

In the pre-independent India, famines - situations of extreme scarcity of food, were common cause of large scale starvation deaths. The Bengal famine in 1943-45, for instance, took away about 3 to 5 million people's lives in and around Bengal, Assam and Odisha. Read the following:

"I was the oldest among my siblings. I used to work to survive. I worked as a day labourer. At that time I left my father in the village and took my brothers and sisters to Kolkata. They only had some flour available as food. We went wherever food was distributed. I saw many people suffering in the streets of Kolkata. I saw mothers carrying their sons in their arms who were actually dead. But the mothers were still sprinkling them with water, trying to revive the children. I saw many things. People ate grass, snakes. I lost two sisters and a brother.

"These are the people who are farmers, agriculturists. They're not beggars so they did not even know how to beg. They have huge self respect. When they came, they just sat on the pavements and they died there. And when that picture hit the people of Kolkata, at that point suddenly everyone understood the scale of the disaster."

There have been instances in Indian history where famines happened because foodgrains supply was not organised by the rulers. This could have been arranged from stocks or bringing supplies from other regions. By the time of India's Independence, governments started evolving

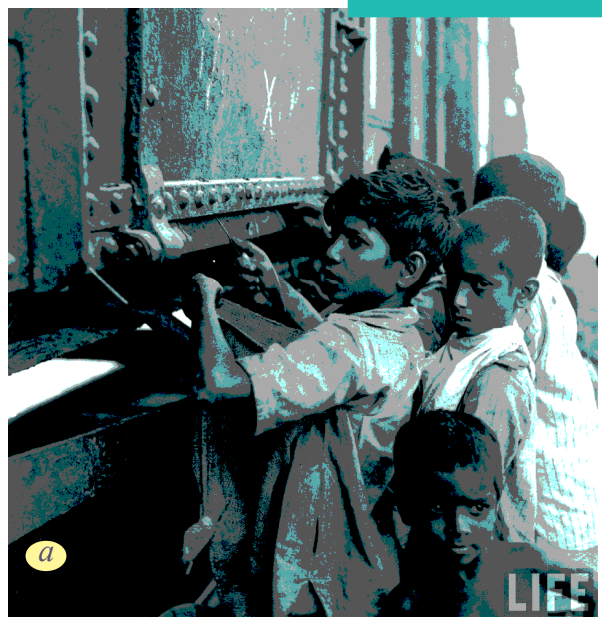


Fig 11.1 Photographs from LIFE Magazine: (a) children trying to collect grain from goods train (b) woman sweeping grain fallen on the ground.

various systems to ensure foodgrains for its people. Ration shops where people go and buy food grains at subsidised prices, mid-day meals that many of you have been eating, anganwadis where young children are taken care of, including meals during the day are some ways through which government today ensures food security. In this chapter we will look at some issues associated with food security.

The first section will focus on the issues of overall food security: the issue of production and availability of food for the country as a whole. The second section would discuss the access people have – how does one ensure that the available food reaches people. Finally, we need to look at the nutrition levels among families to know whether these schemes and methods are effective.

## Food Security for the Country

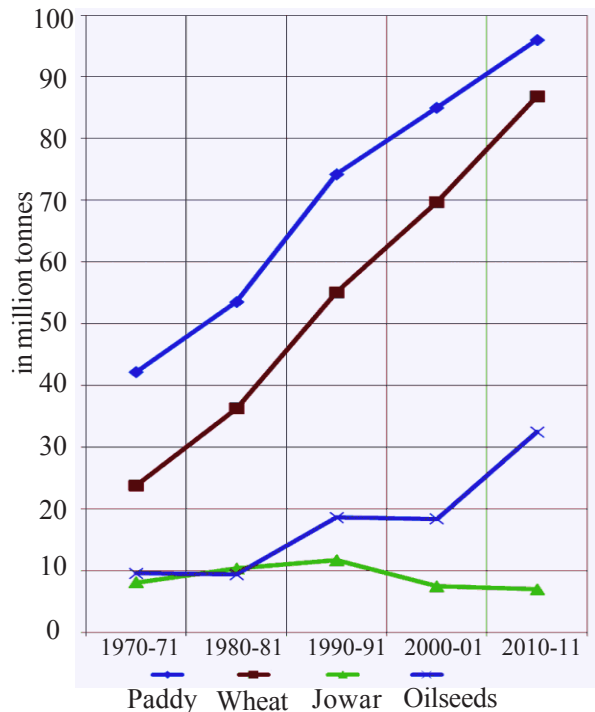
### Increasing foodgrain production

Producing sufficient amount of foodgrains is an important requirement of food security. In India, for example, it means, the government creates conditions so that farmers are able to produce increasing amount of foodgrains.

