A G R I C U L T U R E

Agriculture is a combination of two words i.e. **Agri** and **culture**. **Agri** means **farming** and **culture** means **practice**, it means **practice of farming** is called agriculture.

Agriculture is a primary industry concerned with obtaining raw material from the ground for immediate consumption / for further processing. All types of agriculture can be viewed as a system i.e. **Inputs**, **Processes** and **Output**.

Inputs: Knowledge / Ideas etc. that you put into work.. The inputs fall into two groups.

1. **Natural / Physical inputs**: Agricultural requirements provided by nature e.g. Land,
   Soil, Climate.

2. **Human inputs**: Agricultural requirements provided by man. e.g. Capital, Labor.

Process: A series of things that are done in order to achieve a particular result.

Outputs: Out puts are the result of inputs.

Agriculture As a System

Inputs	Processes	Outputs
Natural / Physical Land	e.g.	Crops, Food and
Land	Ploughing	raw material e.g.
Soil	Sowing	Wheat
Climate (Temperature & Rain)	Irrigation	Rice
Sunshine	Fertilizing	Cotton
Human Factors	Weeding	Sugar-cane
Capital	Harvesting	Vegetables
Machines / Mechanization	Threshing	Flowers
Fertilizers	Milking	**Animal Products**
Labor	Breeding	Milk
Knowledge	etc.	Meat
Irrigation		Eggs
Pesticides		

Waste Products

Animal feed, Husk, Manure, Molasses.

Profit invested back into farm.

Importance of Inputs (Natural)

Land.   Should be flat, easy use of machine, easy irrigation. Easy ploughing, Easy sowing, easy harvesting.

Soil.   Should be fertile i.e. Alluvial, Clay and Loamy. Provides nutrients. Can be drained easily.

Climate.   Required rain for Rabi and Kharif crops.
              Required temperature for Rabi and Kharif crops.

Sunshine. For warmth, ripening and photosynthesis.

Importance of Inputs (Human)

Capital: Purchase of machinery e.g. Tractor, Harvester. Purchase of fertilizer and
HYVs,
              Wages to skilled labor, Arrangements of better irrigation facilities.

Machines: Faster work, more efficient, better preparation, can thresh and harvest, does not need to rest, use of tube wells.

Fertilizer: Better than dung, provides nutrients. Increase the output

Labor: Skilled for machinery and unskilled for loading and unloading the material, ploughing, sowing, weeding and cutting the crops.

Knowledge: Better cultivation methods, management, skills for machinery.

Irrigation: Enough water at the correct time, fills the gap of rainfall.

Pesticides: Kills pests and diseases, increasing the output and income.

Seeds: HYV s, pest resistance, drought resistance, increase yield, grow faster.

Processes

Ploughing: A large piece of farming equipment with one or several blades pulled by a tractor or animal. It is used for digging and turning over soil specially before seeds are planted.

Sowing: Spreading seeds in or on the ground with machine or by hands.

Irrigation: To supply water to an area of land through tube well / channels so that crops will grow.

Fertilizing: Adding substances to soil to make plants grow more successfully.

Weeding: Wild plants growing where they are not wanted especially among crops.

Threshing: To separate grains of wheat or rice from the chaff.

Milking: To draw. milk from animals especially cow, buffalo and goat.

Breeding: Keeping of animals in order to breed from them.

Outputs: Result of inputs. e.g. rice, wheat.

Types of Crops:

There are **two** types of crops.

Rabi Crops: These are cultivated in October and November and harvested in April and May. e.g. wheat.

Kharif Crops:These are cultivated in May and June and harvested in October and November.
e.g. rice and cotton.

Types of Farming:

1. Small Scale subsistence Farming: It produces food and raw material mainly for the

people who work on them.

2. Cash Crop Farming: The growing of agricultural crops for sale.

3. Livestock Farming: Keeping of animals called livestock farming.

1. Small-scale Subsistence Farming

It produces food and raw material mainly for the people who work on them. Any surplus for sale is a bonus, not an expectation.

Many of the farms in all the Provinces are small scale subsistence holdings. The size of the farm is much smaller than the normal subsistence holding which is taken to be 5 hectares or 2.5*5 acres. This indicates that most farmers have difficulty in earning, living with small holding and they have to supplement their income from other sources, e.g. they may work as a carpenter, blacksmith, driver or cobbler etc.

Small-scale Subsistence farming as a system

Inputs	Processes	Outputs

Inputs

Natural / Physical
Land
Soil
Climate (Temperature & Rain)
Sunshine

Human Factors
Natural Manure
Draft power from animals (Cattle)
Irrigation (rain or wells)
Labor (Family members)
Knowledge (Inherited)
Desi varieties of seeds
Traditional wooden plough

to

profit.

storage

Processes

e.g.
Ploughing
Sowing

Irrigation

Fertilizing
Weeding
Harvesting
Threshing
Milking
Breeding
etc.

Waste Products

Cow-dung as natural manure is kept in a conical
Shape and covered by mud.
Chaff mixed with water and mud to make

Rooms and covering roofs.

Profit and waste products invested back into farm.

Outputs

Crops, Food and
raw material e.g.   **For**
Wheat

Rice

Cotton
Vegetable
Flowers

Animal Products
Milk
Meat
Eggs

Surplus product are sold

The local market for

home

use.

Q.1.   Why are so many farms small in size?
Ans.   Rapidly growing population
        Limited good farmland.
        Laws of inheritance.
        Land divided amongst all sons.
        Majority of the farmers are poor.
        Many farms are only subsistence farms.
        Landlords have divided their land into small tenants farms.

Q.2.   If a farmer has a good crop and can sell some in the market, how may he use the money he earns to improve his yield for the next year?
Ans.   Better seed - HYV, disease / pest resistant.
        Fertilizer - to provide nutrients .
        Pesticides - to kill insects, viruses .
        New animals - younger, better breeding.
        New tools to faster work .

Repairs - to machinery, irrigation system, storage etc.

Q.3. Give 4 ways in which a small-scale subsistence farmer can supplement his income.

Ans. Carpenter. Blacksmith. Cobbler. Driver etc.

Q.4. Why does the output of a small-scale subsistence farm vary from year to year?

Ans. Variability of rain Lack of rain.
Problems of irrigation.
Pests and diseases.
Uses own seeds.
Family problems / sickness / men go to city.
Water logging and salinity.

Q.5. Describe the drawbacks / Disadvantages of small-scale subsistence farming. OR Describe the drawbacks of the size of the farm i.e. five hectares or less..

Ans. Machinery cannot be used.
Loans cannot be obtained to develop smallholdings.
Irrigation is difficult on small and discontinuous farms.
Experiments cannot be carried out for increasing production.

Q.6. How can education and training help a small-scale farmer to increase his output?

Ans. Learn about modern methods e.g. seeds, machinery, pest control.
Takes loans - must be related to education or literacy.
Improve literacy - where to sell to make most profit.
Learn how to avoid crop failure.

