Food Crops

RICE

India is second largest producer of rice after China. It is a Kharif crop.

Climatic Conditions

1. **Temperature:** during the ripening period should be from 18°C to 32°C.
2. **Rainfall:** It should be heavy between 150 cm and 300 cm. Irrigation is essential if the rainfall is less as standing water is required.
3. **Soil:** Alluvial soil, clayey or loamy soil.

Rice is grown at a variety of elevations provided the requirement are met e.g. Kashmir, Kerala, Uttarakhand.

Type of Rice

Rice is of two types: Upland Rice and Lowland Rice.

(*a*) **Upland Rice** is grown in mountainous regions. It is sown in March/April and harvested in September/ October. Most of the rice crop is used locally.

(*b*) **Lowland Rice:** This variety is grown in low lying regions. It is sown sometime in June and harvested before winter in October. It needs plenty of water. The rice is used both locally and also sent to other regions.

Cultivation of Rice

Cultivation of rice requires the following process:

(*a*) **Sowing:** Seeds are sown in different ways:

(*i*) **Broadcasting** is the scattering of seeds by hand. It is practised where labour is scarce and the soil is not very fertile.

(*ii*) **Dibbling** is the dropping of seeds at regular intervals in ploughed furrows. This method is common in the Northern Plains.

(*iii*) **Drilling** is the dropping of seeds through shafts of bamboo attached to the plough. In this method, there is no wastage of seeds but this method requires more time and labour. It is common in Tamil Nadu.

(*b*) **Transplantation:**

(*i*) Seeds are first sown in nurseries.

(*ii*) After, about five to six weeks, plants are uprooted by hand and transplanted into the flooded fields. The advantage is that the yield increases greatly.

(*c*) **Harvesting** is carried out by hand using implements like scythes. **Threshing** is done by beating the paddy heads against a hard rock or by making bullocks trample the paddy under their feet.

(*d*) **Japanese method of cultivating rice** increases the yield three times the normal quantity. It involves:

(*i*) the use of better quality seeds called japonica.

(*ii*) sowing of seeds in raised nursery beds.

(*iii*) transplantation of seedlings in rows.

(*iv*) application of fertilizers and better irrigation facilities.

(*e*) **Reasons for the low yield of rice are:**

(*i*) Timely rainfall and proper irrigation of rice fields is lacking in the country.

(*ii*) Lack of soil fertility and inadequate use of chemical fertilizers by farmers.

