

Agriculture — III

Cash Crops (1)

Syllabus

Agriculture

Climatic conditions, soil requirements, methods of cultivation, processing and distribution of the following crops:

— sugarcane and oilseeds (groundnut, mustard and soyabean)

CASH CROPS

Cultivation of food crops is essential for our basic survival. However, we also grow commercial crops or cash crops which enhance our life. *Cash crops are those that are primarily grown for sale and not for use by the grower and his family*, for example, sugarcane. The cash crops provide raw material to agro-based industries. They provide money to the farmers not only to improve their living conditions, but also to improve their farming practices.

The main cash crops are categorised as:

1. Sugarcane
2. Oilseeds
3. Beverages: Tea, Coffee
4. Fibres: Cotton, Jute
5. Others: Tobacco, Rubber.

SUGARCANE

Sugarcane is a member of the grass family and is a tall tropical variety with a hard, thick stem which grows to a height of 3.5 m or more. Sugar is stored in the stem. The plant probably originated in eastern Asia.

India has the world's largest area under sugarcane. This crop is the main source of sugar, gur and khandsari and holds a pre-eminent position as a cash crop in the country. It accounts for the largest value of production amongst all the commercial crops. India stands next only to Brazil in the production of sugarcane and accounts for nearly one-fifth of the world cane production.

