UNIT 3 PUBLIC DISTRIBUTION SYSTEM

Though it is important to produce the required amount of food for a country, yet its distribution to the public (in a way that the weaker sections of society also get their share), is equally important. In this unit you will learn about the working of the public distribution system of food through outlets like fair price shops.

Structure

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3.0 OBJECTIVES

After going through this unit, you should be able to

- **explain and define the working of the Public Distribution System**
- **relate the working of the Public Distribution System to benefits for the consumers**
- **identify the benefits of Fair Price Shops and**
- **explain the concept of Food subsidies.**

3.1 INTRODUCTION

The system of the government and its agencies supplying the essential commodities to the consumers at reasonable prices is called the Public Distribution System (PDS). Let us try to understand how it began in our country.

The institution of fair price shops came into existence during the Second World War. Earlier, the Government had made arrangements to open grain shops in different industrial and rural areas for the distribution of specified quantities of food grains at subsidised rates to labourers. To stabilise the prices of foodgrains, the Government organised fair price shops where card-holders could make purchases at fixed prices. Thus, the Government tried to influence the prices in the open market. The Central Government formulated a scheme in 1956 for the extensive sale of foodgrains through fair price shops. All the State Governments were asked to open a large number of fair price shops mainly for the distribution of rice and wheat. The total distribution of food grains in 1956 from the Government stocks was 2.1 million tonnes.

The amount of grains thus distributed increased significantly after 1964 because of poor agricultural production over the three years from 1964-65 to 1966-67. In 1965, statutory rationing (rationing as per law) where the quota of sales for individuals is set by the Government was introduced in four major cities and later extended to a further 10 cities in the country. The family ration card system was also introduced.

3.2 WORKING OF THE PUBLIC DISTRIBUTION SYSTEM (PDS)

Let us try to understand how the PDS works in the country. The farmers producing the food grains are distributed throughout the length and breadth of the country. So also, the consumers are geographically distributed. Most of the consumption points are the large townships and urban areas where food is not grown. The food grown by the farmers will have to be supplied to these consumption centres. As you know, there are both rich and poor people, and in the case of an increase in the prices, it is the latter who stand to suffer.

The trading community usually takes care of assembling the crops grown by the farmers and marketing them to the consumers. But, left to themselves, the traders indulge in speculative activities i.e. they speculate (expect) the prices to increase during the non-harvest season because of low availability of foodgrains. This goes by the simple principle in economics which says that when the demand for a commodity is more than its supply, the price of that commodity increases. Hence, there is a possibility of the traders hoarding (stocking) the commodity and thus creating an artificial scarcity in the market. This leads to an increase in the prices of foodgrains when the traders release their stock, thus enabling them to make higher profits. It is here that the Government intervenes to prevent such a situation and comes to the rescue of the consumers.

The Government agencies which are involved in the PDS are the Food Corporation of India and the Food and Civil Supplies Corporations for the State Governments. They buy the foodgrains grown by the farmers usually at the regulated markets. They store these grains and transport them to the distribution (offtake) points. From these points, the retailers (Fair Price Shops) buy the commodities and ultimately sell the grains to the consumers. The Central Government fixes the quota month-wise for each state regarding the quantity of foodgrains which can be sold through the PDS. This quota depends upon the needs of the population of the state and its contribution to the central pool of food stocks. Rice and wheat are the two commodities which have been given maximum emphasis for the sake of procurement and distribution through the PDS.

You will now see how the PDS helps the consumers.

There are two important concepts which you have to understand. They are the Market Price and the Issue Price. Market price is the price of a commodity prevailing in the open market. You usually concentrate on the wholesale price in the open market. This is because the retail price depends upon the wholesale price. Issue price is the price at which the government releases (sells) its stock to the retailers (Fair price shops) for distribution. Here again, the price you pay in your shop will be more than the issue price itself. The information on prices will usually be converted to Index numbers (Price Indices) to facilitate a better comparison between different points of time. In very simple terms, the price index can be estimated in the following way:

Price of wheat in 1970 : Rs. 120 per quintal
Price of wheat in 1975 : Rs. 180 per quintal

Let us assume the Base year as 1970, i.e. we want to observe the changes in the prices of wheat over a period of time in comparison with those prevailing 1970.

Therefore, the price index of wheat for:

$$1970 \text{ is} = \frac{120}{120} \times 100 = 100.00$$

$$1975 \text{ is} = \frac{180}{120} \times 100 = 150.00$$

Remember that Index numbers are all pure numbers without any units.

