the difference in cost of vegetables between the different channels.
7. Observe difficulties, if any, faced by the producer and discuss the marketing information acquired by the producer.

Check Your Progress

A. Fill in the blanks

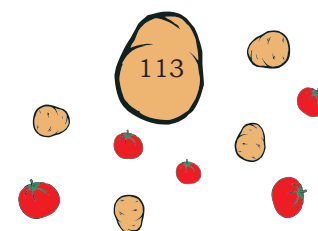
1. A majority of the produce is marketed through Channel _____ and _____.
2. A model that determines the price and quantity of any product is called _____ model.
3. APEDA stands for _____.
4. Marketing information system is also known as _____.
5. NAFED was established on _____.

B. Multiple choice questions

1. How many channels are predominant in vegetable marketing?
 - (a) 1
 - (b) 2
 - (c) 3
 - (d) 4
2. APEDA was established in _____.
 - (a) 1986
 - (b) 1996
 - (c) 2002
 - (d) 2005
3. The collection source of marketing information is _____.
 - (a) newspaper
 - (b) magazines
 - (c) government agencies or experts
 - (d) All of the above
4. Bulb and tuber crops are generally transported _____.
 - (a) by air
 - (b) by ship
 - (c) by rail
 - (d) None of the above

C. Subjective questions

1. What is the marketing system of vegetable crops?
2. What are the reasons for price fluctuation in the market?
3. Define demand with a suitable example.
4. Define supply with a suitable example.



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D. Match the columns

A	B
1. Source of market information	(a) Market information
2. Marketing Federation of India	(b) APEDA
3. Product Development Export Authority	(c) NAFED
4. Agriculture and Rural Development Bank	(d) Directorate of Economics and Marketing
5. Price determination	(e) NABARD