Examine Graph 1 and fill in the blanks (for knowing the value at each point, you can use a scale to know the exact amount on the y-axis).

- The foodgrains production has grown over the period 1970-71 to \_\_\_\_\_. Paddy production increased from about 40 million tonnes in 1970-71 to about \_\_\_\_\_ tonnes in 2010-11. Another important food crop that witnessed rapid increase in production during this 40 year period was \_\_\_\_\_. Compared to paddy and wheat the production of \_\_\_\_\_ did not increase during 1970-2011. This could be due to \_\_\_\_\_.
- Read again the section on “Land and other natural resources” in chapter 9. What are the possible ways of increasing production of crops from land?

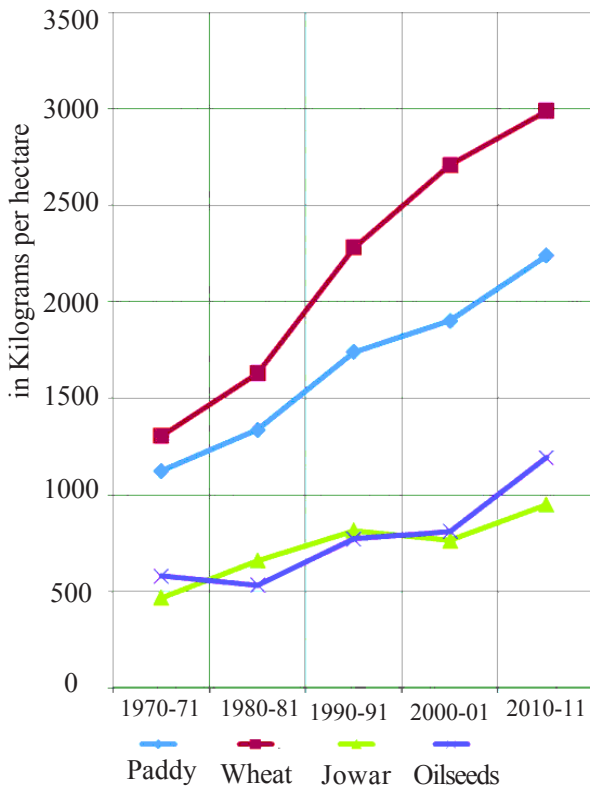
Graph 1 : Production of select Foodgrains (in million tonnes)



We know that the area under cultivation has been roughly unchanging since the last few decades. Yield then becomes a crucial variable. Look at Graph 2.

In order to increase the per hectare yield of a crop, necessary inputs have to be

Graph 2 : Yield of select Foodgrains  
(in kilograms per hectare)



provided in a judicious manner. One way is to expand irrigation but use water in a manner so that this vital resource is shared and made available to all.

The crops with low yields indicated in Graph 2 mostly grow in dry lands, where the present and even future possibility of irrigation is minimal. Planting drought-resistant crops as per the local conditions, water-harvesting and crop rotation are therefore used to raise production on a given piece of land.

It is also important to ensure that soil and other natural resources are not damaged or depleted in the process. Some scientists and people, working in the field of agriculture, report that the way rice and wheat are cultivated in India – by intensive and unscientific application of chemical fertilisers and insecticides – have led to continuous but unsustainable increase in the yield levels. In fact, these methods have led to soil degradation,

and depletion of ground water resources. If this continues, we may soon come to a situation that yields start falling rather than going up.

Describe the per hectare yield of paddy and wheat by filling the following passage.

Two crops \_\_\_\_\_ and \_\_\_\_\_ always had low yield when compared with paddy and wheat. Yet both these crops have shown slow increase in yield in recent years.

- Why should attention be given to increase the yield of jowar? Discuss.
- What factors have contributed to the high growth of paddy and wheat yields over the long period?

### Availability of Foodgrains

If a country is able to produce foodgrains, for the whole of its population, this would be considered as the first requirement. How do we measure if there is food for all? Whether this food reaches families would be examined later. We are at first estimating what is available. This means that per person (or per capita) availability of foodgrains in the country should be sufficient and also increasing over the years. Is the increase in foodgrain availability really happening?