Q.7. Explain why crop yields may be low when subsistence farming methods are used.

Ans. Use of traditional methods.
Draft power (animals).
Primitive irrigation system.
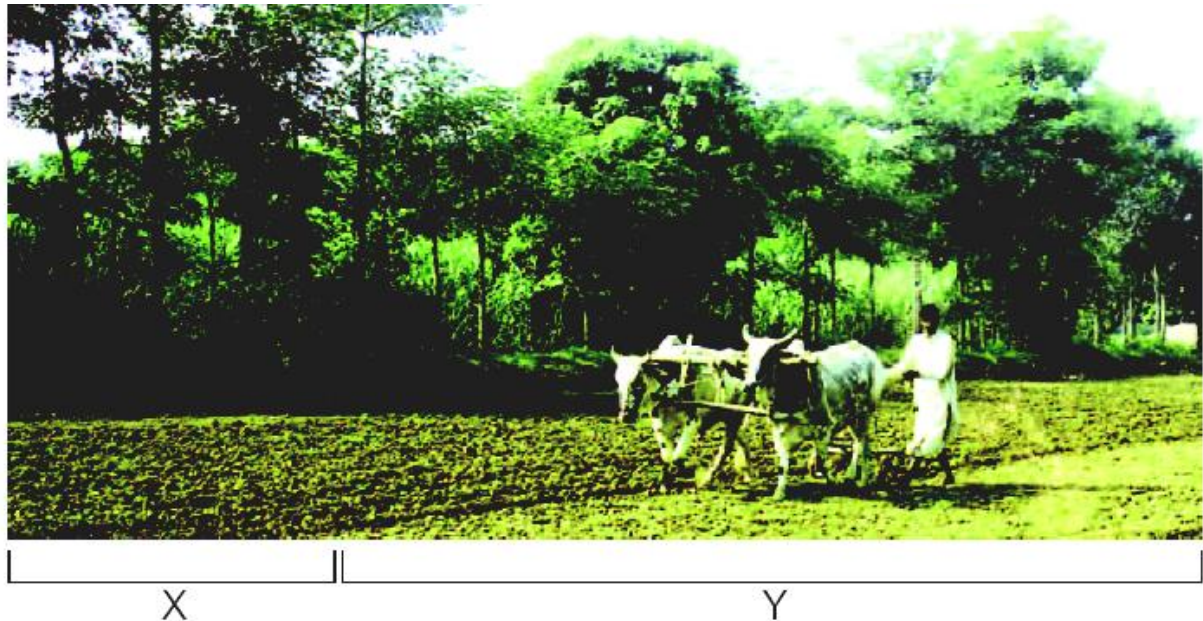No mechanization / tractors.
Family / unskilled labour.
Poor seed.
No fertilizers / pesticides.
Dung for manure.

Study **Photograph A** of a rural area in Jhang District.

Photograph A

Q.8.   What is this man doing?
Ans.   Ploughing.

Q.9.   Why is the soil at X a different color from the soil at Y?
Ans.   Turned over.

Q.10.   Name three inputs for farming other than soil that can be seen on the photograph.
Ans   Bullock / Cattle.
Plough.
Labor.

Q.11.   Describe three other processes that may be carried out before a crop is harvested.
Ans.   Sowing seeds.
Fertilizing to provide extra nutrients.
Weeding to give plants space to grow.
Irrigation / watering to provide water.
Spraying pesticide to kill insects.

2. Cash Crop Farming

The growing of agricultural crops for sale. A crop that is grown primarily for sale is called a cash crop.

In Pakistan farmers or landlords prefer growing those crops which can bring high yields and maximum profit. Large farms in Sindh and Punjab are being planted with cotton, rice, wheat or sugar-cane.

Cash crop farming aims to maximize profit. A cash crop farmer wants to increase agricultural output. This factor motivates him to use those farming techniques which will generate the highest profit, e.g. mechanization and modernization. A commercial farmer can afford to buy agricultural machinery, e.g. tractor, thresher and combine harvesters, to speed up the process on farm. The crop is protected from pests and insects by applying pesticides and insecticides. A commercial farmer selects the crop on the basis of demand, price and favorable government policies. When the crop is harvested, extra labor is employed.

Cash Crop Farming As a System:

Inputs

Natural / Physical
Land
Soil
Climate (Temperature & Rain)
Sunshine
Human Factors
Capital
Machines / Mechanization
Fertilizers
Labor (skilled)
Knowledge (modern)
Irrigation (Canals & tube well)
Pesticides & Insecticides

Processes

e.g.
Ploughing
Sowing
Irrigation
Fertilizing
Weeding
Harvesting
Threshing
Milking
Breeding
etc.

Waste Products

Animal feed, Husk, Manure,

Profit invested back into farm.

Outputs

Crops, Food and
raw material e.g.
Wheat
Rice
Sugar cane
Cotton
Vegetables
Flowers
Animal Products
Milk
Meat
Eggs

Types of Crops:

There are **two** types of crops.

1. Rabi Crops

These are cultivated in October and November and harvested in April and May. e.g. wheat.

2. Kharif Crops

These are cultivated in May and June and harvested in October and November. e.g. rice, cotton.

W h e a t

Wheat is a Rabi crop and staple food used in the manufacturing of bread and variety of baked products.

In October and November after ploughing the fields, wheat seeds are sown directly into the ground. The first irrigation is done in its first month of sowing and second irrigation takes place further after one month. Approximately four time water is needed. Last irrigation takes place one month before harvesting. This crop is harvested after five or six months.

At the time of harvesting a lot of manual labor is required to complete the harvesting process. Chaff is separated from grain. The grain is then stored by the farmer for the use of his family and surplus transported to market for sale. The yield of wheat has gradually increased in Pakistan with the introduction of modernization and mechanization e.g.

The use of farm machinery.
Modem means of irrigation.
HYV s.
Use of chemical fertilizer.
Modem methods of farming.
Support price.
Government incentives e.g. loans.
Use of pesticides and insecticides.

Our country is rarely self sufficient in wheat production because of ever increasing population and gradual decrease in cultivable area due to water logging and salinity. Other points like, Small size of farm, inherited knowledge and shortage of water.

Geographical Requirements for Wheat crop

Rainfall: Moderate rainfall is required e.g.200 – 500 mm.

Temperature: At the time of sowing 10 - 20 C
At the time of harvesting 25 - 30 C or above is much better.

Soil: Soil must be fertile i.e. Alluvial. Loamy or Clay.

Land: Must be flat and well drained.

Sunshine: (For warmth, ripening and photosynthesis).

Photograph of Wheat Crop.