Now you can say that the price of wheat has increased by 50 per cent between 1970 and 1975.

The benefit to the consumers due to the PDS can be realised when you compare the movement of wholesale (open market) prices and issue prices over the years. The following table clearly shows the movements of the two between 1970-71 and 1979-80 in India.

Table 3.1 Index numbers of wholesale and issue prices

Base Year 1970-71 = 100
Base price : Rice = Rs. 106.00 per quintal
Wheat = Rs. 82.80 per quintal

Year	Rice Index number of		Wheat Index number of	
	Wholesale price	Issue price (coarse rice)	Wholesale price	Issue price (Wheat)
1970-71	100.00	93.80	100.00	94.20
1971-72	103.00	93.80	99.50	94.20
1972-73	116.00	93.80	106.50	94.20
1973-74	140.20	103.60	108.20	100.20
1974-75	183.20	119.60	183.10	151.00
1975-76	178.80	126.60	159.60	151.00
1976-77	156.90	126.60	152.60	151.00
1977-78	162.00	126.60	156.50	151.00
1978-79	160.80	126.60	153.80	153.00
1979-80	183.80	126.60	160.70	153.00

Source: K.C.S. Acharya, Food Security System of India, Concept Publishing Company, New Delhi.

Looking at table 3.1 you can see that both in the case of rice and wheat the market price has increased much faster than the issue price. In the case of rice, the market price has increased by about 84 per cent between 1970-71 and 1979-80, while the issue price has increased by about 34 per cent. The increase in the market and issue prices of wheat during the same period is by 61 per cent and 60 per cent, respectively. Another point to note here is that every year, in the case of both rice and wheat, the index number of wholesale price is greater than that of the issue price. These results indicate that the consumers have derived benefits from the PDS in the form of paying lower prices for the commodities they have purchased.

You can also look at the total benefits the people in the country have gained in monetary terms as shown by the table below.

Table 3.2 Computation of benefits to consumers (in 1978) due to the distribution of rice and wheat

Item	Unit	Rice	Wheat
1 Average market price	Rs./Qtl	158.36	128.50
2 Issue price of Govt stocks	— " —	135.00	126.65
3 Net difference	— " —	23.36	1.85
4 Quantity sold during the year	tonnes	2087	6635
5 Benefit to consumers	Rs. Cr.	51.36	12.27
Total benefit to consumers (Rice + wheat)	Rs. Cr	63.63	

Source: Extract from K.C.S. Acharya, Food Security System of India, Concept Publishing Company, New Delhi.

Table 3.2 indicates the extent of monetary benefits the people of India have gained due to the distribution of rice and wheat by the Government agencies. The consumers have gained by about Rs. 63 Cr. during 1978. In fact,the amount of gain was as high as Rs. 264 Cr. during 1975 because the difference between the market price and the issue price of rice was as high as Rs. 66.80 per quintal. The amount of gain to the consumers, as you see from the table, also depends upon the quantity of the commodities sold from out of the Government stocks.

You have seen how the consumers can derive benefits from the PDS. You should not forget that the benefits not only include the availabiliy of foodgrains at lower prices but also include availability of the commodities throughout the year. The PDS in India is recognised as a permanent feature of the strategy to control prices, to reduce fluctuation in prices and to achieve an equitable distribution of essential commodities i.e. all people can have access to buying the essential items at reasonable prices. The PDS involves a very good co-ordination between production, procurement, transportation, storage and distribution.

Commodities recognised for sale by PDS

The Government of India has recognised the following commodities as essential items reflecting the needs of the common man.

1 Cereals-rice and wheat
2 Sugar
3 Edible Oil
4 Soft Coke (for fuel)
5 Kerosene
6 Controlled Cloth
7 Tea
8 Coffee
9 Toilet and Washing Soaps
10 Match Boxes
11 Exercise Books for Children

However, the Central Government has confined its responsibilities to the seven commodities viz., wheat, rice, sugar, edible oil, kerosene, soft coke and cloth. These seven commodities form the core of the PDS. It is not necessary to standardise the commodities sold throughout the country through the PDS because the needs of different states will be different. Hence, you see that some State Governments are distributing a large number of essential commodities through fair price shops.

The Central Government also helps the State Governments in acquiring many commodities of common use like razor blades, toilet soaps, cycles, and tubes, etc., at wholesale prices for distributing through the fair price shops.