There is a difference between production and availability of foodgrains. This is estimated as:

**Availability of foodgrains for the year** = Production of foodgrains during the year (production – seed, feed and wastage) + net imports (imports – exports) - change in stocks with the government (closing stock at the year end- opening stock at the beginning)

**Availability of foodgrains per person per day** = (Availability of foodgrains for the year ÷ population)/ 365

Information relating to production, imports and change in government stocks are given in the following table for three years – 1971, 1991 and 2011. Besides production, imports are a way of increasing availability of foodgrains in any particular year. Another important source of foodgrain availability is the change in government stocks. The government can, for instance, increase the availability of rice for the people by selling from its existing stocks. While the stocks of rice with the government falls, the amount of rice available for consumption in that year increases.

(You will read more about government stocks in the next section.)

As shown for 1971, calculate per person availability of foodgrains for 1991 and 2011.

*Table 1: Per Person availability of foodgrains*

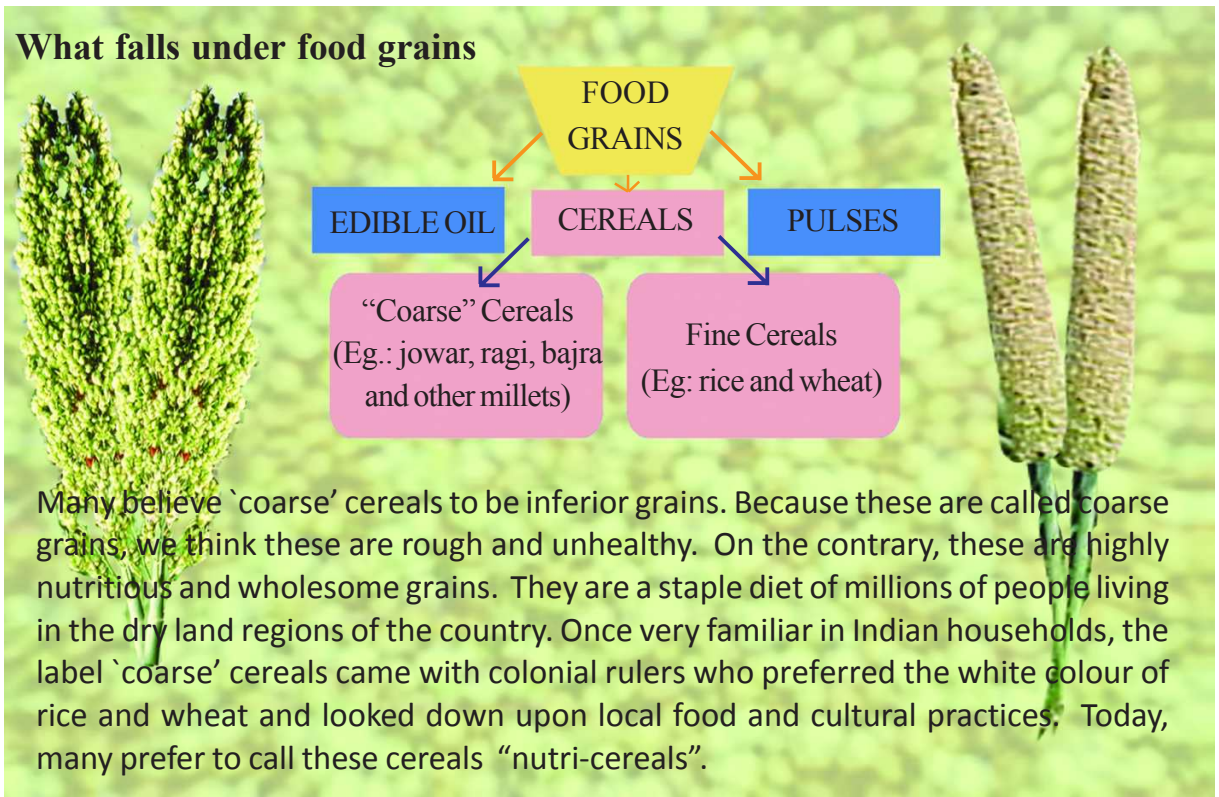
Year	Population (millions)	Net Production of foodgrains #	Net imports #	Change in government stocks #	Net availability of foodgrains #	Per person availability per day (grams)
col (1)	col (2)	col (3)	col (4)	col (5)	col (6)	col (7)
1971	551	94.9	2	2.6	col (3) + col (4) – col (5) = 94.3	$= \{\text{col (6)/col (2)}\}/365$ $= (94.3/551)/365$ $= 0.000469 \text{ tonnes} *$ $= 0.000469 \times 1000$ $= 0.469 \text{ Kilograms} *$ $= 0.469 \times 1000$ $= 469 \text{ Grams}$
1991	852	154.3	-0.1	-4.4		
2011	1202	214.2	-2.9	8.2		