Photograph of Wheat Crop

Wheat Crop As a System

Inputs	Processes	Outputs
Natural / Physical use	e.g.	**Wheat** **For home**
Land	Ploughing	**and for sale.**
Soil	Sowing	
Climate (Temperature & Rain)	Irrigation	
Sun shine	Fertilizing	
Human Factors	Weeding	
Capital	Harvesting	
Machines / Mechanization	Threshing	
Fertilizers		
Labor (skilled)		
Knowledge (modern)		
Irrigation (Canals & tube well)		
High yielding varieties		
Pesticides & Insecticides		**Profit**

Profit invested back into farm.

Uses of Chaff

1. Used as a animal feed.
2. Mixing with mud used to cover the roofs of the houses.

High Yielding Varieties of Seeds:

1. Shahkhan 95.   **2. Wadnak 95.**   **3. Kohson 95.**   **4. Maxipak.**

Wheat producing Areas:

Punjab province
Faisalabad, Multan, Bahawalpur, Sialkot, Muzaffargarh, Jhang, Okara and Rahimyar khan.

In Potwar plateau rainfall is sufficient and has a rugged landscape that makes irrigation impossible. So wheat is grown on Barani land.

Sindh province
NausheroFeroz, Nawab shah, Khairpur, Ghotki,Sanghar, Mirpur Khas, Dady and Hyderabad.

Khyberpaktunkhan
Mardan, D.I. Khan, Peshawar, Charsadha, Swabi and Kohat.

Balochistan
Nasirabad, Jafarabad and Khuzdar.

Q.l. **State the natural inputs necessary for wheat production and for each explain it importance.**

Ans. **1**. Flat land. (Should be flat, easy use of machine, easy irrigation).

2. Fertile soil (Loamy, clay or Alluvium). Provides nutrients. For good growth.

3. Temperature favorable at the time of sowing (**10 - 20 C**) and at the time of harvesting

(**25 -30 C** or above).

4. Rainfall (300 - 600 mm) moderate, for germination / growing / swelling the grain.

5. Sunshine (For warmth, ripening and photosynthesis).

6. Well drained soil – for root growth.

Q.2. **Explain how human inputs have contributed to the increase in wheat production.**

Ans. 1. Use of machinery (Tractor and other modern machinery).

2. Chemical fertilizer.

3. HYVs (Maxipak).

4. Modem means of irrigation (Canals & tubewell).

5. Pesticides and insecticides.-

6. Government loans.

7. Support prices.

8. Plant protection programmes.

9. Land reforms.

Q.3. **Why do farmers use high yielding varieties (Wheat)?**

Ans. 1. Gain maximum output.

2. Demand is increasing due to increase in population.

3. Pest resistance.

4. Fast growth.

5. Drought resistance.

6. Govt. encouragement.

Q.4   Why is wheat a Rabi crop?
Ans.   Requires mild temperature (10 - 20 C) at the time of sowing, dry season for harvest and temperature remains (25 - 30 C or above).
Rain (200 - 500 mm).

Study the bar chart, **Fig.1**, which shows the acreage of four crops grown in Pakistan from 1980 to 2000.
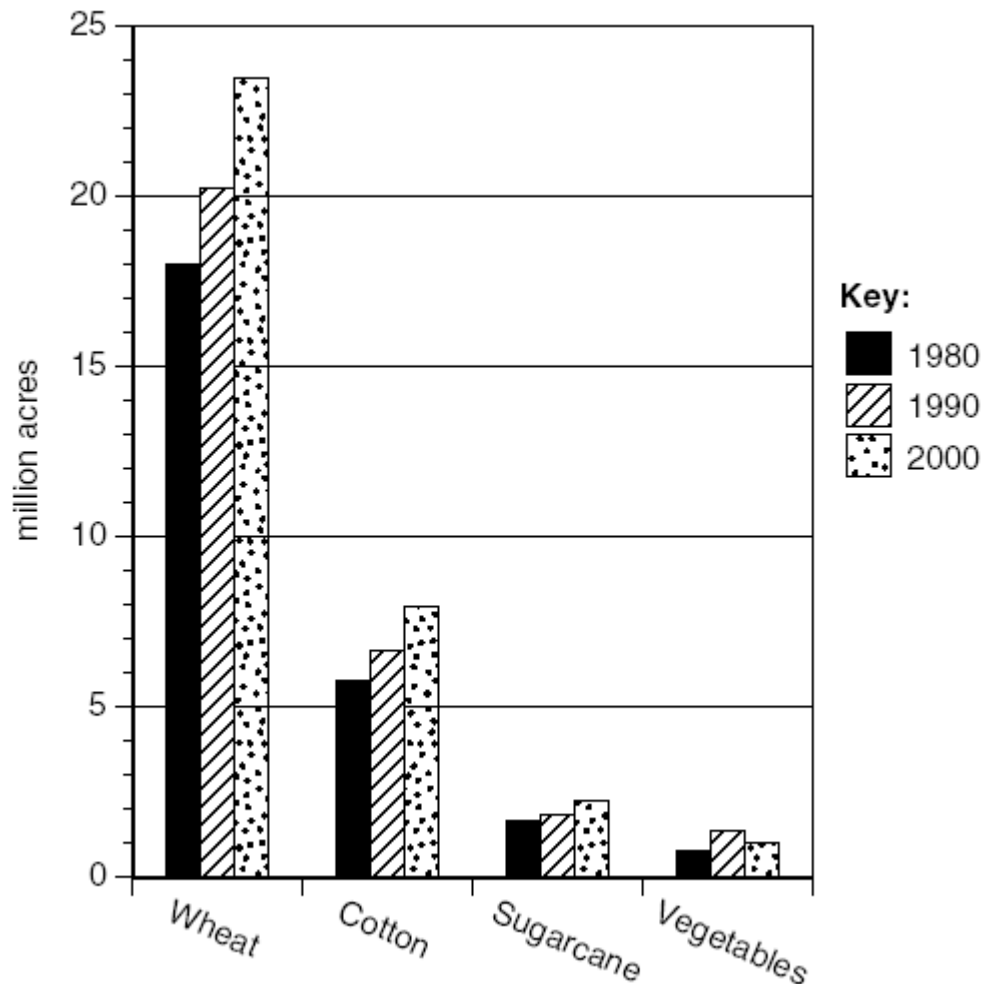

Fig.1

Q.5.   How many million acres if wheat were grown in 2000?
Ans.   23 – 24.

Q.6.   For which crop was there an increase in area from 1980 to 2000 by 2 million acres?
Ans.   Cotton.

Q.7.   Why is an increase in wheat production important?
Ans.   1. Increasing population.
2. Lack of food.
3. Decreasing imports.
4. Increasing exports to earn foreign exchange.