The working of the PDS is periodically reviewed in consultation with the State Governments. At the Central Government level, an Advisory Council on the Public Distribution System has been constituted to review its working from time to time. All the State Governments have also established such Advisory Councils at district and tehsil levels.

Expansion of the PDS has been an important point of action in the new 20-point programme. Special emphasis is laid on increasing the number of fair price shops in the areas which have not been sufficiently served by the PDS. Hence, the expansion of PDS is supplementary to the poverty alleviation programmes.

3.3 FAIR PRICE SHOPS

As the name itself indicates, a fair price shop is one in which the commodities are sold at reasonable and fixed prices. As far as possible, the Government recognises the co-operative stores as fair price shops. However, many private traders are also permitted to sell the commodities through the PDS by being recognised as fair price shops by the Government.

The number of fair price shops increased from 2.39 lakhs in March 1979 to 3.15 lakhs in January, 1985 These fair price shops are scattered over both the urban and rural areas. Thus all sections of society can derive benefits from them.

As was mentioned earlier, several essential commodities are being sold by the fair price shops. The more important of these commodities are foodgrains, sugar, edible oil, kerosene oil and cheaper varieties of cloth.

In our country there is a system of rationing followed for distribution of commodities by the fair price shops. In fact, they are more popularly called 'ration shops'. Any person or family willing to buy commodities from the ration shops should possess a 'ration card'. The ration card which serves as a permit will be issued only by the Directorate of Food and Civil Supplies of the concerned State Government. On application to the Directorate, a ration card is issued to a family. The family is also referred to the particular shop from where they can buy their supplies. All families living in the jurisdiction of a particular office (Directorate) are eligible to become ration card holders.

The major advantage of buying your requirements from a ration shop is that you can get the commodities at lower prices as compared to buying the same in the open market (any other shop). Secondly, the prices at which these commodities are sold in the ration shops do not fluctuate as much as they do in the other shops. For example, the price of edible oils increases during the festive season in other shops, while in the ration shop it does not. Hence you are assured of your quota of commodities at stable prices.

The rationing system has been particularly helpful to the poorer sections of society As you learnt in the first unit, the poor spend a very large portion of ther income on food articles. So, when these commodities are available to them at lower prices, they will be benefitted. Further, because the ration shop network is fairly widespread, they can have access to these commodities close to their homes.

Thus, the Government's policy relating to the Public Distribution System and the fair price shops go together. This policy has helped all sections of the population to avail of essential commodities at stable prices.

Check Your Progress

1 What happens if the distribution of food items is entirely left to the traders ?

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2 Explain briefly the procedure adopted in the Public Distribution System.

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3 Differentiate between 'Market Price' and 'Issue Price' of foodgrains.

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4 What is a Price Index? How does it help us ?

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3.4 FOOD SUBSIDIES

A subsidy is that component of the total price which a buyer need not pay. Food subsidy is one which helps the consumer buy his food at a cheaper rate than what he would have actually paid for.

Subsidies are usually awarded by the Government, either Central or State. The main intention of a subsidy is to help the buyer purchase his requirements at cheaper prices. In fact, subsidies are sometimes are sometimes also used to encourage the consumption of some commodities. Examples of such subsidised products include new commodities sold in the market or indigeneously produced goods as against imported ones.

Subsidies may come either in the form of absorption of certain costs by the Government or in the form of cash. You may have observed that during the loan melas, when loans are given to poor people, it will usually be in the form of providing productive assets like sewing machines, etc. Out of the total loan of Rs. 5000 granted, Rs. 1500 will be subsidy and the remaining Rs. 3500 will be the loan component. The other form of subsidy may be in the form of non-transfer of some costs to the consumer. For example, the Government may incur heavy costs in transporting the goods from one place to another, but will not include these costs in the prices it fixes for the consumers. Most of the public service utilities you consume—such as drinking water, bus transport, electricity, etc., are subsidised in this form.

To understand what is the total quantity of food subsidy given by the Government you should learn a few things more than what you already know.

In the beginning of the unit, you saw that there is a difference between the market price and issue price. You also saw that the issue price is the price at which the Government sells its stock to the retailers. But the Government has to first buy the commodities to build up its stock. The procedure of buying stocks by the Government through its agent i.e., the Food Corporation of India (FCI) is called 'procurement'

The foodgrains are procured by the FCI from either the open market or collection in terms of some compulsory sales by the millers. The price at which FCI buys the foodgrains is called 'procurement price'

Procurement prices are fixed by the Government of India. The prices at which different commodities like rice, wheat, coarse grains, etc. are procured will be different. As a matter of policy, the Government announces the procurement prices for different commodities at the beginning of the sowing season. Hence, if you closely observe, the procurement prices for kharif crops (June to November) are announced in June, while those for rabi crops (October-November and March-April) are announced in November.