\* Note: 1 tonne = 1000 kilograms; 1 kilogram = 1000 grams  
# Million tonnes

- Based on your calculations, fill in the blanks: The per person availability of foodgrains \_\_\_\_\_ (increased/decreased) between 1971 and 1991 but was \_\_\_\_\_ (lower/higher) in 2011. This happened despite slowdown in population growth in the recent decades. In future, the government must ensure higher availability through \_\_\_\_\_



## What falls under food grains



Many believe `coarse' cereals to be inferior grains. Because these are called coarse grains, we think these are rough and unhealthy. On the contrary, these are highly nutritious and wholesome grains. They are a staple diet of millions of people living in the dry land regions of the country. Once very familiar in Indian households, the label `coarse' cereals came with colonial rulers who preferred the white colour of rice and wheat and looked down upon local food and cultural practices. Today, many prefer to call these cereals “nutri-cereals”.

## Availability of Other Food Items

It is said that there is a change in consumption pattern with people demanding more fruits, vegetables, milk, meat, poultry and fisheries. This is a good sign for the consumers as well as producers. Consumers need a diverse food basket and a balanced diet. Farmers producing foodgrains can go in for crop diversification in order to increase their incomes. You may recall in the earlier classes we read about the conversion of foodgrain fields into cash crops such as cotton in AP during the last two decades. This was one of the reasons for farmer's distress and even suicides. Farmers can instead pay attention on allied activities such as poultry, fishing and dairying since it provides new opportunities for farmers.

Over the years, although there has been increase in production of other food items, it is not sufficient to meet the minimum dietary requirements. Nutritionists suggest that every person in India should eat 300 grams of vegetables and 100 grams of fruits in a day whereas per person availability of these food materials is 180 and 58 grams respectively. Similarly per person requirement of eggs is 180 whereas the availability of eggs is 30. The meat dietary requirements are 11 kilograms per year whereas the per person availability is only 3.2 kilograms. We require 300 millilitres of milk whereas the per person availability is 210 millilitres a day.

Farmers thus require support in terms of inputs and market opportunities for diversification to other food items. Farmers may have to be supported and guarded against market risks that they face in the new situation.

## Agricultural Diversification

Midnapore has red laterite soil. The village was Kaspal in the Borkollah gram panchayat area. Almost all have tube wells. The bank gave credit to them for water development... I talked to Hari Prasad Samantha, Chitto Maiti and Jhath Lenka - nobody farms more than two acres. The technology is fairly good. The original seeds came from the university although there is little replacement in paddy. But they make more money from cash crops and it is vegetables all the way. Potatoes are a craze. The seeds come from commercial companies and are expensive.... A great thing that happened on the way was dairying. Almost all of them have between three to five cows. The women folk look after them. This is now spreading. Farmers know the best pulse seeds come from Maharashtra and Madhya Pradesh. Their own mustard is good.

The land slopes up from the river. About two or three hundred meters up and a distance away I check out another village. Around half of the population is poor. It is a mono crop region with the second crop, if any, depending on the rains. Yields are low. Many answers are possible, but without a plan and government effort it would be cruel joke to talk about diversification to them.

Note that agricultural diversification may impact foodgrain production. This might give rise to a policy dilemma that has to be handled through careful planning. Since resources are diverted to non-foodgrain uses, foodgrain production may come down. India's per capita availability is very low when we compare the same for countries in Europe (700 grams) and USA (850 grams). The decline in the level of per capita availability of foodgrains is something to be worried about for India's food security. The poorer households exert more energy and depend much more on foodgrains as their source of energy intake. The policy should aim to increase production of food grains and other types of food simultaneously.