The graph, **Fig.2**, shows the expected water demands for 4 crops in Pakistan up to the year 2025, in million acre feet (MAF).
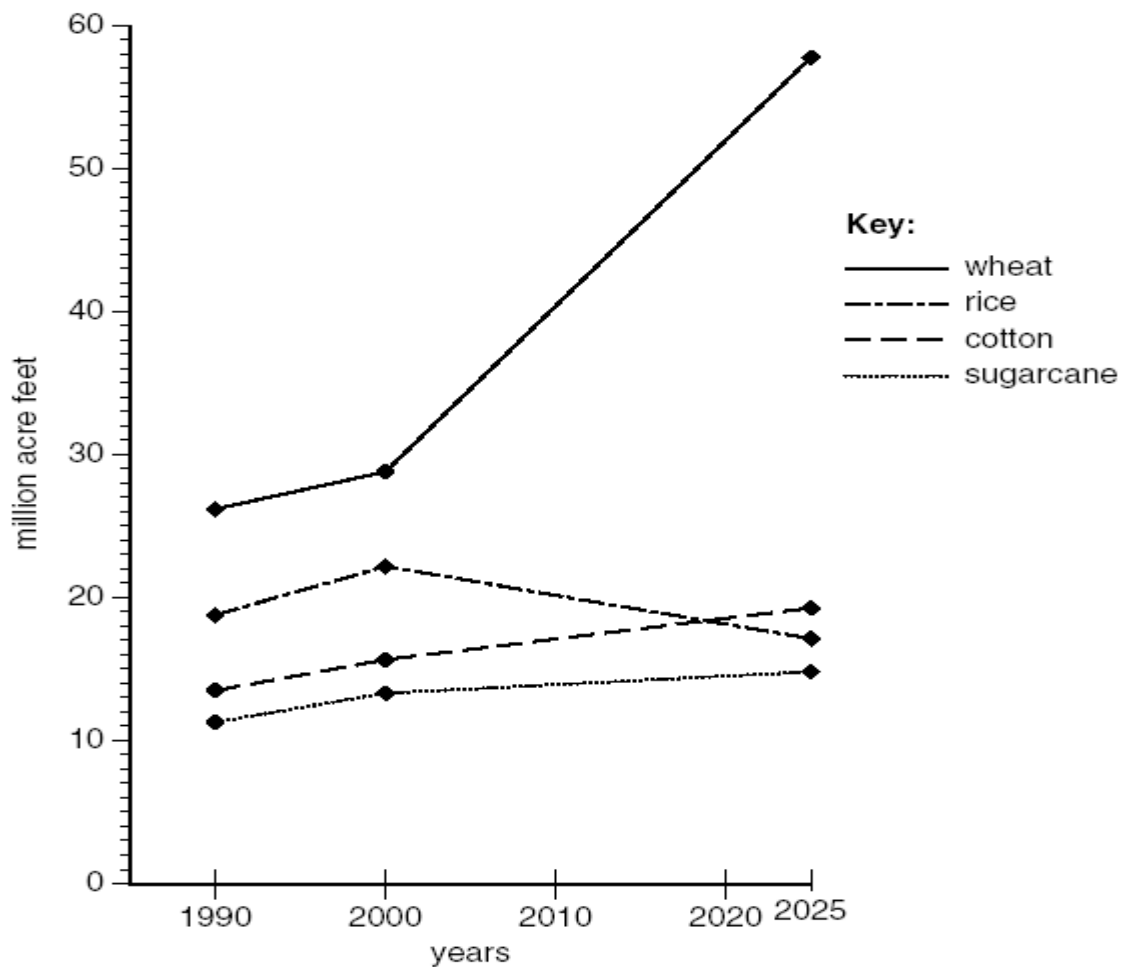

Fig.2

Q.8. **Which crop is expected to have a decrease in its water demand by 2025?**
Ans.   Rice.

Q.9. **By how many MAF (million acre feet) will the water demand for wheat expected to increase between 1990 and 2025?**
Ans.   **31 /** 30 – 34.

Q.10. **Why is an increase in water demand expected for wheat?**
Ans.   1. More wheat being grown due to growing population.
2. More desert areas being reclaimed.
3. More use of HYVs (Maxipak).
4. More use of chemical fertilizer.
5. More double cropping .

Q.11. **What is alluvial soil?**
Ans.   Silt / Loam deposited by river due to flooding, because it is full of nutrients or minerals.

Q.12. Explain why alluvial soil is good for crop growth.

Ans.   Fertile / contains nutrients e.g. nitrate / potash / phosphate.
Moisture retentive.
Replaced each year.
Not prone to waterlogging.

Study the climate graph, **Fig.3**, which shows the rainfall / snowfall and mean monthly temperatures in the valley.
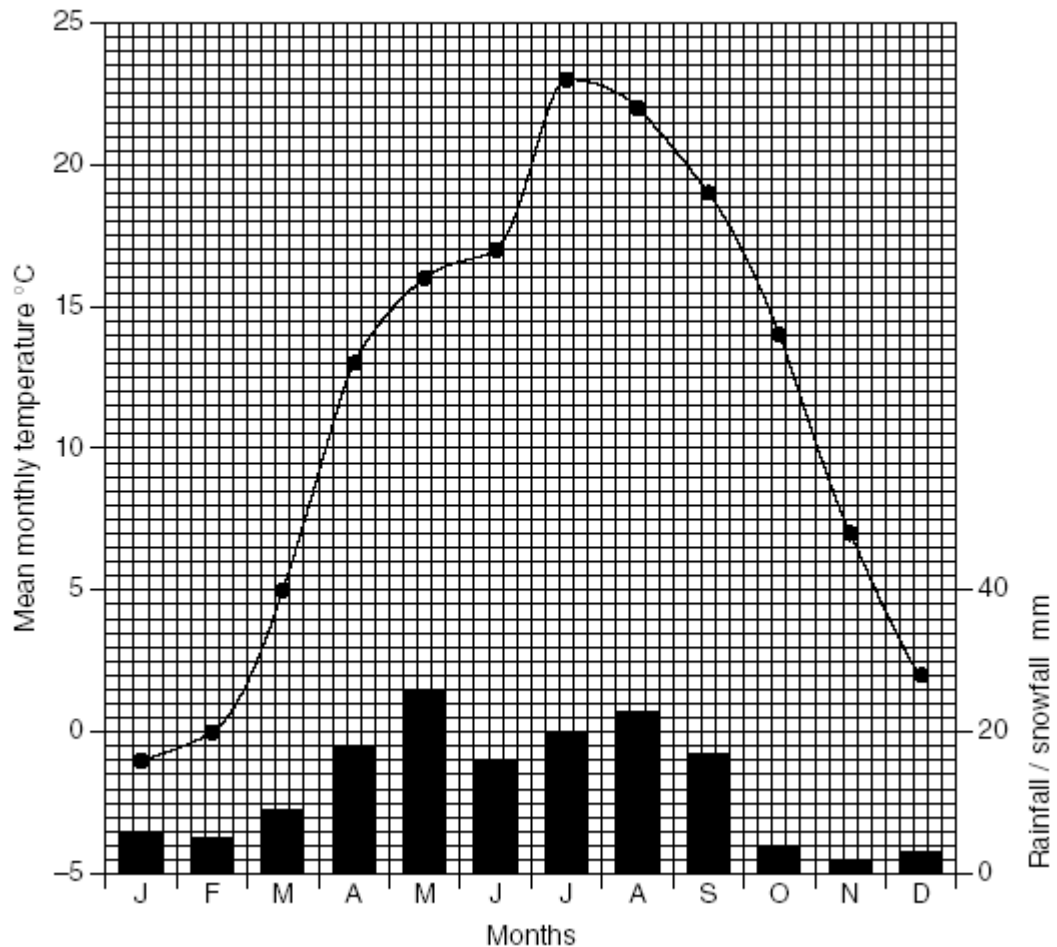

Fig.3

Q.13. The wheat is harvested about 6 months after it is sown. In which month is the wheat most likely to be sown here?