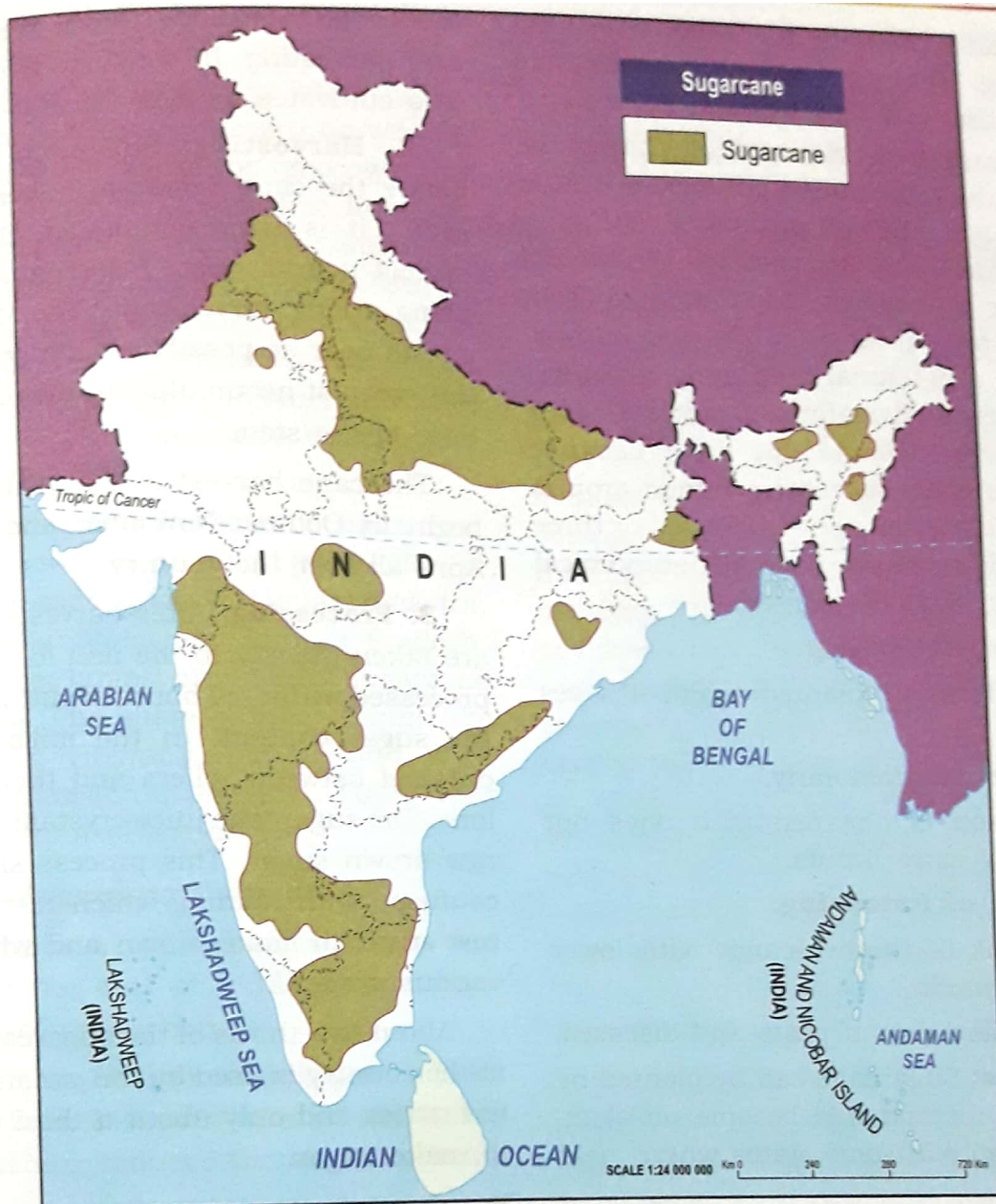
CLIMATIC CONDITIONS

Temperature: Sugarcane matures in 10 to 18 months depending on the climate. Sugarcane grows best in areas with 20°C to 26°C temperature. Its growth starts at a mean temperature of about 20°C and the growth accelerates with an increase in temperature up to 24°C and finally stops at 26°C. Frost is fatal for sugarcane crop. Short cool dry winter season during ripening and harvesting is ideal.

Rainfall: Sugarcane grows well in tropical regions with 100-150 cm of rainfall well distributed throughout the year. However, irrigation is necessary in areas of lower rainfall or even



Sugarcane



Sugarcane Producing Areas

in areas of higher rainfall during the long dry spells. The sucrose content decreases if heavy rains continue for long and a rainfall deficiency produces a fibrous crop. A slightly dry sunny weather is necessary during the ripening stage of the cane.

Soil

Sugarcane is grown in well drained rich alluvial, heavy loams or lava soil. It is largely grown on loams and clayey loams of the Great Plains and on black soils, brown or reddish loams and laterites in the Peninsular India. Sugarcane exhausts the fertility of the soil. Hence, the soil

is supplemented with manures and nitrogenous fertilizers.

METHODS OF CULTIVATION

1. Sowing: Sugarcane is a labour intensive crop. The crop is kept weed-free and irrigated frequently if there are no timely rains. Most of the crop is planted just before the hot season, a little earlier in the southern and eastern parts. Sugarcane is planted by following methods:

(a) Sett Method: New canes are usually planted by taking cuttings from old plants. These cuttings, known as *setts*, quickly become established and after a few days buds sprout to

form new stalks. Four to five stalks grow from each cutting. The sugarcane takes anything from 8 months to a year to mature.

(b) Ratooning: In this method during the first harvest the sugarcane is cut leaving a little bit of the stalk in the soil with roots. The stalk soon puts out new shoots or ratoons. The second or any other successive crop obtained from the roots of the leftover crop is called Ratoon. Sugarcane is a perennial crop and, in theory, the same plants could continue to produce canes for many years. This is not done because the yield from each successive ratoon crop is lesser than the previous one. After two or three ratoons, the old roots are no longer economical and new setts must be planted.

Advantages of Ratooning:

- (i) Crop need not be planted again, it saves labour.
- (ii) The ratoon matures early.
- (iii) This method is cheaper as it does not involve any extra inputs.

Disadvantages of Ratooning:

- (i) The yield is of thinner canes with lower sucrose content.
- (ii) There is more risk of pests and diseases.

(c) By Seeds: Sugarcane can be planted by seeds but this method has become obsolete. It is practised only in some states where yield is not high.

Sugarcane is planted in furrows and covered with soil. There is enough distance between rows

(30-45 cm) to facilitate hoeing, weeding, irrigation and harvesting. In some parts of the country it is cultivated as a mixed crop.

2. Harvesting: Sugarcane is harvested before the cane begins to flower. In northern India, it is harvested before the winters to protect it from frost. The crop is cut by hand using a long curved knife. The stalks must be cut as near as possible to the ground because the greatest accumulation of sucrose is in the base of the stem.

The cane harvest and crushing operations begin in October–November and continue till April all over the country.

3. Processing: After harvesting, the canes are taken quickly to the mill for they must be processed within 24 hours of cutting to preserve the sugar content. In the mills the cane is crushed between rollers and then boiled with lime. The sugarcane juice crystallises and forms raw brown sugar. This process should not be confused with refining which re-processes the raw sugar to make brown and white sugar of various grades.

About two-thirds of the sugarcane produced in the country is used by the *gur* and *khandsari* industries and only about a third of it is used to make sugar.

DISTRIBUTION

The Main Regions: Sugarcane is cultivated throughout India between 8°N to 32°N latitude. There are three main areas of sugarcane production in India: (a) Sutluj-Ganga plain from Punjab to Bihar; (b) Black soil area from Maharashtra to Tamil Nadu; and (c) Coastal Andhra Pradesh and the Krishna valley.