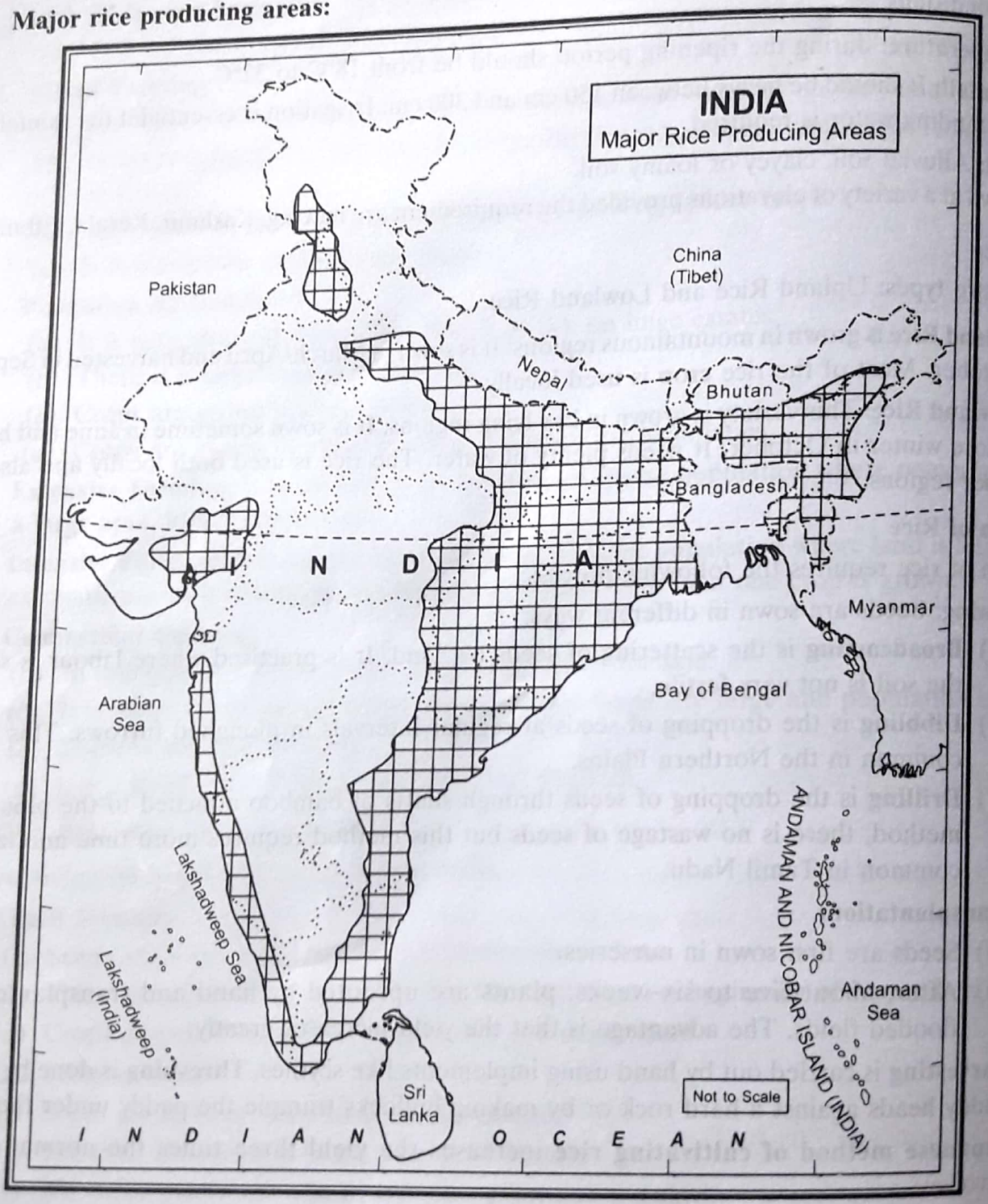
(*iii*) Poor quality of seeds are used.

(*iv*) Methods of cultivation are inefficient.

(*v*) Pests cause loss to plants.

(*f*) **Areas of Production:** West Bengal, UP, Andhra Pradesh, Tamil Nadu

2. Major rice producing areas:



WHEAT

India is the fourth largest producer in the world after Russia, USA and China. After rice, wheat is the most important food crop of India.

(*a*) The **climatic requirements** for its growth are as follows.