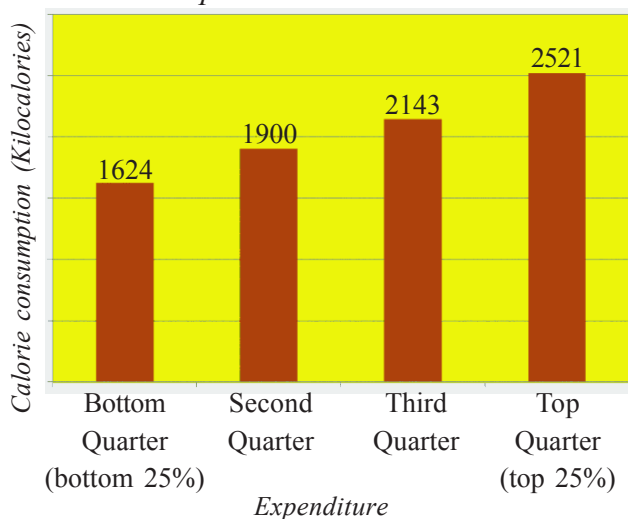
- Underline words and sentences that deal with agricultural diversification and explain why are these essential for Indian farmers.
- Write a description about agricultural diversification for your own village or any village that you know about.

## Access to Food

The next important aspect of food security is the access to food. It is not sufficient to produce foodgrains and other items. Everyone should be able to buy them for consumption. Is everyone able to access the minimum food requirement?

You may recall what you studied in Class VIII on poverty. Food we eat gets burnt in our body and produces heat and this is measured in terms of calories. This helps to do our work. If we eat less or less nutritious food, the calorie intake of our body becomes less and hence we may find it difficult to work or our health may get

Graph 3 : Calorie intake per person in rural India



deteriorated. A standard of 2100 Kilocalories per day in urban areas and 2400 Kilocalories in rural areas is the recommended food intake per day.

The national average calorie levels in both rural and urban areas are below the needed calorie requirements. Also, the consumption of calories has gone down between 1983 and 2004. This is shocking since as we have seen our economy is growing at a rapid rate. Production of goods and services has increased many times.

This is not all. Averages hide disparities in distribution. Whereas the very well-off

consume food that goes beyond the recommended calorie requirements, for a large proportion of the population the food intake is inadequate to provide the calories required. 80 percent of people in rural areas in India consume food that is below the calorie standard. In the Graph 3 you can see the lowest calorie intake is for the people who are the poorest in the rural areas. And it is way below the recommended standard of 2400! Whereas these are the people involved in the most difficult and heavy manual labour.

The major reason for low calorie intake is the lack of purchasing power of the people. People don't have adequate incomes to buy food. There are various reasons for this as you have read in the discussion on poverty, unemployment, public facilities, etc. Can you recall some of these, before you proceed?

## Public Distribution System (PDS)

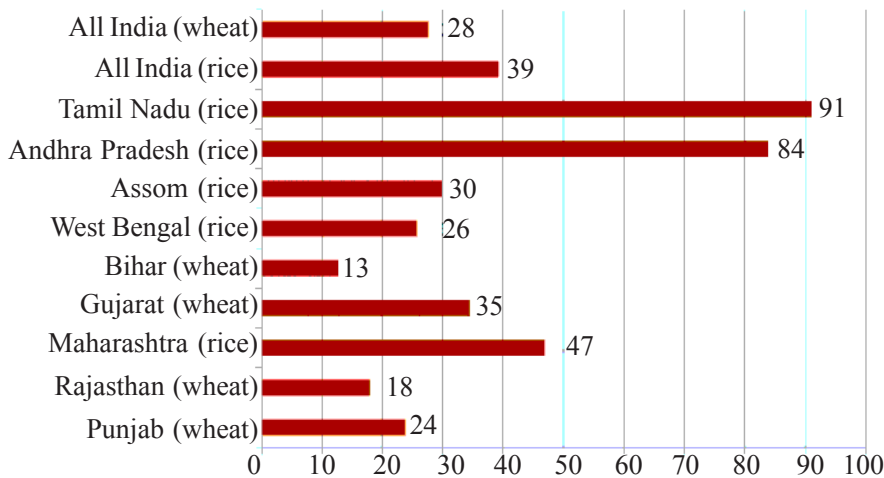
Ration shops are important means for people to access foodgrains in India. One survey was conducted in 2004-05 to know whether families in different states procure foodgrains from public distribution system fair price shops and how much they are part of the total foodgrain consumption. Look at the Graph 4. This shows people's dependency on PDS for purchase of their staple foodgrains in different states of India.

- Recall the discussion on Public Distribution System in Class VIII. How is PDS related to food security of the people in the country?

Studies indicate that Southern states of India have a good record in public distribution system. Notably, these are the states that have followed a universal PDS system which means that low cost foodgrains would be available to all. This is in contrast to other states where poor families have been identified and foodgrains are sold to at different prices to poor and non-poor. Even among the poor, the very poor have different entitlements, or

guarantees for access. For example, the Antyodaya cardholders are entitled to get 35 kgs of foodgrains (rice and wheat) per month per family.