North India: Geographically, North Indian States are the chief suppliers of sugarcane, i.e., the belt lying between Bihar and Punjab has the large sugarcane growing tract, especially the Sutluj-Ganga plain. This is because of the fertile alluvium which is renewed every year by numerous mountain streams flowing in this area, sufficiently high temperatures and



Sugarcane Harvesting

rainfall, and availability of high water level enabling easy irrigation.

South India: South India, on the other hand, has higher yield per hectare, a longer harvesting season and better quality of the crop owing to the favourable maritime climate free from the effects of summer *loo* and winter frost, sufficient irrigation and new farming techniques. But in southern parts of India the sugarcane crop has to face stiff competition from other cash crops like cotton and groundnut. Furthermore, the winter rainfall along Tamil Nadu coast is not beneficial for the crop.

On state-level Uttar Pradesh occupies first place both in respect of area and production of sugarcane in the country followed by Maharashtra, Tamil Nadu, Karnataka and Andhra Pradesh. Tamil Nadu is the largest producer of sugarcane in South India. The share of other States like Gujarat, Bihar, Haryana, Punjab and West Bengal and Telangana is less than 10 per cent of the total output of the crop.

Problems of Sugarcane Cultivators

- (i) Sugarcane is a soil exhausting crop and therefore the cost of fertilisers increases the cost of production.
- (ii) The farms are far from the mills and a delay of more than 24 hours between harvesting and crushing reduces the sugar content.
- (iii) The cost of transport increases the cost of production.
- (iv) The crop is an annual crop and therefore, the farmers are unable to cultivate any other crop, thereby, limiting their income.
- (v) It requires high input of irrigation means.
- (vi) The price is fixed by the government which is most of the times not profitable for the farmers.

Role of Government in Solving Farmers' Problems

- (i) Cooperative societies have been set up by the government to help the farmers.
- (ii) Rural credit banks provide loans to farmers at low interest rate for buying farming tools,

high yielding variety seeds, fertilisers and pesticides.

- (iii) Better irrigation means are developed to provide regular water for irrigation of sugarcane farms.

OILSEEDS

All the principal oilseeds—groundnut, linseed, castor, sesamum, soyabean, cotton seeds, sunflower, rapeseed and mustard, *etc.*, are grown in India. These oils are used for various purposes. They are used as industrial raw materials in the manufacture of paints, varnishes, hydrogenated oil, soaps and lubricants. Vegetable oils produced from the seeds of groundnut, rapeseed and mustard, sesamum, safflower, sunflower and soyabean are edible. They are commonly used as a cooking medium. Although linseed oil is used for cooking food in some areas of central India, it is categorised as a non-edible oil. Castor oil too is non-edible. Groundnut is the leading oilseed followed by rapeseed and mustard. *Oilcake*, i.e., the residue left after the extraction of oil from the oil seeds is used as a fodder for animals and also serves as a good manure in the fields. Linseed oil is got from flaxseeds and is good for health.

1. Groundnut

Groundnut is also known as *peanut* or *monkey nut*. It is believed that groundnut was introduced in India from Brazil during the 16th century. It contains about 42 per cent oil, which is extracted from the nuts found in the roots of the plant. It is mainly used for the manufacture of hydrogenated oil. It is also used in making



Groundnuts

margarine, medical emulsions and soap. Groundnut oil is used as a cooking medium, its oil cake is used as cattle feed. The nuts are eaten raw, roasted, salted or sweetened.

There are two types of Groundnut plants:

- (a) The runner type;
- (b) The bunch type.

CLIMATIC CONDITIONS

Groundnut thrives well in the tropical and sub-tropical climates and is highly susceptible to frost. The groundnut is a rabi crop in Odisha and in southern states. In the rest of India, it is a kharif crop.

Temperature: Groundnut requires about 20°C to 25°C temperature. Dry weather is needed during the time of ripening.

Rainfall: Groundnuts require light to moderate rainfall between 50 to 100 cm. Rainfall should be well distributed. Prolonged drought, continuous rains, stagnant water and frost harm the crop adversely. In Tamil Nadu and Maharashtra it is raised under irrigation.