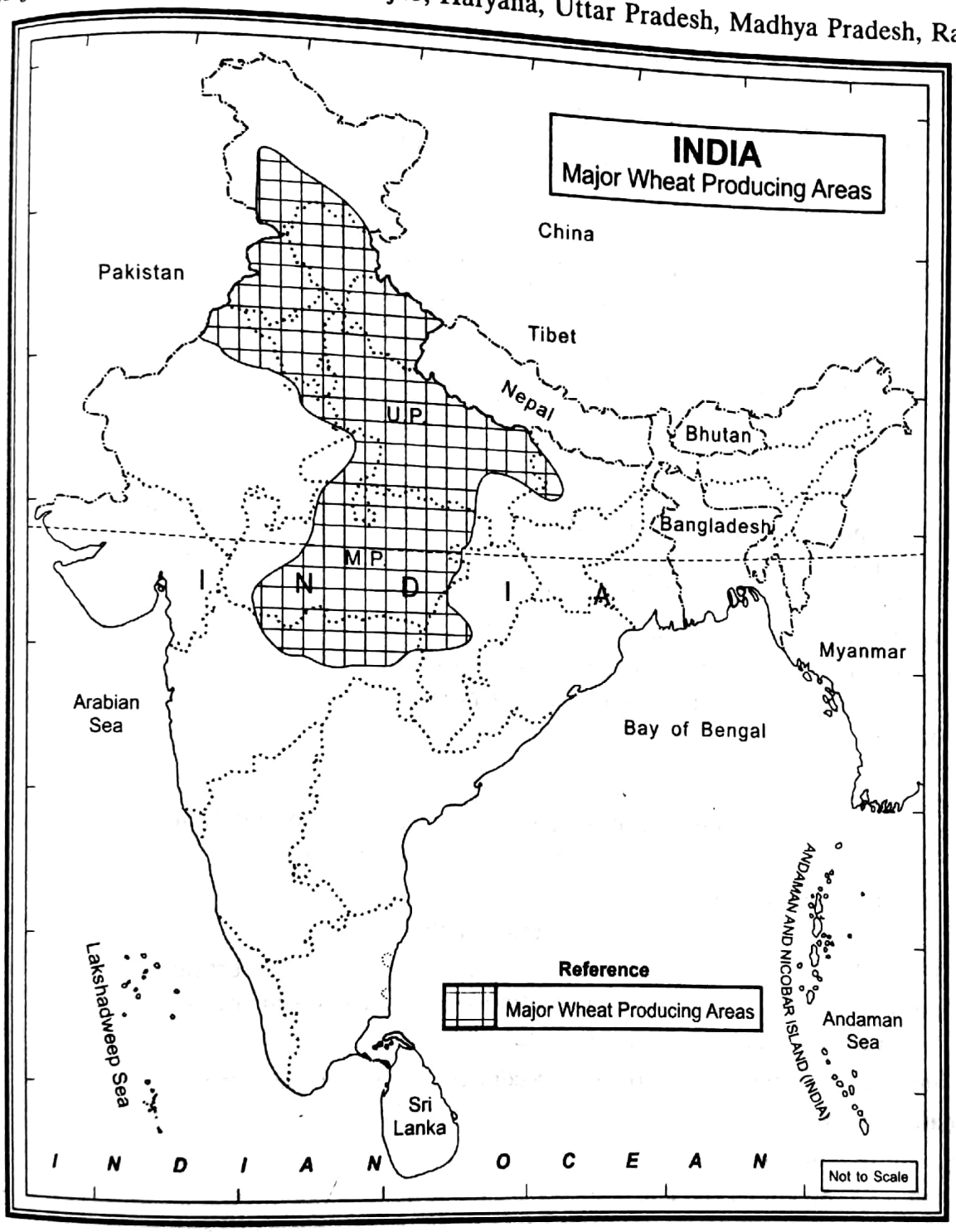
(*i*) Temperature: 10°C – 20°C in early period and 26°C – 28°C at the time of ripening.

(*ii*) Rainfall: Rainfall required for it is about 50 cm – 100 cm mainly in winters.

(*b*) **Soil:** Soil required is mainly clayey or any soil such as black and alluvial soils.

(c) **Method of Cultivation:** Sowing is done after the rains when the soil is moist. The fields are ploughed and the seeds are sown by broadcasting, dibbling and drilling.
Harvesting is done before it becomes too hot. It is done by using a sickle. Recently machines are being used in Punjab and Uttar Pradesh.

(d) **Major wheat producing areas:** Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Rajasthan.



MILLETS

(a) Millets are also referred to as 'inferior grains' as they can be grown in any region where it is not possible to grow rice or wheat. Jowar, ragi and bajra are some of the millets grown in India.

(b) The grains are used as food by human beings while the leaves and stalk are used as fodder for livestock.

(c) Maturing period is from three to four months.

(*a*) **Jowar:**

(*i*) It forms the staple food for a large part of the population of Peninsular Plateau.

(*ii*) It requires a temperature between 18°C and 32°C and can survive high heat and drought conditions.

(*iii*) Rainfall between 50 cm to 100 cm is sufficient for the crop.