Ans.   April / May.

Q.14. Why is the climate in the months after it is sown good for the growth of wheat?

Ans.   Mild temperature 13 -23.
Warmer for ripening July 23 and August 22.
High / moderate rainfall 16 – 26 mms per month, light rain before harvest.
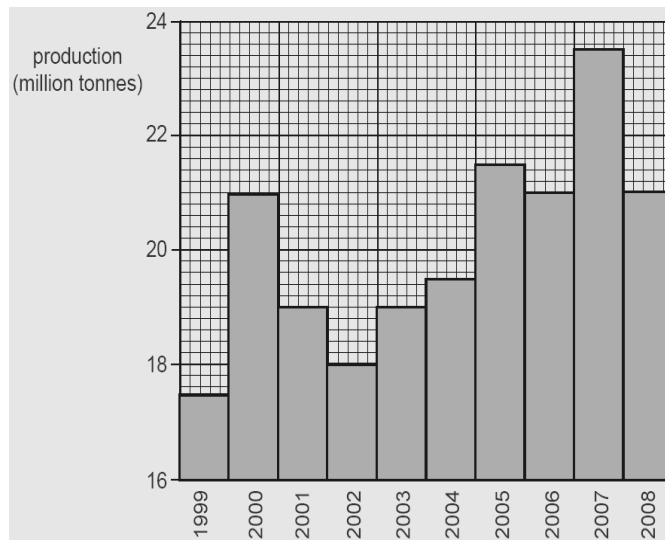Dry period for harvesting.

Fig.4

Study **Fig.4**, which shows wheat production.

Q.15. Compare this to the production of wheat in the years from 1999 to 2008.

Ans. Higher than in 1999
Same as 2000 / 2006

Q.16. Explain the reasons for the changes in production over these years.

Ans. Rainfall variability / drought
Floods / storm damage, poor irrigation
Pest attack, family sickness, wheat price
Reasons for overall increase e.g. HYVs
More fertilizer, training, mechanization
More population.

R i c e

Rice is a kharif and cash crop. It is important as foreign exchange is earned from its export. It is normally grown on the large scale for commercial purposes in Punjab and Sindh province. In northern hilly region this crop is cultivated on small scale (Small-scale subsistence farming) on terraced fields (Cultivation on steps of slopes). .

Rice seeds are initially sown into bed or nurseries. When the plant is about 9 inches high, then it is transplanted into the prepared fields which have been flooded to a depth of 6 - 9 inches.

The rice fields are kept full of water is then cleared off for harvesting to begin. Threshing of rice is done by draft animals or combine harvester. After threshing, rice is taken to the rice mills, for polishing and packing. Rice husks are used for making cardboard and covering the roofs of the houses after mixing with mud and water.

Rice Crop As a System

Inputs	Processes	Outputs

Natural / Physical
use

Land | Ploughing (Nursery) | **and for**

sale.

Soil | Sowing into (Nursery)
Climate (Temperature & Rain) | Irrigation
Sunshine | Transplanting

Human Factors
Fertilizing

Capital | Weeding
Machines / Mechanization | Harvesting
Fertilizers | Threshing
Labor (skilled)
Knowledge (modern)
Irrigation (Canals & tube well)
High yielding varieties
Pesticides & Insecticides   **Profit**

e.g.   **Rice**   **For home**

Profit invested back into farm.

Geographical Requirements for Rice Crop:

Land: Leveled ground is needed.

Soil: Alluvial soil is the best.

Temperature: 25 - 35C is needed at the time of sowing and same temperature is needed at the time of cutting.

Rainfall: Heavy rainfall at least 1270 mms but over 2000 mms is ideal and plenty of rain during 4 - 6 months is essential. .

Sunshine   (For warmth, ripening and photosynthesis).

High Yielding Varieties of seeds (Rice)

1. Irripak   2. Basmati

Photograph of Rice Crop.

Photograph of Rice Crop

Rice production Areas:

Punjab Province
Sialkot, Gujninwala, Sheikhupura, Jhang, Faisalabad, T.T.Singh, Gujrat, Kasoor and Okara.

Sindh Province
Larkana, Shikarpur, Dadu, Badin and Thatta.

Khyberpaktunkhan
Dir, Peshawar, Mardan, Swabi, Kohat, D.I.Khan.

Balochistan Province
Jafarabad. Nasirabad

Q.l.   Explain why the cultivation of rice is labor intensive?
Ans.   Nursery for seed.
Repairing bunds for water.
Prepare fields by ploughing.
Irrigation.
Transplanting.
Fertilizer for nutrients.
Pesticides to kill pests.
Cutting / harvesting.

Q.2.   Why is rice not grown in areas which on1y practice barani farming?
Ans.   Requires over 1275mms rainfall (in growing season).
Prefers over 2000mms rainfall.
Not enough rain for flooding fields.
No where in Pakistan has this amount of rainfall (in growing season).

Q.3. **Choose two or more human inputs and explain how these can improve rice yields.**

Ans. **Fertilizer**: Better than cow dung, provides nutrients.
Knowledge: Better cultivation methods, management, skills for machinery.
Irrigation: Enough water, at the correct time, fills the gap of rainfall.
Pesticides: Kills pests, used at correct time.
Seeds: HYV s, new strains developed to increase yield, grow faster.

Q.4 **Explain how physical inputs can increase rice yields.**

Ans. **Soil:**. Best clay i.e. alluvial, loamy or clay, provide nutrients, needs water retention and can be drained.
Rain:. Needs 1270 mms to 2000mms at the correct time of the year, at start of monsoon, none during harvest.
Sunshine:. For warmth, ripening, photosynthesis.

Q.5. **Why do farmers use high yielding varieties (Irripak)?**

Ans. 1. Gain maximum output.
2. Demand is increasing due to increase in population.
3. Pest resistance.
4. Fast growth.
5. Drought resistance.
6. Govt. encouragement.

Q.6. **Why is Rice a Kharif crop?**

Ans. Requires warm temperature (20 - 30 C) at the time of sowing & harvesting is needed.
Dry season for harvest.
Monsoon rain for growth I flooding fields (1270 - 2000 mms).

