

## Economic activities

# SUBSISTENCE RICE FARMING IN INDIA, AN LEDC

### The importance of rice

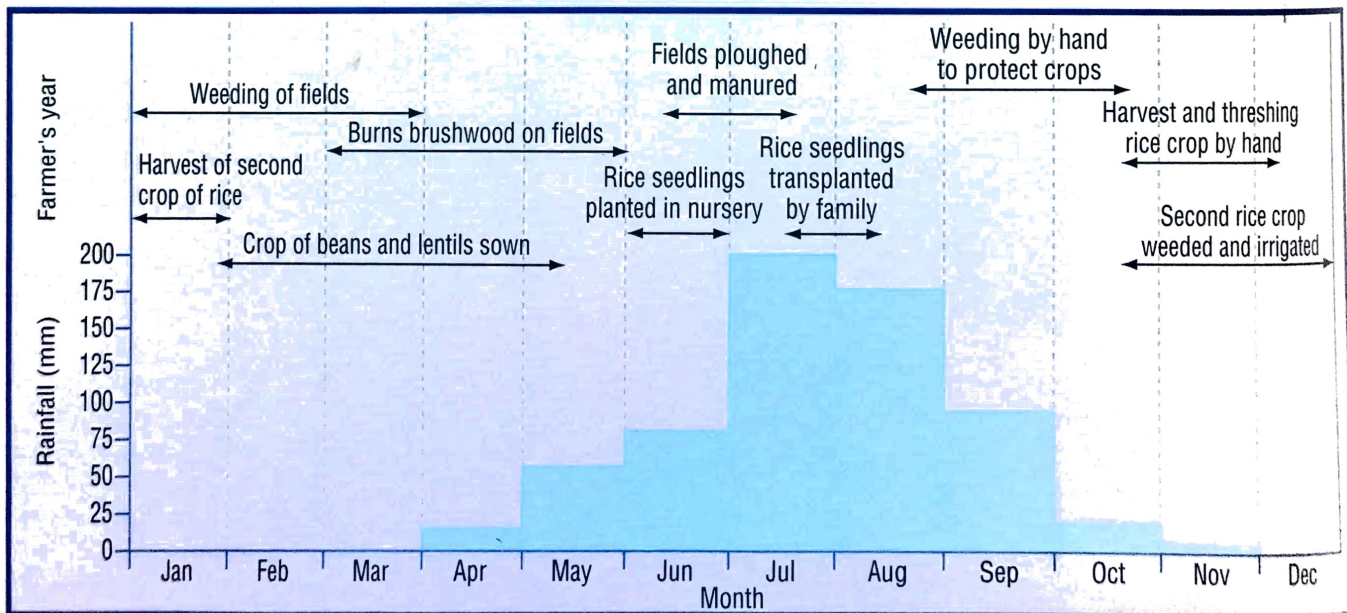
There are several thousand varieties of rice. Almost all require very moist soils throughout most of their growing season. Rice is a major world crop, feeding one third of the world's population. Its growing requirements mean that it can only be successfully cultivated in a few areas of the world. The main rice areas are in South East Asia. Rice growing is particularly suited to a monsoon climate as shown in Figure 3.28. Much of the rice grown in these countries is for subsistence – to feed the farmer and his family. Many farms are very small. They may have an area of only one hectare (the size of a football pitch) and be divided into as many as 15 plots. The small size of the farms together with the poverty of the people means that there is little mechanisation. The farming is labour intensive with much human effort required to do all the jobs. Water buffalo (oxen) are used to prepare the padi-fields and also provide manure, which is used as a means of supplementing soil fertility.

India is the world's second largest producer of rice, growing 20% of the world's total. Rice is the staple food of 65% of the total population in India, forming 90% of the country's total diet. Agriculture is the backbone of the country's economy, providing direct employment to about 70% of working people in India.

The Green Revolution is the name used for changes in farming in LEDCs such as India in the last 50 years. In the 1960s there was a fear that it would not be possible to grow enough food for the rapid increase in the world's population. It led to a search for new ways to increase agricultural productivity. In 1959 the International Rice Research Institute (IRRI) was set up in the Philippines to discover how rice yields could be increased.