Graph 4 : Percentage Share of Purchases from PDS, rice and wheat, 2009-10



● Fill in the blanks

For all India, \_\_\_\_\_ percent of peoples' total consumption of rice and \_\_\_\_\_ percent of peoples' total consumption of wheat are purchased from the ration shops. This shows that people have to buy most of their

foodgrain requirements from \_\_\_\_\_. However, there are several well-performing states like \_\_\_\_\_ and \_\_\_\_\_. And some states like \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ where PDS hardly seems to be fulfilling peoples' needs for foodgrains.

### PDS and Buffer Stock

The stock of foodgrains mainly wheat and rice procured and maintained by the government through Food Corporation of India (FCI) is called buffer stock. The FCI purchases wheat and rice from the farmers in states where there is surplus production. The farmers are paid a pre-announced price for their crops. This price is called Minimum Support Price (MSP). The MSP is declared by a government agency every year.

The state and Central Governments procure nearly one-third of foodgrains from farmers. These foodgrains are distributed to people through various mechanisms. In recent times, the government agencies are procuring more foodgrains than what is required to meet the public distribution system. If government stocks keep increasing year after year, less is available (see year 2011 in Table on foodgrain availability). The government has been criticised that it is not distributing these foodgrains to the needy people. Sometimes, governments also exported these foodgrains to other countries. Do you think it is good idea to export foodgrains and earn a small income whereas a large section of people within the country are not able to access foodgrains?

The Indian government came out with a new law in 2013 called the National Food Security Act to legalise peoples' Right to Food. It applies to approximately 2/3rd of the population of India. As per this law, every person of low income families is entitled to 5 kilograms of foodgrains per month at subsidised rates. Among poor



families, the poorest ones are entitled to 35 kilograms of foodgrains. For a few years, the central government will supply rice, wheat and millets for Rs.3, Rs.2 and Rs.1 respectively. Under this law, if required, a maximum of 75 per cent of people living in rural areas and 50 per cent of urban population have the right to buy foodgrains from public distribution system. If the government is not able to arrange foodgrains, it will give cash for the people to buy foodgrains. This law also envisages providing free cooked meals for pregnant women, lactating mothers, children aged 1-6 coming to anganwadis and mid-day meals for children aged 6-14 in schools.

While Indian Parliament enacts various laws such as National Food Security Act and implements schemes such as Integrated Child Development Scheme (ICDS), in recent times, the Indian judiciary also has become pro-active in ensuring food security. Through judicial verdict on court cases filed by non-governmental organisations, the Supreme Court directed all the state governments and central government to provide mid-day meals to all the young children studying in schools. Though such schemes existed in a small scale in a few states like Tamil Nadu, this scheme is now being implemented in all the states. About 14 crore children studying in schools eat mid-day meal today. When state governments refuse to implement this scheme, the court also set up monitoring mechanisms and provided suggestions for better implementation such as school mid-day meals should be locally produced, hot and cooked (and not dry snacks or grain which many governments distributed until then), hygienic, nutritious (of a prescribed minimum caloric level) and with varied menus for every day of the week. The court also ruled that preference be given to dalit cooks, widows and destitute women. This is the largest school feeding programme in the world. In order to generate revenue for this scheme, the court directed the Indian government to impose taxes. The hot cooked meal is also now provided in *anganwadis* for children.

## Nutrition status

Lastly, we look at the nutrition status of children and adults to judge whether the food actually consumed is adequate. This also informs us if the above discussed systems are working effectively and also about the problem areas.

Food is required by the body for all its functions- for energy, growth and the capacity to remain healthy and fight illness. The food that we consume is normally classified as:

**Carbohydrates:** that provide energy, through wheat, rice, ragi, jowar, oils, sugar, fats etc.

**Proteins:** that help growth and regeneration of body tissues, through beans, dals, meat, eggs, rice, wheat etc.

**Vitamins:** that provide protection and ensure the working of many vital systems of the body, through foods such as fruits, leafy vegetables, sprouts, unpolished rice etc.

**Minerals :** That are required in small quantities for many important functions such as iron for blood formation. This is provided through green leafy vegetables, ragi etc.