Q.7. **Why is an increase in rice production important?**

Ans. 1. Increasing population.
2. Lack of food.
3. Decreasing imports.
4. Increasing exports to earn foreign exchange.

Q.8. **Explain how canal irrigation is used and controlled to grow rice.**

Ans. From river/ reservoir / dam / barrages,
Closed or opened by gate,
Field flooded in preparation / for nursery beds,
Kept flooded during transplanting and growth,
To a depth of about 30-37 cm / 12-15 inches
Drained before harvest.

Q.9. **Explain how rice is grown on small-scale farms in Pakistan.**

Ans. Manual labor / little machinery / hand tools,
Animal / draft power,
Seeds planted in nurseries,
Transplanted into flooded fields,
Care during growth – weeds, pests, maintaining water level,
Water drained before harvest.

<u>C o t t o n</u>

Cotton 'the king of fibre' or 'silver fibre' and most widely used in textile industry. It is used for
making cloths, bed linen and furnishing fabrics. Cotton is a kharif crop, sown in April - May and its picking done in September, October and November.

Cotton seeds are sown at a distance of 30 cm to 40 cm in the months of April and May. One month later, the fields are irrigated and second irrigation takes place further after two months. Cotton bolls are ripen in dry months of September, October and November. The size of the cotton bolls depends on the variety of seeds and application of fertilizers. After picking, cotton bales are loaded on trucks immediately and transported to ginning mills, where the seeds are separated from lint. Cotton seeds are used as animal feed and oil is extracted from them. Cotton lint is tide up into bales for further processing in textile industry.

Photograph of Cotton Crop.

Cotton Crop As a System

Inputs	Processes	Outputs	
Natural / Physical	e.g.	**Cotton**	**For sale**
Land	Ploughing		
Soil	Sowing		
Climate (Temperature & Rain)	Irrigation		
Sunshine	Fertilizing		
Human Factors	Weeding		
Capital	Picking		
Machines / Mechanization			
Fertilizers			
Cotton Picking Machine			
Labor (skilled)			
Knowledge (modern)			
Irrigation (Canals & tube well)			
High yielding varieties			
Pesticides & Insecticides		**Profit**	

Profit invested back into farm.

Geographical Requirements for Cotton Crop

Temperature: At the time of sowing 25 C - 35 C and same temperature at picking, with dry and sunny days. Cotton is sensitive to frost.

Rainfall: showers, Ample rainfall is preferred, i.e. 1000 mms, coming in frequent

with sunny periods. Rain at picking spoils the bolls from which the lint is extracted.

Soil: Loamy / Alluvial soil is the best.

Land: Level land is required.

Sunshine For warmth, ripening and photosynthesis.

High Yielding Varieties of Seeds (Cotton)

1. Nayab 78.   **2. Karishma.**   **3. B. 557.**   **4. 149 F.**

Old Varieties:

1. Pak upland and
2. Desi.

Areas of Cotton production:

Punjab Province

Khanewal. Sahiwal. Vehari.MuJtan.BahawafuagaF;-Bahawaipur. Muzatfargarh. RY.Khan.
MInor Areas: Faisalabad. Jhang. Sargodha. Leiah. Kasur. Okara. T.T.Singh. D.G.Khan.
Bhakkar. Mianwali.

Sindh Province

Nausheroferoz. Nawabshah. Sanghar.
Ghotki. Sukkur. Khairpur. Dadu. Hyderabad. Mirpur Khas. Badin .

Climatic Hazards: (Problems)

Cold Temperature / Frost can kill plants.
Rain can damages cotton boll before picking.
Floods can wash crops away / soil erosion.
Thunder storms / cyclones - damages to crops / soil erosion.
Drought can reduce growth, kill young plants.

Other Factors: (Problems)

Virus / Pests / Diseases e.g. Leaf-curl virus.
Lack of irrigation water.
Waterlogging and salinity.
Drop in demand.
Loss of fertility.

Q.1. **Explain why cotton-is grown in Punjab / Sindh Provinces.**
Ans. High summer temperature i.e. 25 - 35 C. .
Not too cold / No temperature below freezing point.
Some rainfall in April and May.
Rainfall increases in July and August for better growth.
Little rain; dry on October; November for ripening and harvesting.
Alluvial soil; Loamy soil.
Moisture retentive.
Flat land.
Good irrigation facilities.
Good roads; infrastructure.
Access to capital.

Q.2. **Why is much smaller increase in water demand expected for cotton?**
Ans. Less land suitable for cotton; too wet in north.
Fertile soil needed - fertilizers expensive.
Fluctuating export demands due to competition.
Fluctuating prices.
Land changing to wheat cultivation.
Cotton not needed for food.
Cotton cultivation expanding more slowly than wheat / other crops.

Photograph of Cotton Crop.

Photograph of Cotton Crop
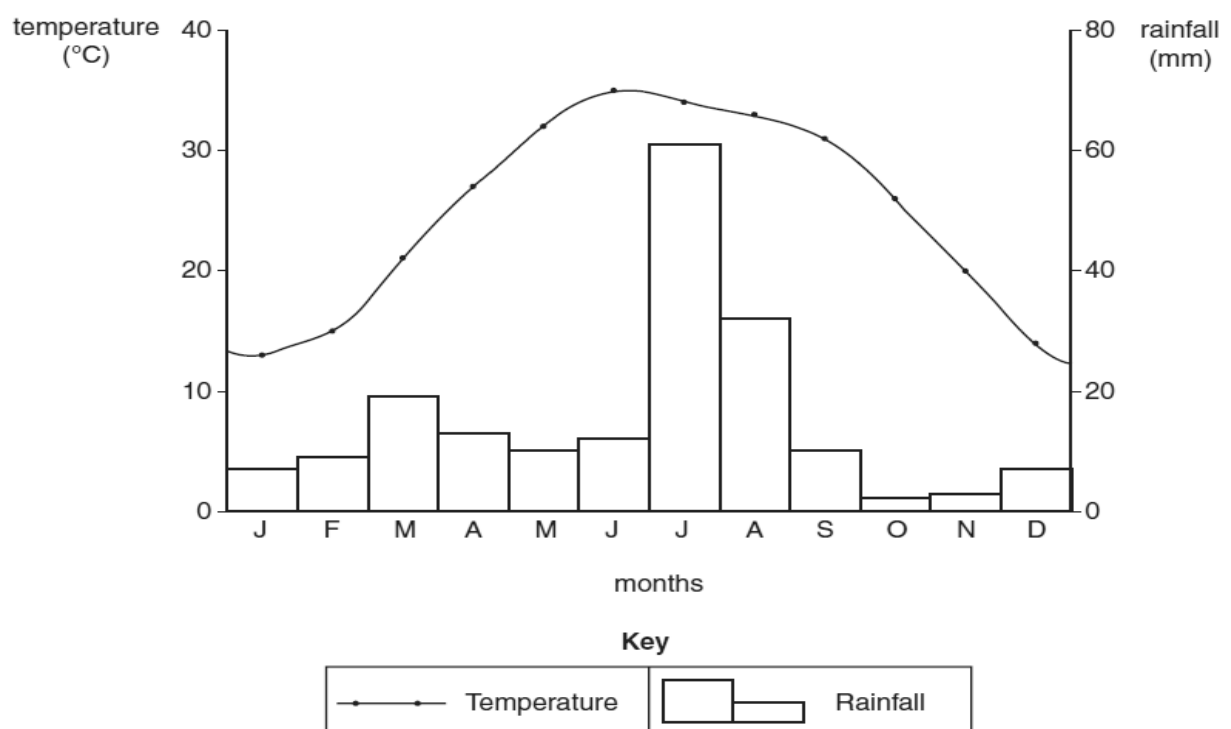
Study **Fig.4**, which shows the climate of Multan.