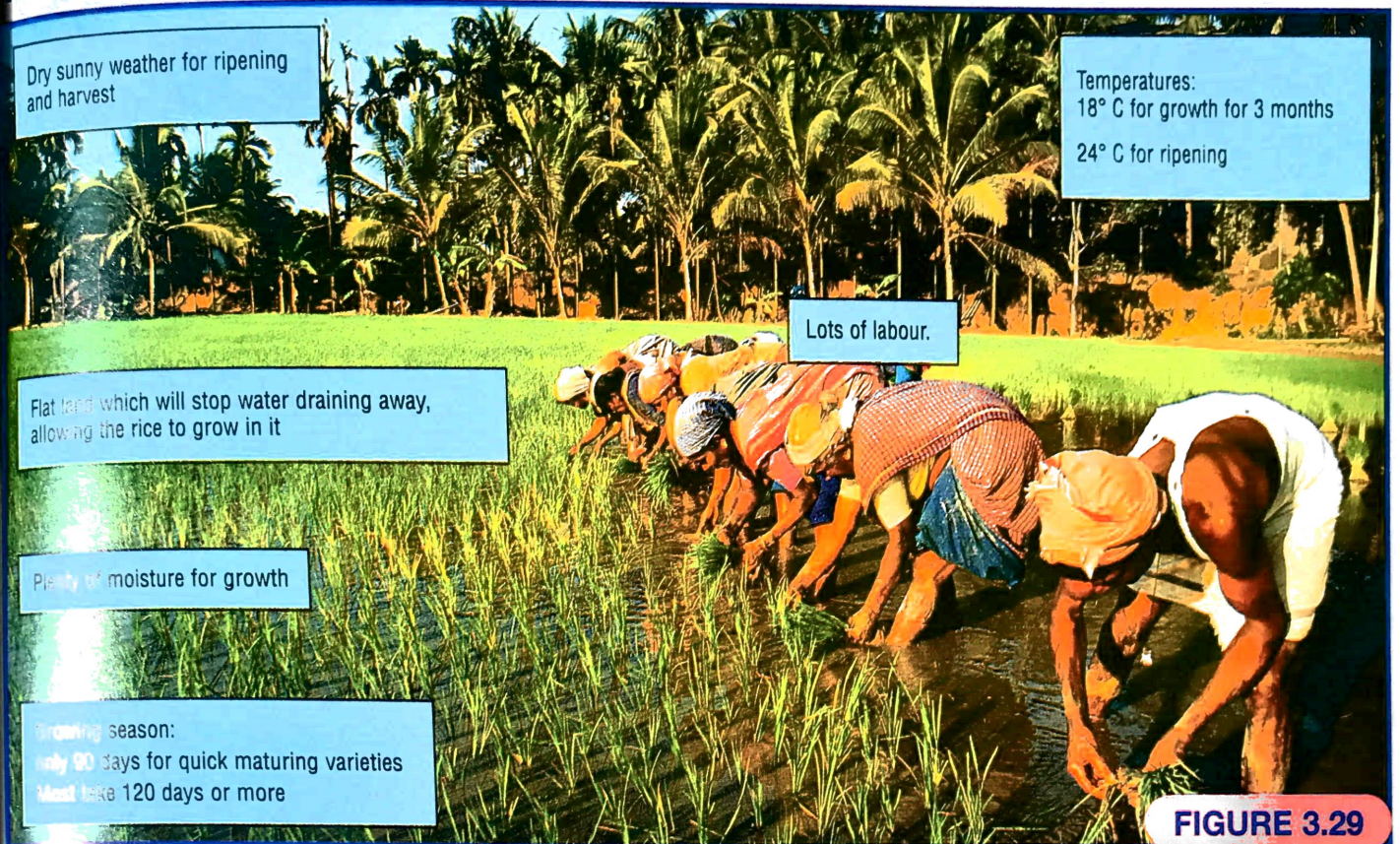
### • High yield varieties

MEDCs such as UK, USA, Germany and Australia provided money to develop high yield varieties (HYVs) of rice as well as wheat and maize. In 1965 an improved strain of rice called IR-8 led to an increase of rice yields of 300%. However, the increase in yields led to a fall in prices. Faster growing varieties have allowed an extra crop to be grown each year. Yields have also become more reliable as many of the new varieties are resistant to disease. HYV crops have shorter and stiffer stems, making them more resistant to wind and rain. However, HYVs require large amounts of fertilisers and insecticides as they are prone to insect attack. The environmental impact of increasing use of chemicals has meant that farming has become less sustainable as a result of soil erosion. Farmers who could afford to buy HYVs and fertiliser have benefited, greatly increasing their yields.



**FIGURE 3.28** The rice farmer's year

# THE GREEN REVOLUTION



Dry sunny weather for ripening and harvest

Temperatures:  
18° C for growth for 3 months  
24° C for ripening

Lots of labour.

Flat land which will stop water draining away, allowing the rice to grow in it

Plenty of moisture for growth

Growing season:  
Only 90 days for quick maturing varieties  
Most take 120 days or more

**FIGURE 3.29**

The growing requirements of rice

Increased output has created a surplus to sell in the cities. This has increased the farmer's quality of life, allowing reinvestment in the farm system with the purchase of machinery. These benefits have not been experienced by all farmers, however. Many poor farmers have not been able to afford the HYVs or the fertilizers, and therefore not had opportunities to improve their yields. Many farmers borrowed money to buy HYV seed and fertilisers but failure to pay it back has resulted in debt, forcing them off the land to the cities. As a result, rural inequalities have increased. As the wealthy farmers have become richer, the poor farmers have become poorer.

## • Mechanisation

Tractors and mechanised ploughs were imported from MEDCs to use instead of water buffalo. Such technology was inappropriate on small farms, but most farmers could not afford to buy the equipment, let alone the fuel or spare parts, so only the wealthy farmers with large farms could mechanise to improve farm processes. This further reinforced rural inequalities.

## • Irrigation

The monsoon rains are often unreliable. The new HYV seeds require far more water than the traditional varieties of rice. As a result, there has been an increased need to irrigate the land. About 45 million ha of land is irrigated in India. The traditional method of irrigation in the Ganges valley is digging wells. Holes are dug to reach the water table and each well can irrigate 1–2 ha of land. The Green Revolution is changing the traditional methods of lifting the water from the well by using modern electric or diesel pumps.

## TASKS

- 1 Use an atlas to find the world's major rice growing areas. Plot them on an outline map of the world.
- 2 Explain why much of India is well suited to rice growing.
- 3 Why is rice cultivation in India so labour intensive?
- 4 Use the farming year diagram (Figure 3.28) to explain how rice growing is dependent on the monsoon climate.
- 5 Compare the photographs of subsistence rice growing (Figure 3.29) and the commercial dairy farm (Figure 3.25). Identify differences in the way the land is farmed.