SOIL

Sandy loams, loams and well-drained black soils, which allow enough of aeration, are considered suitable for groundnut cultivation. The red,

Crop	Temperature	Rainfall	Soil	Leading States
Sugarcane	20°C-26°C	100-150 cm or irrigation facilities with high humidity.	Well-drained rich alluvial, heavy loam or lava soil.	UP, Maharashtra, Tamil Nadu (highest yield hectare), Karnataka, Andhra Pradesh.
Groundnut	20°C to 25°C	50 to 100 cm	Sandy loams, loams and well-drained soils.	Gujarat, Telangana and Tamil Nadu.
Mustard	10°C to 20°C	25 to 40 cm	Loams. Heavier loams	Uttar Pradesh, Rajasthan, Punjab, Madhya Pradesh and Haryana.
Soyabean	13°C to 24°C	40 to 60 cm	Friable loamy, acidic soils.	Madhya Pradesh, Rajasthan and Maharashtra.

yellow and black cotton soils of Peninsular India suit it well. Such light soils are essential as the nut ripens in the soil.

METHODS OF CULTIVATION

1. Sowing: The sandy soil is ploughed. Then the seeds are sown by broadcasting or drilling in June or July. When the plants mature, they flower. After self pollination the flower stalk elongates, turns downwards burys the fruit where it matures. The mature fruits have wrinkled shells with one to four seeds per pod. The whole crop takes 4 to 5 months to be ready for harvest.

Groundnut is a *Kharif* crop in most part of India. The crop is sown in June-July and harvested in November-December. But in Tamil Nadu it is a summer crop sown in February-March and harvested in June-July.

2. Harvesting: The entire plant, including the roots, is removed from the soil. Groundnuts are dried and packed into sacks to be sent to mills or commercial establishments.

DISTRIBUTION

India is the second largest producer of groundnuts in the world after China. The crop occupies about 3.6 per cent of the country's total cropped area and amounts to about 4 per cent of the total agricultural production.

Groundnut is a tropical crop and is extensively grown in Peninsular India. Telangana and Tamil Nadu together account for more than half of

the groundnuts produced in India. Gujarat is the leading producer of groundnuts in India. The other groundnut producing states are Maharashtra, Karnataka, Andhra Pradesh, Rajasthan, Madhya Pradesh, Uttar Pradesh and Punjab.

2. Mustard

Mustard oil seeds are crushed to get an important edible oil. It is used extensively in northern India as a cooking medium. In Uttar Pradesh, Punjab and Haryana the oil cake of mustard is an important cattlefeed. The leaves of mustard (sarson) are eaten as vegetable in Punjab and Uttar Pradesh. It is also used as a manure. Its oil content is about 25-43 per cent.

Mustard thrives only in cool climate and that is why it is widely grown in the Sutlej-Ganga Plain and a very small proportion is obtained from the States of Peninsular India. It is grown mostly as pure rabi crop or mixed with wheat, gram and barley.

CLIMATIC CONDITIONS

Temperature and Rainfall: Since mustard grows best in cool climate, it is grow well in temperature which ranges from 10° to 20°C. The crop requires rainfall varying between 25 to 40 cm.

SOIL

Mustard can be grown on loams but slightly heavier soils are preferred.

METHODS OF CULTIVATION

Mustard is grown with wheat, gram, barley in rows in the same climatic conditions. Its growing period is four to five months. It is harvested about one or two weeks before the main crop and collected in heaps in the granary. The seeds are separated by getting them trampled under the bullocks' feet.

DISTRIBUTION

About 90 per cent of the area and production is contributed by Uttar Pradesh, Rajasthan, Punjab, Madhya Pradesh and Haryana. The rest comes from Assam, Bihar, West Bengal, Odisha, Gujarat and Jammu and Kashmir.

3. Soyabean

Soyabean has a high protein content. The beans may be eaten as vegetable or made into soya sauce. Soyabean is used as a substitute for animal protein. It is consumed as soya milk and tofu (cheese).

CLIMATIC CONDITIONS

Soyabean is a light coloured oval bean raised as a *kharif* crop. It is sown in the month of

June. Care is, however, taken that time-lag between the sowing time and the onset of heavy monsoon rains is about two weeks since heavy rainfall adversely affects the germination of soyabean seeds.

Temperature: It requires temperature in the range of 13°C - 24°C. Temperature above 13°C is necessary for the normal growth of soyabean.

Rainfall: Soyabean grows in regions with 40 cm to 60 cm of rainfall. The rainfall should be well distributed throughout the growing season.

Soil: It is grown on friable loamy acidic soils.

METHODS OF CULTIVATION

The crop needs three or four irrigations during its growing period. Before sowing, its seeds are covered with gur (jaggery) and rhizobium. At present, it is, mainly a rainfed crop. It is harvested in the middle of October.

DISTRIBUTION

The most important soyabean producing area lies in Madhya Pradesh and the adjoining districts of Rajasthan and Maharashtra. Madhya Pradesh is the leading producer of soyabean.