Fig.4

Q.3. **Explain why cotton is grown in this part of the Punjab. Refer to Fig.4 in your answer.**

Ans. Summer temperatures over 30 / May – September 32 – 31 and rises to 35 in June.
Some rain in April-May for sowing / 15-18mms.
Rainfall increases in July-August for growth.
Little rain / dry on October-November for ripening and picking.
Other Factors
Alluvial soil, Flat land, Good Irrigation system, Access to capital.
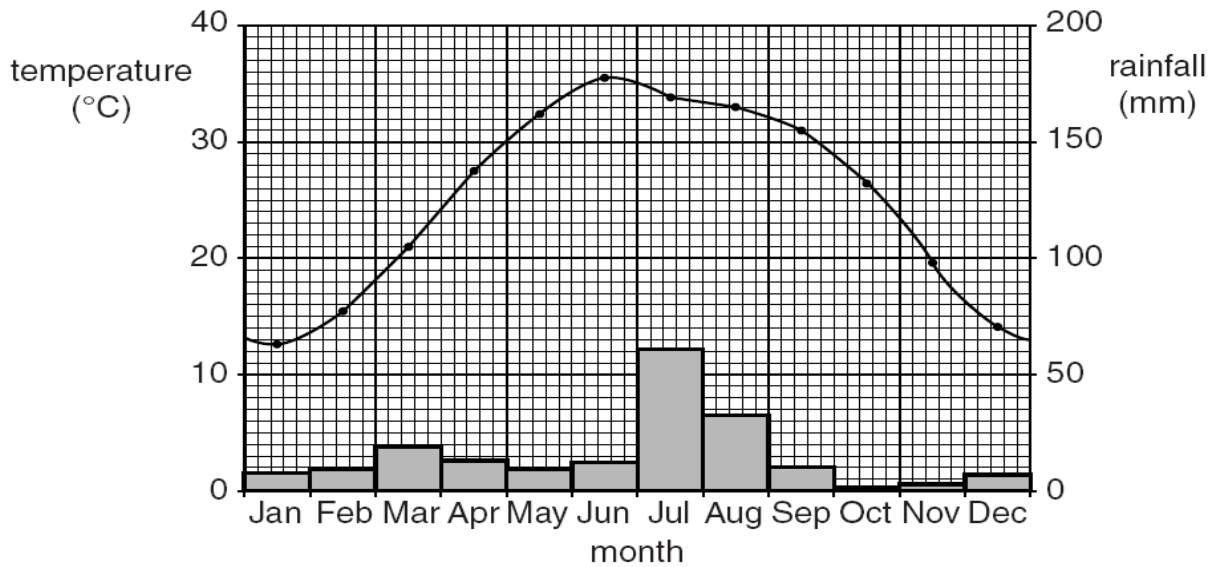
Study **Fig.5**, which shows the climate of Multan.

Fig.5

Q.4. **Cotton is the major cash crop grown in Pakistan. Label on Fig.5:**
The month of sowing
The months of growth
The month of harvest
Ans. April and / or May
June to September
October and / or November.

Q.5. **Explain why the months you have marked for growth have the best climatic conditions for cotton.**
Ans. Temperature above 25 C
Mild night temperature / no frost
Less rain for harvest
1000 mm rainfall.

Q.6. **Why is cotton not grown further north?**
Ans. Too cold (in summer / growing period), sensitive to frost, poor soil
Rain / too wet during harvest, steep slopes / no flat land
Remote / long way from factories.

Q.7. **Why is cotton not grown further west?**
Ans. Too dry / lack of rainfall (for growth)
Lack of irrigation canals, too cold (in growing period)
Poor soil / infertile, steep slopes / no flat land,
Remote area.

Study **Fig.6**, which shows the amount of cotton produced and the area used for this in Pakistan.
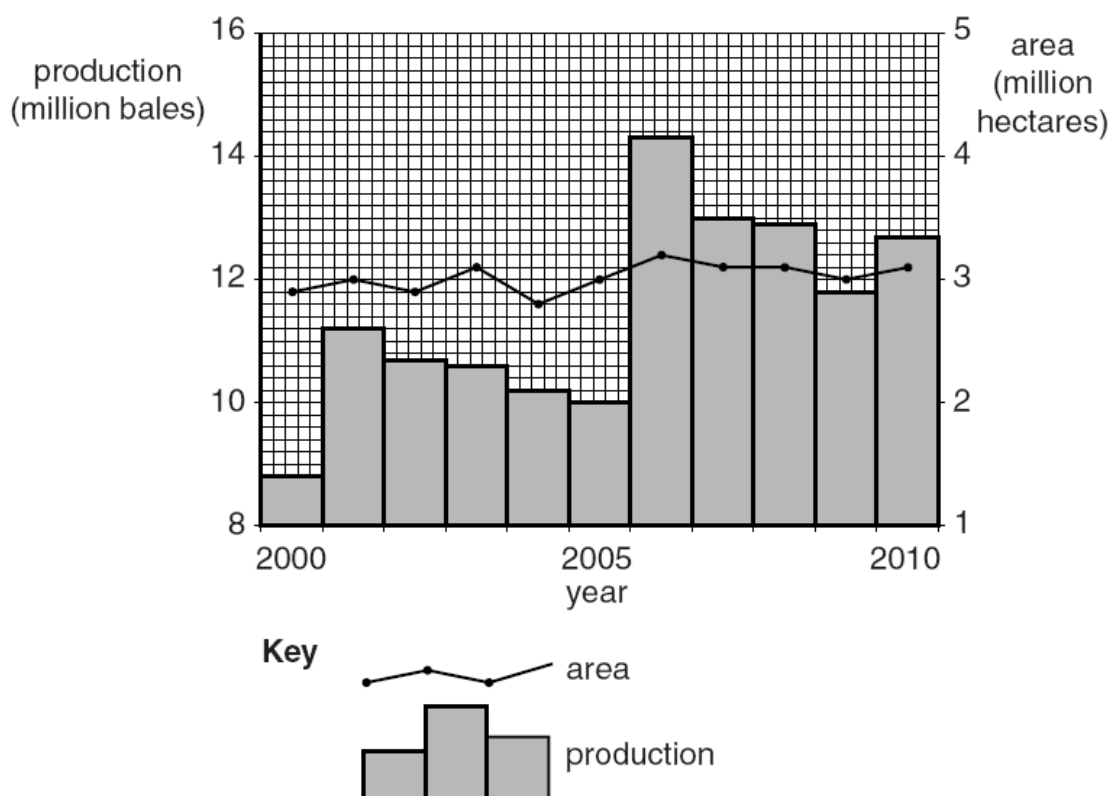

Fig.6

Q.6. **Compare the change in cotton production with the change in area of land used between 2000 and 2010.**

Ans. Production varies more
Area changes by 0.4 m.ha, production by 5.5 m bales
Both increase in 2006.