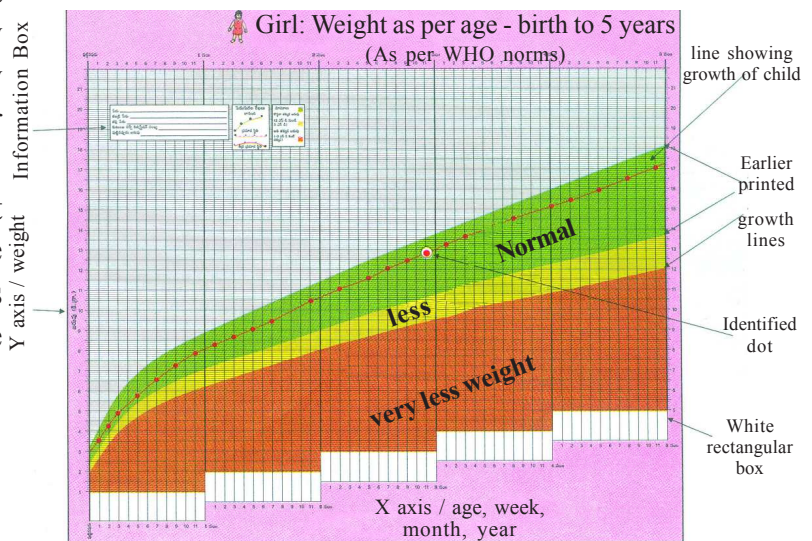
If we conduct a survey, as you have done in some previous chapters, we can find out about the food people eat by asking them to describe their meals for the day. Through this we can get a rough idea of whether all the food groups above are being covered. However it is difficult to measure precise amounts of carbohydrates, vitamins, proteins, minerals being consumed by each individual in the family. Nutritionists have devised indicators using height and weight that can inform us whether individuals are well nourished. Through various measurements of large population and using statistical knowledge nutritionists have been able to arrive at reliable standard ranges. A comparison for individual persons is therefore possible. This gives us the most reliable source of information about nutritional status of people.

A survey conducted by the National Institute of Nutrition, Hyderabad (NIN) across many states in the country confirms the overall alarming status of nutrition in the country. While we have looked at case studies that depict real family situations of under nutrition and poverty in previous classes it is also important to examine some of these faceless statistics. They help us examine whether these situations are exceptions or an indication of a general trend. They also help us to look at issues that may be hidden and not so obvious to commonsense.

As discussed above, to examine the nutritional status of children, simple but accurate measurements of height and weight are used. You could visit an anganwadi center and observe how this is carried out. Since children grow fast, their weight changes significantly with age, unlike in adults. For this indicator to be reliable, weight is to be accurately measured and have the correct age. These readings are then plotted against charts that have been developed by nutritionists to examine if they fall within a normal range or below.

For example when we plot weights of a child against age it tells us whether the child is underweight. This is for one child.

Fig 11.2 : Weight chart used in Anganwadi to measure the weight of children in A.P.



What does the NIN survey indicate? Out of the seven thousand children, in the age group 1-5 years, examined in the survey from many states in the country, 45% of children are underweight. Their weight was less than what is expected by normal standards. These children are in fact hungry and not getting adequate food. Unless they are severely underweight it may not be easily visible or identifiable. Going just by common sense we fail to realise that enormous number of children in the country are underweight. We are so used to seeing such children that we take this as “normal”. The survey jolts our common sense and makes us realise that this situation would seriously affect their growth and capacities of nearly half the children of the country.

The report says:

“The overall prevalence of underweight was about 45% and it was significantly higher among 3-5 year, compared to 1-3 year children. The prevalence was more than 50% in the States of Gujarat (58%), Madhya Pradesh (56.9%) and Uttar Pradesh (53.2%) and observed lowest in Kerala (24%). ...

“The overall prevalence of severe underweight was about 16%. ...”

- How can an effective anganwadi center deal with such a situation for a locality? Discuss.

Nutritionists compare three different charts for pre-school children. This is given below. These three different indicators give us an overall picture of the nutritional status of these children.

Indicator	What does this show for those children below the normal range	Explain in your own words	% of children in the country
Weight is plotted against age	Underweight		45%
Height is plotted against age	Stunting	When children are undernourished for a long time, their bone growth is affected. Such children would remain short for their age. It is difficult to cover this.	41%
Weight is plotted against height	Wasting	This indicates a child who has lost weight recently. If given sufficient food she can cover this up, quickly.	21%

- What overall conclusions can you draw from these statistics? Write a paragraph .

The nutrition status among adult men and women is measured using Body Mass Index(BMI). You have read about this in earlier classes.[BMI=(weight in kgs/ height in metres squared).]