(*iv*) The black cotton clayey soil is ideal though it can grow in a variety of soils—red, alluvial and yellow loams.

(*v*) It is generally sown by the broadcasting method.

(*vi*) Jowar is largely grown in Maharashtra, Madhya Pradesh, Karnataka, Andhra Pradesh Rajasthan and Gujarat.

(*b*) **Bajra:**

(*i*) Bajra is generally grown as a mixed crop with cotton, jowar or ragi.

(*ii*) It grows well where temperatures are between 25°C and 30°C.

(*iii*) It requires rainfall of 50 cm to 100 cm.

(*iv*) Bajra is grown on red, sandy loams and black soil in the kharif season.

(*v*) The main bajra growing states are Rajasthan, Gujarat, Uttar Pradesh, Punjab and Haryana.

(*c*) **Ragi:**

(*i*) An important millet which is grown in the dry parts of south India and some parts of northern India.

(*ii*) It can withstand severe drought and low rainfall.

(*iii*) It requires average rainfall of 50 to 100 cm. Temperature required between 20°C and 30°C.

(*iv*) Ragi can be grown in red, black or drained alluvial soil.

(*v*) It is a crop mainly of the south and is grown in Karnataka, Andhra Pradesh and Tamil Nadu.

PULSES

(*a*) Pulses are a very important part of the diet of the vegetarian population of India. They include a number of crops like *Chana*, *tur*, *masur*, *urad*, *moong* and *peas*.

(*b*) They are important because:

(*i*) They are a very good source of protein for the vegetarians.

(*ii*) Pulses help in restoring the soil fertility because there are certain bacteria in the roots of pulses which have the ability to fix atmospheric nitrogen in the soil.

(*iii*) Gram is also used as a feed for cattle.

The importance of pulses has grown in recent times due to the increased demand.

(*c*) **Climatic conditions:**

Temperature : 20° to 30°C

Rainfall : 50 cm to 100 cm

Soil: Pulses can be grown on all types of soils but a dry light soil is best suited.

Pulses are grown all over India but the important states are Punjab, Haryana, Uttar Pradesh, Maharashtra, Madhya Pradesh and Rajasthan.

Method of Cultivation: Pulses are grown in the kharif season and take about 150 days to mature. Once the dry leaves start falling, the plant is uprooted and dried. Once this process is over the plants are tranmpled under the feet of the bullocks and the pulses are then separated from the chaff. Sometimes the seeds are separated by beating them with a stick.

SUGAR CANE

Sugar cane can be grown from seeds but all commercial plantings are made from stalk cuttings of two to three joints. These cuttings are known as **'setts'**.

Cultivation of Sugar cane: The setts are planted in furrows about 1.5 m to 2 m apart. The new plant begins to grow in about two weeks and fresh leaves appear. Rich fertile soil is piled around the roots. This process of obtaining another second crop from the same plant is known as ratooning. Generally two ratoon crops are obtained from each planting.

(*a*) **Ratoon Cropping** is another way of growing a new crop of sugar cane. After the cane has been cut close to the ground, it begins to grow again and produces a second crop called ratoon.

Advantages of Ratoon Cropping:

(*i*) Ratoons mature sooner.

(*ii*) Cost of cultivation is much lower since there is less expenditure on preparation.

Disadvantages of Ratoon Cropping:

(*i*) It yields thinner canes.

(*ii*) Low sugar content.

(*iii*) There is an increasing risk of pests and diseases.

(*b*) **Harvesting** is done before the cane begins to flower. The maximum concentration of sugar is at the base of the cane, so the cane is cut near the ground with a curved knife called a machete.

(*c*) **Processing:** After harvesting, the sugar cane has to be taken quickly send to the factory as the sugar content decreases rapidly. At the sugar cane mill the sugar cane is processed by boiling it with lime and then filtering it. It is then processed into jaggery (gur), white sugar and khandsari.