Such an announcement of procurement prices in the beginning of a crop season has a favourable impact on the producers. This is because the farmers are aware that this is the minimum price at which they have to sell their produce. The procurement price is fixed according to the recommendations of an advisory body called Commission on Agricultural Costs and Prices. This body was formerly known as the Agricultural Costs and Prices Commission. This Commission takes into account the average cost of production of the crop (cost per quintal) for its recommendations of procurement prices.

In addition to the payment of procurement price, the FCI has to spend a huge amount of money as incidentals. These include the following:

1 Obligatory charges (Mandi charges, sales tax, cost of gunny bags)

2 Storage and interest charges

3 Handling charges (labour, internal movements etc.)

4 Establishment charges

5 Other miscellaneous charges

The FCI also incurs costs on the following items of distribution.

1 Freight

2 Interest

3 Transit and storage loss

4 Handling expenses at the godowns

5 Administrative overheads

Thus you see, the total cost of procurement includes

a) Procurement price b) Procurement incidentals and c) Distribution incidentals

When you add these three, you arrive at the cost of procurement (per tonne or quintal) which is called the **'Economic Cost'.**

The difference between the 'Economic' cost of procurement and the issue price of a commodity is what is considered as **'Consumer Subsidy'.** The benefit of this subsidy directly goes to the consumers. Similarly, the consumer subsidy is worked out for all the commodities procured and distributed separately.

The consumer subsidy per unit of the commodity multiplied by the total quantity of the commodity procured gives the subsidy amount for each commodity. An addition of all amounts spent on all commodities gives you the total consumer subsidy on food.

The following table indicates the method of calculation of consumer subsidy.

Table 3.3 Economic cost of wheat 1981-82 (in Rs. per tonne)

Cost Component	Amount (in Rs. per tonne)
a) Procurement/acquisition cost	1277.50
b) Procurement incidentals	223.20
c) Total purchase cost (a+b)	1500.70
d) Distribution incidentals	378.70
e) Economic Cost (c+d)	1879.40
f) Issue price	1450.00

Source: Extract from K.C.S. Acharya, Food Security System of India, Concept Publishing Company, New Delhi.

Similarly, economic cost of procurement can be worked out for other commodities like rice and coarse grains.

In the year 1981-82 the Government of India subsidised foodgrains in the following manner:

Subsidy on wheat	=	Rs. 365.96 Cr.
Subsidy on rice	=	Rs. 256.45 Cr
Coarse grain	=	Rs. 0.38 Cr
Total consumer subsidy	=	Rs. 622.79 Cr

Another important component of food subsidy is the expenses incurred on maintaining the buffer stock of grains. In very simple terms "Buffer Stock" is the total quantity of grains held by the Government agencies, mainly the Food Corporation of India, to meet any emergency requirements of foodgrains during times of shortage of production. For instance, in the year 1987-88, when the entire country was affected by drought, there was a shortfall in the production of foodgrains to the tune of about 20 million tonnes. Now the buffer stock of foodgrains available in India (about 23.5 million tonnes at the beginning of this year) will be used to make up this shortage. This buffer stock is needed to stabilise the availability of foodgrains in the country as well as to stabilise their prices.

Maintaining these buffer stocks involves costs to the Government. These costs include cost of money used (interest), storage charges, administrative costs, etc. These costs are almost entirely borne by the Government. These are called "Carrying costs of buffer stock".

In the year 1981-82, the Government spent a total of Rs. 154.81 crores to maintain the buffer stock.

In sum, food subsidy is a sum of consumer subsidy and carrying cost of buffer stock. The total subsidy given by the Government in 1981-82 amounted to Rs. 777.60 crores.

The major advantage of food subsidy granted by the Government is to the consumers themselves. Consumer subsidies help the consumers get their foodgrains at cheaper prices. Expenditure on carrying buffer stocks helps the consumers by way of stabilising the availability of food grains as well as stabilising their prices.

Check Your Progress

5 List the commodities whose distribution is carried out by the Central Government.

6 Mention the important benefits in buying the essential commodities from a fair price shop.

7 What are the components of food subsidy ? Explain each in brief.

8 How does 'Buffer Stock' help the consumers ?

3.5 LET US SUM UP

In this Unit you have learnt the meaning, origin and working of the Public Distribution System. You have also identified the commodities sold by the PDS. You have understood the concept of a Fair Price Shop and the way the consumers are benefitted by the Fair Price Shops. You are now familiar with the concepts of food subsidy, procurement price and buffer stock and also the manner in which these are operated by the Government. You will now appreciate the benefits which the consumers gain from the Government's policy of the Public Distribution System.

