

Quadrant II – Transcript and Related Materials

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Glossary of terms/words:

- **Fodder- coarse food for cattle**
- **Alfalfa- A leguminous plant with clover- like leaves and bluish flower.**
- **Hemp-a fibre of cannabis plant**
- **Textile-something made by knitting, weaving or crocheting fibers together**
- **Canola-Oilseed Crop**
- **Ornamental crops-crops that are grown for decorative purpose in gardens**
- **Dogwood- A small tree that has flowers growing either in wild or in gardens.**
- **Azalea-one type of flowering shrub**
- **Hailstorm-precipitation of solid ice forms inside thunderstorm.**
- **Potable-safe to drink**
- **Shrub-woody plant which is smaller than a tree and has several main stems arising at or near the ground.**
- **cotton seed mal-the residue of cotton seed kernels from which oil has been extracted**
- **khandsari-unrefined raw white sugar**

Case Studies and Additional Examples/Illustrations

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Notes:-

Introduction

- Crop is any plant that is grown on large scale and harvested extensively for-profit purposes.
- A crop may include macroscopic fungus (e.g. mushrooms), or macroscopic marine alga(e.g. seaweed).
- Most crops are harvested as food for humans or fodder for livestock
- By use, crops fall into six categories: food crops, feed crops, fiber crops, oil crops, ornamental crops, and industrial crops.
- **Categories of Crops**
- Food crops :
Food crops, such as fruit and vegetables, are harvested for human consumption. Grains, such as corn, wheat, and rice, are the world's most popular food crop.
- Feed Crops-

Feed crops, such as oats and alfalfa, are harvested for livestock consumption

- Fiber Crops-

Fiber crops, such as cotton and hemp, are harvested for textile and paper products.

- Oil Crops-

Oil crops, such as canola and corn, are harvested for consumption or industrial uses.

- Ornamental Crops-

Ornamental crops, such as dogwood and azalea, are harvested for landscape gardening. Ornamental crops are most often grown in nurseries, where they are purchased for residential or commercial settings.

- Industrial Crops-

Industrial crops include all crops used in the production of industrial goods, such as fiber and fuel products.

Cereals as a food crop

- The term "cereal" comes from Ceres, the Roman god of agriculture. As this name suggests, cereals are a vital part of the farming and agriculture industries in many countries. Cereal crops are classified as staple foods, which means that they are a significant part of the human diet and are regularly eaten for their high energy content.
- According to Chapman and Carter (1976), "a cereal is generally defined as a grass grown for its small, edible seed."
- Cereals is a collective term for all kinds of grass –like plants which have starchy edible seeds.
- Cereal crops are interchangeably called grain crops.

- The most common cereals include rice, wheat, maize, barley, oats etc.

RICE

- ▶ Rice has been cultivated since time immemorial, but it is believed that rice must have originated somewhere in China or India.
- ▶ It has been staple food of China for a long time and is consumed in many ways.
- ▶ From China and India, rice cultivation spread to neighbouring Asian countries.

GEOGRAPHICAL CONDITIONS FOR CULTIVATION

1)TEMPERATURE

- ▶ Rice is a tropical crop and grown where the average temperature during the growing season is between 20⁰ c and 27⁰ c.
- ▶ Abundant sunshine is essential during its four months of growth.
- ▶ The minimum temperature should not go below 15 ⁰c as germination cannot take place below that temperature.

2) Rainfall

- ▶ Paddy requires more water than any other crop.
- ▶ Average annual rainfall suitable for the growth is between 175-300 cm .
- ▶ Paddy also needs flooded conditions with the depth of water varying over 25mm at the time of transplanting to as much as 150 mm for 10 weeks of the growing period.

3) Soils

- ▶ Paddy is grown in wide range of soil, from the alluvium of china to the clay of central Thailand.
- ▶ Fertile alluvial soil is best for rice cultivation.
- ▶ Rice is also grown in saline areas of deltic region.

- ▶ Rice cultivation requires high fertiliser application.

4) Surface

- ▶ Paddy needs level surface to enable the fields to be flooded at least during the growing period.
- ▶ Its ideal habitat is therefore in the great alluvial deltas and river basins of the world .

5) Fertilisers

- ▶ Paddy requires three essential plant nutrients: Nitrogen, phosphorous and potassium.
- ▶ Most paddy lands have moderate quantity of such nutrients, but if they are deficient, organic manure or artificial fertilisers have to be used.