This index is compared with a range to show if the individual is underweight, within normal range or overweight. A high value shows excess fat and a low value a fat level that is less than what is required. According to NIN report the situation for adult men and women are as follows:

“The prevalence of chronic energy deficiency ( BMI<18.5) among men was about 35% , while overweight/obesity (BMI >25) was 10%. ....

“About 35% of adult women had chronic energy deficiency and 14% were overweight/ obese. The prevalence of chronic energy deficiency was highest in the States of Odisha, Gujarat and Uttar Pradesh, followed by 33-38% in Karnataka, Andhra Pradesh, Maharashtra, Madhya Pradesh and West Bengal ....”

How is this related to food security? A doctor who is working in a rural area of Chhattisgarh running a community health programme where streams of underweight patients come every day explains this link. From a study of the patients he found that the PDS grain of 35kg/ per month for a family of five lasted only 11 days. For the rest of the month they have to depend on the market or their own produce.

For example a rickshaw puller in Bilaspur who earns 70-80 rupees a day would try to survive on the PDS grain, spending Rs 400 on rent and Rs 100 on electricity. It was not surprising that he lost weight and caught tuberculosis.

These measures are thus indicators of food security. The doctor from Chattisgarh says :

No one would have a lower weight or height if he/ she had access to adequate food. The proof of the pudding is in the eating. We can judge all processes like efficacy of the PDS, the importance given to growing food crops, and the purchasing power of people by looking at body parameters like weight and height. Besides, a person’s height can also tell us whether food was available during his/ her childhood. We can still choose to describe underweight and stunted people as malnourished if we like. But I suggest the correct term would be ‘hunger’ “.

## Summing up

The first section examined the issue of food security from the point of view of overall production of food in the country. What can be done to increase the food production remains an important question. Next we discussed how availability is measured. A worrying fact is that per person availability of foodgrains has actually not risen but declined in the recent years.



Fig 11.3 : PDS Shop



Whatever is produced and is available has to reach the people. This could be through what they purchase in the market or in the ration shop or through schemes such as school meals etc. Here we find that most people are in fact consuming fewer calories than required. This gap is severe for the poorest. Though there's a shift towards other foods such as fruits, vegetables, meat, eggs and this is welcome, deficiency in calorie intake is alarming. PDS is not effective in places where they are most needed. This serious situation is revealed through nutrition surveys that show children and adults as being underweight in a chronic way. Over a long period of time, 35% to 45% of people are consuming less food than they should. A large section of people are malnourished (or hungry), even when we have adequate food in the country. This is not acceptable. The issue of food security needs careful thinking and effort in all of the above directions.

### Key words

Production

Availability

Access

Nutrition

Buffer stock

Hunger

PDS

### Improve your learning

#### 1. Correct the false statements

- Increase in food production alone ensure food security
- It is important to encourage mono-crop cultivation to ensure food security
- Low calorie intake is higher among people with low income
- Legislations have an important role to play in ensuring food security
- PDS system could be used to address the issue of child nutrition

2. The consumption of calories has consistently \_\_\_\_\_ in rural areas. The average per capita calorie consumption in 2004-05 is \_\_\_\_\_ than the required calories. The minimum calorie consumption for persons living in urban areas is 2100 calories. The difference between actual calorie consumption in 2004-05 and the required calorie consumption in urban areas is \_\_\_\_\_.

3. Supposing the foodgrain production has been affected in a particular year, because of a natural calamity. In what ways can the government ensure higher availability of foodgrains for the year?

4. Use an imaginary example from your context to describe the relationship between underweight and access to food.

5. Analyse a week's food habit of your family. Create a table to explain nutrition elements included in it.

6. Describe the relationship between increase in food production and food security.

7. Give reasons to argue for the following statements "Public Distribution System can ensure better food security for people".



# Wake up.

Every night, one in seven  
of us goes to bed hungry.  
It doesn't have to be this way.

 Oxfam

Be Humankind

[www.oxfam.org.uk](http://www.oxfam.org.uk)



8. Make similar posters about food security.

## Project

Read the following poem, *Aai*. Can you write a poem relating to any aspect of food security?

### *Aai (Mother)*

I have seen you  
turning back the tide of tears  
trying to ignore your stomach's growl  
Suffering parched throat and lips  
Building a dam on a lake...

I have seen you  
sitting in front of the stove  
burning your very bones

to make coarse bread and a little  
something  
to feed everybody, but half-feed yourself  
so there'd be a bit in the morning...

I have seen you  
washing clothes and cleaning pots  
in different households  
rejecting the scraps of food offered  
with pride...