Climatic Conditions

1. **Temperature:** Sugar cane grows well in areas with 20°C to 26°C of temperature. Frost kills the grain so there should be no humidity or rainfall during harvest time.
2. **Rainfall:** The rainfall should be between 100–150 cm. It should be distributed evenly throughout the growing season. Therefore irrigation is sometimes essential.
3. **Soil:** There should be alluvial, loamy or volcanic soil. Since sugar cane is a soil exhausting crop, manure and fertilizers are used.

(*d*) **Problems of sugar cane farmers:**

(*i*) Sugar cane is soil-exhausting. So a large quantity of fertilizers is required.

(*ii*) Farms are far away from the factories. Delay of more than 48 hours results in less sugar content.

(*iii*) Price is fixed by government irrespective of the quality of the cane.

(*iv*) Cultivation on small farms proves uneconomical.

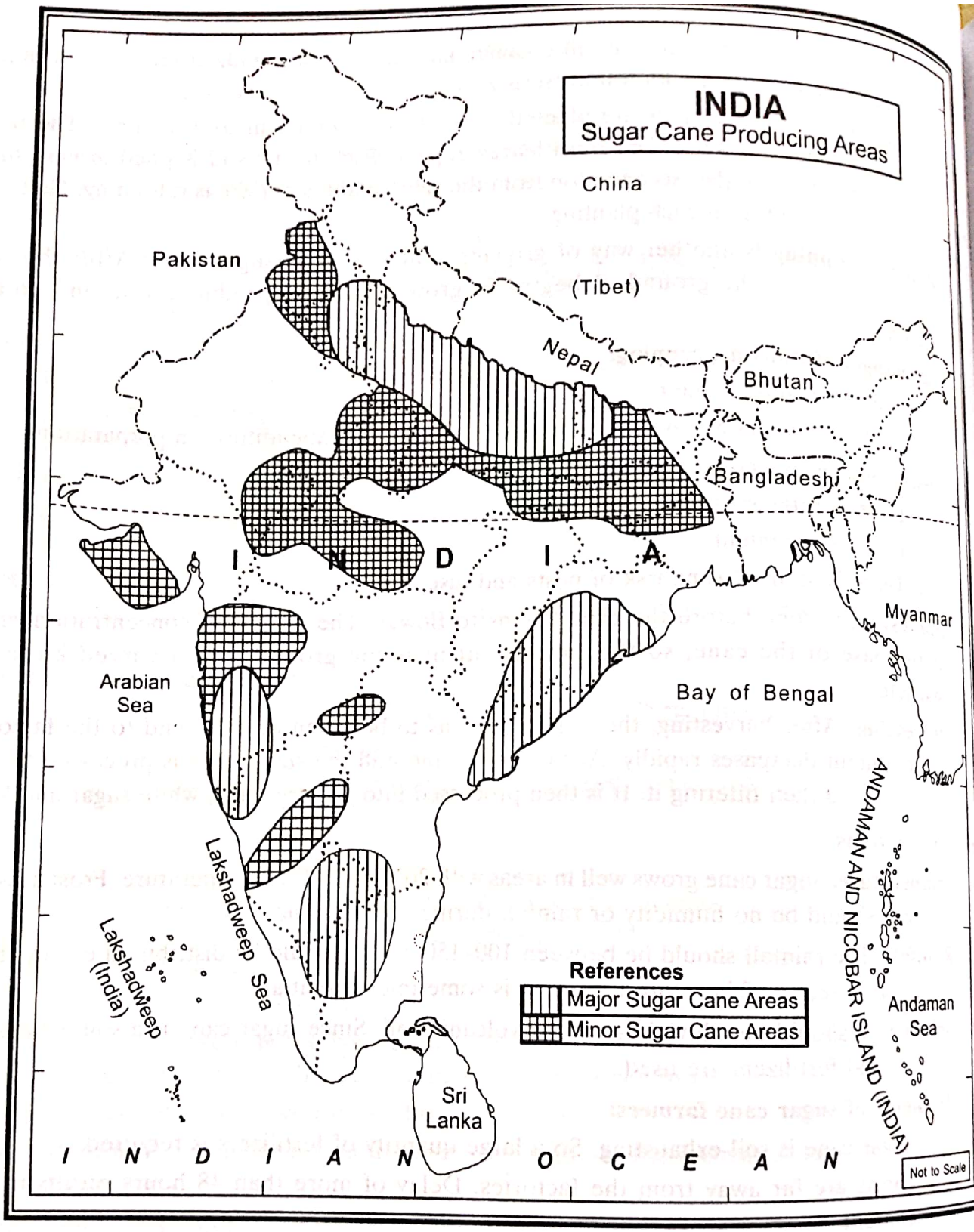
(*e*) **By-products of sugar cane:**

(*i*) Molasses — fertilizers, rum, yeast.

(*ii*) Bagasse — used to make paper, fibreboard, synthetic fibres.

(*iii*) Press mud — used to make wax, shoe polish and carbon paper.

(*f*) **Major sugar cane producing areas:** — Uttar Pradesh, Maharashtra, Tamil Nadu, Karnataka.



OILSEEDS

India is a leading oilseed producing country in the world. With the exception of palm oil and olive India grows all the principal oilseeds.

(*a*) Some of the oilseeds grown in India are:

(*i*) Groundnut

(*ii*) Mustard (*Sarson*) and rapeseed (*rai*)

(*iii*) Sesame (*til*)

(iv) Linseed
(v) Cotton and Sunflower seed
(vi) Soyabean
(vii) Castor seed

(b) Economic importance of oilseeds:
(i) Oilseeds occupy the second place after food grains as a farm commodity. They form an important export item.
(ii) Vegetable oil is a necessary part of our diet.
(iii) The oil industry employs more than 10 million people.
(iv) Oilcake (the by-product after the oil is extracted from oilseed) is used as cattle feed and fertilizer.
(v) Oils like linseed oil are in great demand for industrial purposes such as lubricants, varnishes and paints.