3.6 GLOSSARY

Buffer Stock : Stock of essential commodities held by the Government to meet emergency situations.

Procurement price : The price at which the Food Corporation of India buys the foodgrains.

Consumer Subsidy : The difference between the Economic Cost of procurement and the Issue Price of a Commodity is Consumer Subsidy. The non-transfer of certain costs to the consumer such as procurement and distribution incidentals by the Government forms the consumer subsidy.

Fair Price Shop : A retail outlet where essential commodities can be bought at prices fixed by the Government.

Food Subsidy : A subsidy is that component of the total price which a buyer need not pay. Food subsidy is one which helps the consumer buy his food at a cheaper rate than what he would have actually paid for it. It is the sum total of consumer subsidy & carrying cost of buffer stock.

Freight : Goods transported by commercial transport

Issue Price : The price at which the Government releases its stock.

Market Price : The price prevailing in the open market (wholesale).

Price Index : An indicator of the percentage change in price with respect to a base period.

Procurement Price : The procedure of buying stock by the Government through its agent (Food Corporation of India (FCI) is called procurement price.

Public Distribution System: (PDS) The system of the Government distributing essential commodities through fair price shops.

Procurement : The process of Government buying commodities from producers to supply them to consumers through Public Distribution System

Rationing : The system of quota of essential commodities permitted to be bought under the Public Distribution System

3.7 ANSWERS TO CHECK YOUR PROGRESS

1 If the distribution of food items is entirely left to the traders, there is a possibility of the traders hoarding (stocking) the food items and thus creating an artificial scarcity in the market. This leads to the increase in the prices of foodgrains when the traders release their stocks, thus leading to higher profits for them. Under these circumstances, it is the poor who stand to suffer the most.

2 In the Public Distribution System, the Government agencies like Food Corporation of India (FCI) and the Food and Civil Supplies Corporation of the State Governments buy the foddgrains from the farmers at a regulated market. These agencies store the grain bought, transport it to the distribution (Off take) point from where the retailers (Fair Price Shops) buy the food items for selling to the consumers. The month-wise quota for each state is fixed by the Central Government. This quota depends upon the needs of the population of the state.

3 The market price is the price of a commodity prevailing in the open market. The issue price is the price at which the Government releases (sells) its stock to the retailers (Fair Price Shops) for distribution. Though the price one pays in the Fair Price Shop is more than the issue price, it is still much lower than the market price.

4 Price index is a figure which indicates the current level of price of a particular commodity as compared to a previous level or base price. The index number (price indices) facilitate a better comparison of prices at different points of time.

5 The commodities whose distribution is carried out by the Central Government are :

Wheat
Rice
Sugar
Edible Oil
Kerosene
Soft Coke
Controlled Cloth

6 The important benefits to the consumers in buying the essential commodities from a Fair Price Shop are :

i) One can get the commodities at lower prices as compared to buying the same in the open market.

ii) The prices do not fluctuate much. One is assured of ones quota of commodities at stable prices.

iii) Since the ration shop network is fairly widespread, one can have access to these commodities very close to one's home, thus resulting in low buying cost.

7 The food subsidy is the sum total of consumer subsidy and carrying cost of buffer stock. Consumer subsidy comprises expenditure of the Government for procuring and distributing food. Besides the procurement price, the Government spends on procurement incidentals such as Mandi charges, sales tax, cost of gunny bags, storage and miscellaneous charges. Similarly, the distribution incidentals of the Government include freight, interest, transport and storage losses, handling expenses at the godowns, and administrative overheads. The difference between the total cost of procurement (Economic cost) and the issue price is consumer subsidy, the benefit of which goes directly to the consumers.

The carrying costs of buffer stock include cost of money used (interest), storage charges, administratives cost for maintaining the buffer stock, etc. which are almost entirely borne by the Government.

8 The buffer stock helps the consumer by stabilizing the availability of foodgrains in the country and by stabilizing the price of foodgrains. The buffer stock of food grains is utilized to make up the shortages in times of emergency such as drought, flood, etc. If the buffer stock does not make up this shortage, the prices of food grains in the market will shoot up and the foodgrains will not be available to the needy sections of the population.