6) Labour

- ▶ It is a labour- intensive, therefore requires more labour in comparison to other cereal crops.
- ▶ Labour is necessary for preparing the field, weeding, sowing, manuring, harvesting, threshing, winnowing and milling.

METHODS OF CULTIVATION AND VARIETIES OF RICE

1. Preparation of field

- ▶ Paddy farmers used to get their fields ready before the rainy season.
- ▶ The weeds are cleared and the field is ploughed by buffaloes or tractors .
- ▶ Manures and fertilisers are added to the soil.
- ▶ The whole surface then remained covered with water .
- ▶ The field is then ready for receiving seedlings.

2) Transplantation

- ▶ Generally paddy seedlings are first prepared in nursery and then transplanting is done in the field after 40 days.

- ▶ In some areas of India and Sri Lanka seeds have been sown directly in the field and the seedlings sprout when the rain comes. But yield of paddy from transplanting is greater than the direct sowing.

3) Harvesting

- ▶ Harvesting is done with either through a curved knife or sharp – edge knife.
- ▶ It is very labour – intensive.
- ▶ Harvesting is done in the dry season, when the weather is sunny.

4) Threshing, Winnowing and Milling

- ▶ After the paddy stalks have been gathered and dried for a brief spell, their threshing is done. By beating the sheaves against the bars, the grains are separated from the stalks.
- ▶ Winnowing is a process of removing the unwanted particles from the paddy grains.
- ▶ Milling means removal of the yellowish husks from paddy so that white rice is obtained.

WORLD DISTRIBUTION OF RICE – PRODUCING AREAS.

- ▶ The tropical region of Asia or monsoon Asia is the largest rice- producing area.
- ▶ The countries of this region together produce 90% of the global output of rice.
- ▶ Major producing countries are China, India, Indonesia, Thailand, Bangladesh, Myanmar, Vietnam, Laos, Cambodia, Japan etc.
- ▶ The greatest rice- producing country in the world is China. It accounts for 36% of the world production of rice.
- ▶ India is the second largest rice producing country in the world. Which accounts for 20% of the total rice production.
- ▶ The major rice- producing states in India are west Bengal, Bihar, Tamil Nadu, Andhra Pradesh, Uttar Pradesh, Madhya Pradesh, Karnataka, Assam and Odisha.

- ▶ Indonesia is the third largest rice- producing country in the world.
- ▶ Countries like Bangladesh, Vietnam, Thailand, Myanmar and Philippines are the countries which produces more than 10 million metric tons of rice annually.

WHEAT

- ▶ Is one of the most important food crop.
- ▶ It ranks next only to rice in area and production.
- ▶ It is one of the important cereal crop grown during the winter season and is a staple food for the millions of people.

GEOGRAPHICAL CONDITIONS FOR CULTIVATION

- ▶ Temperature required during growing season is around 15.5⁰ C.
- ▶ It requires a cool climate with moderate rainfall.
- ▶ In India the crop is mostly raised in the Great Plains During the Rabi season.
- ▶ A frost at flowering time and hailstorm at ripening stage damage the crop.
- ▶ The soil suitable for wheat is clay or loam.

Types of wheat

- ▶ On the basis of sowing season wheat can be divided in to two types
 1. Winter wheat
 2. Spring wheat
 - Winter wheat : usually grown in regions of the middle latitudes where winters are mild and cool but without frost.
 - Spring wheat: Is grown in the colder north of the Canadian Prairies, where winter temperature may drop to 16⁰ c to below

freezing point and seeds can only be sown after the severe winter is over.

CULTIVATION

- ▶ Wheat requires a well- pulverised but compact seed-bed for good germination.
- ▶ The fields are ploughed and pulverised several times before the seed is sown.
- ▶ Sowing is done usually during
 - September –October in KA, MH, Andhra P, MP and WB.
 - October – November in Bihar, UP, RJ, Haryana and PB.
 - November- December in HP, and JK.
- ▶ Harvest takes place during
 - January- February in KA, Andhra P., MP, WB
 - March- April in Bihar, UP, RJ, Haryana and PB
 - April- May in HP, and JK.

Area and Production

- ▶ On an average Wheat accounts for 20% of the total area under cereals and 11 % of the total cropped area in the country.
- ▶ Wheat accounts for 28% of the total cereals output in the country.
- ▶ Over 86% of the country's total Wheat output comes from Uttar Pradesh, Punjab, Punjab, Madhya Pradesh, Haryana, Rajasthan and Bihar; remaining coming from WB, Gj, HP, MH, J& K , and KA.