Types of Oilseeds

Oilseeds are of two types:

(a) **Edible Oilseeds:** Some oilseeds are crushed to make vegetable oil. These include groundnuts, mustard seed, sunflower seeds, sesamum, rapeseed etc.

(b) **Non-edible seeds:** These oilseeds are crushed and the oil obtained is used in industries and to produce other commercial products e.g. Castor oil, linseed.

Some Important Oilseeds

Groundnuts

(a) Groundnuts is an important oilseed, largely grown all over the Deccan Plateau. It is commonly known as 'peanut or monkeynut'.

In the northern part of the country it is grown in the kharif season but in the south groundnuts are grown as a rabi crop.

(b) **Geographical Conditions for Growth:**
Temperature required for the cultivation of groundnut is between 22°C and 28°C with a warm dry weather during the ripening period.

Rainfall: The rainfall should be well distributed throughout the period of growth. Groundnut does not require very heavy rainfall and about 50 to 75 cm is sufficient. It can also grow well in irrigated areas.

(c) **Soil:** A light sandy soil is best suited to this crop.

(d) **Method of Cultivation:**
Sowing: It is an annual crop and is sown generally in the month of June or July. When the flowers appear on the plant, the stalks bend downwards and the pods go into the soil, where they mature. Groundnuts are also grown as a rotation crop with millets etc. as they are leguminous.
Harvesting: Groundnuts mature underground in the months of October and December. They have to be dug out when they mature. The pods are then dried in the sun. Therefore a warm dry season is required.

(e) **Areas of Production:** Over 70% of the groundnut production is concentrated in the states of Gujarat, Andhra Pradesh, Karnataka and Tamil Nadu. The leading producer of groundnuts in India is Gujarat.

Mustard and Rapeseeds

The crops are grown in winter along with wheat.

(*a*) **Uses:**

(*i*) They are mainly used in pickles and *curries*.

(*ii*) They also used as a cooking medium in North India.

(*iii*) The leaves are used as a vegetable.