Practical Exercise

Visit a Fair Price Shop and another regular Retail Shop in your locality and record the prices at which the following commodities are sold in these two shops (Remember the quality of the commodity selected in these two shops should be the same)

1) Rice
2) Wheat
3) Suji
4) Sugar
5) Maida
6) Palm Oil
7) Kerosene Oil

Comment on your observations.

SUGGESTIONS FOR STARTING YOUR OWN KITCHEN GARDEN

A kitchen garden should be of interest to all of us whether we live in a village, town or city. The kitchen garden in a village will, of course, be quite different from the one in the city. This is because the village dweller will probably have much more land available. Even if you do not have land for a kitchen garden there is no need to be discouraged. People living in multistoreyed buildings have developed another type of garden—the roof or verandah garden. Vegetables are grown in boxes or pots and special arrangements are made on the roof itself using water-proof cement or polythene sheet lining. Waste plastic shopping bags can be best utilized for the purpose.

The following section will give you some important practical tips in planning a kitchen garden and growing some of the common vegetable crops. The major aspects are given in points to facilitate quick reference.

1 The place selected should be open and free from shade but sheltered from the wind. In the case of open spaces, no large trees should be close by.

2 Successive growing of the same vegetable is not desirable because it affects the fertility of the soil. This is the reason why crops are 'rotated' and different vegetables are grown in successive seasons.

3 Intercropping can be resorted to in addition to rotation. This is the practice of growing generally two or sometimes more types of vegetables at the same time on the same land. The advantage of intercropping is that it reduces the possibility of attack by the pests.

4 Certain crops such as beans and peas return to the soil those nutrients which other plants remove. Hence, they can be alternated with other crops. Also plants with deep roots (carrots, radish) should be alternated with those with short roots (beans).

5 It is essential to grow no crops on the land for a few months in each year. For example, in dry and hot climates the best time to lay off is summer. During this period, the soil is exposed to the air. This has a desirable effect in killing pests and restoring nutrients.

6 Seeds should be obtained in time from reliable firms and sown in small quantities at intervals of a few days.

7 The cold season vegetables (peas, cauliflower) are sown from August to December in the plains and from February to June in the hills. The time for sowing hot season vegetables (cowpea, okra) is from January to April in the plains. In places where the cold season is very short, only early maturing varieties should be grown. Sowing should never be done when the soil is wet.

8 You will find that many improved varieties of vegetables have been developed. The names of some varieties (in brackets) are:

Chilli (N.P. 46 A); Onion (E. Grano, Pusa Red); Okra or Bhindi (Pusa Sawani); Brinjal (Pusa Purple Long, Pusa Kranti); Cauliflower (Pusa Katki, Snowball); Radish (Rapid Red, Japanese White, Pusa Desi, White Icicle); Potato (Chamatkari, Alankar, Kufri Sindhuri); Cowpea, (Pusa Phal guni, Pusa Dofasli); Cabbage (Golden Acre, Drumhead); Cluster beans (Pusa Naubhar); French beans (Contender); Carrot (Nantes); Beetroot (Crimson Globe); Turnip (Purple Top White, Globe or Snowball); Knol Khol (White Vienna); Peas (Bonneville, Arkel); Tomato (Sioux, Pusa Ruby, S 120).

9 The sowing methods used are different, for each type of vegetable.

a) Palak and other greens: seeds are sown close to the surface (less than a cm below surface)

b) Carrot, radish: seeds are sown 1.25-1.5 cm apart, then covered with soft soil and later when the seedlings sprout, they are sown again at a distance of 10-15 cm.

c) French beans (dwarf): seeds are sown 1.25 cm deep in parallel furrows (long cuts at a lower level than the rest of the plot) 25-35 cm apart.

d) Okra: seeds are sown in furrows with rows separated by a distance of 50 cm or more.

e) Peas, runner beans: seeds are planted in rows as far apart as 1/2 to 1 meter.

10 Some suggested cropping patterns:

	Vegetable	Months	Intercrops
a)	Cabbage	November to March	—
	French beans	March to October	—
b)	Cauliflower	July to November	—
	Radish	November to December	—
	Onion	December to June	—
c)	Potato	November to March	—
	Cowpea	March to June	—
	Cauliflower (early maturing*)	July to October	—
d)	Brinjal (long)	July to March	Spinach
	Bhindi (Okra)	March to June	Amarnath
e)	Brinjal (round)	August to April	Apinach

* A variety of cauliflower which matures earlier than others.