- ▶ Uttar Pradesh contributes 31% of the production and occupies the highest rank among all the states.
- ▶ In the world, China is the leading producer of wheat.
- ▶ India is the second largest producer of wheat in the world.
- ▶ USA is the third largest producer of wheat in the world.

CASH CROPS

- ▶ Besides food grains, India grows a large number of commercial crops mostly for sale in raw or semi-processed form.
- ▶ They include tea, coffee etc.

TEA

- ▶ Tea is the most important beverage crop of the world. It is mostly cultivated as plantation crop.

Conditions for growth

- ▶ Grown in the tropical and sub-tropical regions on hill slopes where the annual rainfall is heavy, 150-250 cm.
- ▶ A temperature of 21⁰c during the growing season of not less than eight months is ideal.
- ▶ Tea plantations are located in the highlands on hill slopes where the natural drainage is good.
- ▶ Undulating tracts, where the water escapes freely without serious soil erosion, offer best conditions for tea cultivation.

- ▶ Tea is grown in variety of soils. The best is loam with porous sub- soil which permits a free percolation of water.
- ▶ Tea shrub grow better when shielded from strong sunlight or violent winds. It is therefore usual in plantations to plant some large trees in between the shrubs to give shade .
- ▶ Tea – cultivation and processing are labour – intensive tasks.
- ▶ Tea cultivation is capital- intensive farming. It requires large finances for the development of plantaion.
- ▶ India has the world’s largest area and production of tea.
- ▶ India produces about 34 % of the total world output of tea at present.
- ▶ China is the second largest producer of tea in the world.
- ▶ African country Kenya is the third largest producer of tea in the world.
- ▶ Assam is the largest tea producer in India.
- ▶ Tea occupies a pivotal position in Assam’s economy contributing about 12% of its total income.

- ▶ West Bengal is the second largest producer of tea followed by Tamil Nadu.

COFFEE

- ▶ Coffee is one of the most important cash crops, known best for its delicious taste.
- ▶ Coffee is a popular drink all over the world.
- ▶ The coffee was introduced in India by a Muslim Fakir, Bababudan Sahib during 17th century.

CULTIVATION AND TYPES

- ▶ The coffee tree may grow up to height of 9 metres, but its height is kept low up to 1.5 to 2.5 metres in commercial cultivation.
- ▶ The coffee is obtained from seeds of berries which which are red in colour when ripe.
- ▶ Seeds from the berries are dried , roasted and ground into coffee powder.
- ▶ There are three types of coffees according to their nature and geographical distribution:
 - Coffee Robusta: grows on lowlands of African plateaus which contributes 15-20 % of global output.
 - Coffee Arabica: It is the most popular one and contributes 70-80% of the global output.
 - Coffee Liberica: Inferior grade coffee, contributes only 5-10% of global output and grows in Africa.

GROWTH CONDITIONS FOR CULTIVATION

- Coffee is a tropical plant which is grown in semi- tropical climate.
- The coffee plant require hot and humid climate with 150 to 200 cm rainfall and 15^o -30^o c Temperature.
- Direct sunlight is harmful, therefore they are planted under shade of taller trees .
- Dry weather for proper ripening of the berries is necessary in December- January.
- Water stagnation is harmful for coffee plants, therefore hill slopes are best suitable for it.

Economic Conditions

- Labour: Coffee cultivation required a large number of labour force because coffee is to be hand-picked. Apart from this, there is much work to be done on plantation all around the year such as field preparation, transplanting, cultivating, pruning, weeding, and harvesting.
- Capital : Plantation of coffee is a capital intensive activity as during the first 3-4 years return from coffee plantation are nil and expenditure are more.
- Transport: Coffee plantation requires good network of both internal and external transport as it helps in collection of coffee from producing areas, and distributing to different places.
- Market: Coffee is having international market. It is necessary to maintain international market because there is much competition in the market.

Yield

- Brazil is the largest producer of Coffee in the world and accounts for 40 % of the global coffee supply .
- Vietnam is the second largest producer of Coffee in the world and accounts for 20 % of the global coffee supply .
- Colombia is the third largest producer of Coffee in the world and accounts for 10 % of the global coffee supply .
- In the world India accounts 3.14% of the total coffee supply.
- Almost all the coffee produced in India belongs to the Arabica and Robusta varieties.

INDUSTRIAL CROPS

- ▶ Industrial crops are also known as nonfood crop. They are the crops grown to produce goods for manufacturing, for example fiber for clothing, rubber, sugarcane, cotton, jute, etc.

COTTON

- ▶ Cotton is the main natural fiber .
- ▶ Besides being the source of fiber, cotton plant is also the basic raw material for the production of edible oil and cotton seed mal.