(*iv*) The residue after extraction of oil in known as the oilcake, which is used to feed cattle.

(*b*) **Geographical Conditions for Mustard:**

Temperature: Mustard and rapeseeds can grow in low temperatures ranging from 10° C to 20° C.

Rainfall required for the growth of this crop is between 50 cm and 100 cm.

(*c*) **Soil:** Alluvial soil is required.

(*d*) **Method of Cultivation:**

Mustard is grown in the Rabi (winter) season along with wheat and gram. It is ready for harvest in about four to five months before wheat. The seeds are separated from the plant by the traditional method of trampling them under the bullock's feet.

(*e*) **Areas of Production:** The Ganga-Satluj plain extending over the states of Uttar Pradesh, Haryana, Punjab, Rajasthan are important for the growth of Mustard and rapeseed. Other states are Odisha, Bihar, West Bengal and Maharashtra.

Soyabean

Soyabean is considered as the most versatile plant. Though it contains only about 30% of oil, it can be used for making many useful products.

(*a*) **Uses:**

Oil it extracted from it, which is used in the making of margarine, salad oil etc.

(*i*) The oil is also used in industrial products like paints, varnishes, lenoleum and rubber fabrics.

(*ii*) Soyabean has a high protein content and is a good substitute for the vegetarian population.

(*iii*) It is an excellent rotation crop as it is a leguminous plant.

(*b*) **Geographical Requirements:**

Temperatures: should be between 20°C and 26°C.

Rainfall: The plant is tolerant to drought conditions so it can survive in areas where the rainfall is about 100 cm.

(*c*) **Soil:** Soyabean can grow in a variety of soils especially the one which can retain moisture.

(*d*) **Method of Cultivation:**

Soyabean is a Kharif crop and is sown in the summer months (June) just before the rains. Irrigation is required throughout the growing season. The crop is harvested by October before the winter crops are sown.

(*e*) **Areas of Production:** Madhya Pradesh, Uttar Pradesh, Maharashtra and Gujarat.

COTTON

Cotton is the most important fibre crop of India. It is the fourth largest producer of cotton in the world. It has the largest area under cultivation. The quality of cotton depends on the length of fibres, fineness,

strength and colour. Lon-stapled cotton has fibres over 2.8 cm in length. The short-stapled cotton has a length of 2.2 cm. and is the variety which grows well in India. It is cultivated in the kharif season in most of the regions in India except in those areas where it is grown on irrigated land.

(*a*) **Geographical Requirements:**
Temperature: Cotton needs uniformly high temperature between 21°C and 30°C. Abundant sunshine is required during the period of growth.
Rainfall: A well-distributed rainfall between 50 cm and 80 cm is required for the growth of cotton. Rainfall during the development of the boll is harmful as it then becomes mouldy and gets spoilt. Cotton grows well on irrigated land.

(*b*) **Soil:** Though it can grow in a number of soils, the Black cotton soil is best suited for the cotton plant as it has a water retentive quality. A good drainage is essential as waterlogging harms the cotton plant.

(*c*) **Methods of cultivation:** The time of sowing is different in different parts of the country depending on the climatic conditions. Generally, cotton is sown in June and harvested in October. The plant needs protection from diseases like the boll worms, boll weevils and wilt. The seeds are sown by the broadcasting method and the duration of the crop is about eight months. Other crops like jowar, oilseeds and maize are grown along with cotton. A regular application of manure is important as cotton is a soil exhausting crop. Long-stapted cotton grown in Punjab and Haryana.

Harvesting: A warm temperature is required for the ripening as well as bursting of the bolls. They are picked as they burst. In northern India, cotton is picked between December and January when it is dry. In Peninsular India, the cotton bolls are picked in March–April.

Processing: The raw cotton passes through a process of ginning in which the seeds are separated from the fibre.

(*d*) **Major cotton producing areas are:** Gujarat, Maharashtra, Punjab, Madhya Pradesh, Tamil Nadu, Haryana, Karnataka and Rajasthan.