TYPES OF COTTON

- ▶ Cotton is derived from the hair surrounding the seeds of plants.
- ▶ On the basis of the length of the fiber, there are three main types of cotton:
 - i) Long staple: Staple length of this cotton varies between 25 to 65 mm. Mostly grows in Egypt, Peru , USA etc.
 - ii) Medium Staple: also known as upland American cotton. Staple length of this cotton varies between 15 to 35 mm. Mostly grows in India, China, Brazil etc.

Short staple: Staple length of this cotton varies between 8 to 25 mm. It is a Low quality cotton mostly found in China and India.

PHYSICAL CONDITION:

- Temperature of 20⁰ – 28⁰c .
- It requires Dry sunny days at the flowering and harvesting time.
- It requires rainfall of 55-100 cm.
- Black cotton soil is the most suitable soil for the cotton.

ECONOMIC CONDITION

- ▶ Cotton cultivation is very labour intensive, large number of cheap labour is required.
- ▶ Mechanised cotton cultivation requires huge capital for machinery, pesticides, fertilisers.
- ▶ For export facilities good transport network and steady demand in the market are necessary.

Production and Distribution

- ▶ India ranks first in the world in cotton production.
- ▶ China is the second largest producer of cotton in the world.
- ▶ USA is the third largest producer of cotton in the world.
- ▶ In India Gujrat is the leading cotton growing state followed by Maharashtra, Telangana respectively.

SUGARCANE

- ▶ Sugarcane is the most important commercial crop of tropical countries.
- ▶ Sugarcane is a member of the grass family, and is a tall tropical variety, with a hard, thick stem and sugar is stored in them.
- ▶ This crop is the main source of sugar, gur, and khandsari.

CONDITIONS FOR GROWTH

- ▶ Sugarcane is a tropical plant, therefore it requires a year warm weather to reach maturity.
- ▶ Temperature- 20⁰c to 26⁰c
- ▶ average rainfall – 100-150 cm

- ▶ Much sunshine is required , particularly at the end of the growing season to produce cane with higher sugar content.
- ▶ It grows well in alluvium and light – clay soil.
- ▶ Moist clay – loam with good drainage is the best soil for cane.
- ▶ In India , the crop is grown largely on loams and clayey loams in the great plains and on black cotton soils, brown or reddish loams and even laterites in the peninsular regions.
- ▶ A slightly dry sunny weather is necessary during the ripening stage of the cane.

METHODS OF CULTIVATION AND PROCESSING

- ▶ The crop requires intensive labour and other inputs.
- ▶ The native method of sowing sugarcane is to plough the land some three to five times, and prepare the fine seed –bed about 10 to 15cm deep.
- ▶ Next the field is levelled and the cutting of the seed cane are planted.
- ▶ New canes are usually planted by taking cuttings from old plants. These cuttings become established and after few days buds sprouts to form new stalks.
- ▶ Six to ten stalks grow from each plant, and the sugarcane then takes from one to two years to mature.
- ▶ Little work is done in the field while cane is growing, except in the early stages when plants are kept free of weeds.
- ▶ Most of the crop is planted just before the hot season.
- ▶ The cane harvestbegin in October- November and continue till April .

- ▶ After harvesting canes are loaded on to trucks or tractors to take them quickly to mill for processing as early as possible to preserve high quality of sugar.
- ▶ In the mills the cane is crushed, then boiled with lime to form crystallise sugar.
- ▶ By- products of the crushing process also have important uses.
- ▶ Molasses is used to make rum and industrial alcohol, while Bagasse, the cane residue, can be used as a fuel for the mills, as cattle fodder as well as source of fiber in the paper and synthetic textile industries.

PRODUCTION AND DISTRIBUTION

- ▶ Brazil is the leading producer of the sugarcane in the world and it ranks first with 33% of the world production.
- ▶ India is the second largest producer of the sugarcane. Sugarcane is mostly grown in Gangetic plain. Though sugarcane is cultivated throughout India, the most important states are Uttar Pradesh, Bihar, West Bengal, Maharashtra ,Andhra Pradesh, Punjab, Tamil Nadu, Karnataka and Odisha.
- ▶ Uttar Pradesh is the leading producer of the sugarcane in India followed by Maharashtra and Tamil Nadu etc.
- ▶ China is the third largest producer of the sugarcane which produces 6.83% of the world sugarcane production.
- ▶ Other countries which produces sugarcane are Thailand, Pakistan, Mexico, Colombia.