Q.7. **How can the government help farmers to grow more cotton?**

Ans. Education
Training
Advertising
Loans
Machinery on lease
Land consolidation.

Sugar - cane

Sugar cane is most important kharif and cash crop. It is used primarily in the preparation of White sugar, Brown sugar and Gur.

After the preparation of land sugar cane stalks, 30 cm high are planted in April and May. A distance of 30 cm is kept between each stalk. The quality and height of this crop depends on the frequency of irrigation and application of fertilizer, especially potash. If the land is well irrigated then the plants rise up to the height of 6 - 8 feet and the crop can be rattooned and so

harvested for 2 -3 successive years. After the sugar cane is harvested, it sends up new shoots called rattoon which are left to grow.

Cutting of this crop requires manual labour. After cutting the crop, it is immediately transported to the sugar mills located near the sugar-cane fields. If the transportation of the sugar-cane is slightly delayed, the sugar content is reduced and starts losing weight.

Geographical Requirements for Sugar-cane Crop

Temperature: Required 25 - 35 C

Rainfall: Heavy rainfall is needed i.e. 1500 mm.

Soil: Alluvial, Loamy and Clay.

Land: Level land is needed.

Photograph of Sugar Cane Crop

Photograph of Sugar cane Crop

Sugar – cane crop As a System

Inputs   ## Processes   ## Outputs

Natural / Physical   e.g.   Sugar-cane   **For sale.**
Land   Ploughing
Soil   Sowing
Climate (Temperature & Rain) Irrigation
Sunshine   Fertilizing
Human Factors   Weeding
Capital   Harvesting
Machines / Mechanization   Transporting
Fertilizers
Labor (skilled & unskilled)
Knowledge (modern)
Irrigation (Canals & tubewell)
High yielding varieties
Pesticides & Insecticides   **Profit**

By Products
Bagasse

Profit invested back into farm.

High Yielding Varieties of Seeds (Sugar-cane)

HSF.240.   HS.12.
CPS.237, 234.   BL.4.
CP.77,400.   NSH 555, 311.
BF. 162.   COL 54

Sugar - cane Producing areas

East Central Punjab: Faisalabad. Sargodha. Jhang. Kasur.
Sindh Province: Hyderabad and Badin.
Khyberpakhtunkhan: Peshawar. Mardan. Charsada.

Q.1. **Explain why it is important to increase the production of sugar and other agricultural products in Pakistan?**

Ans.   Increasing population.
Need for better food production.
Higher incomes (for farmers and business).
Increase exports / earn foreign exchange.
Reduce imports / improve balance of payment.
Provides employment in sugar industry.
By-products e.g. Bagasse for fuel.

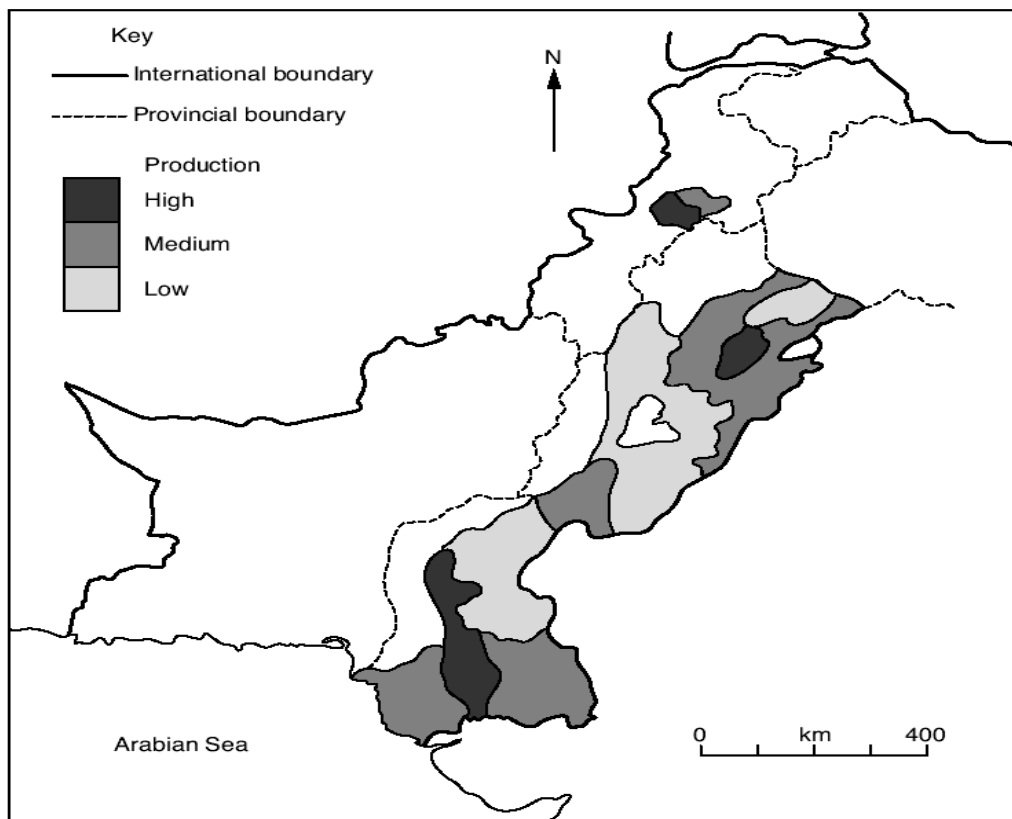Study **Fig.7**, a map showing the distribution of sugar cane farming.

Fig.7

Q.2. **Describe the distribution of high sugar-cane production areas**.
Ans.   Peshawar district, NW of KPK, Faisalabad district, Central Punjab, Central Sindh.

Q.3. **Why are these areas suitable for the cultivation of sugar-cane?**
Ans.   Temperature remains 25-35C
Irrigation to make up for shortage of rainfall 1520 mm
Alluvial soil, Fertilizer factories
Good road system.

Q.4. **Describe the climate and soil conditions needed for growing sugar-cane.**
Ans.   **Climate**:   Temperature 25 – 35 C / warm / hot
Rainfall at least 1500 mm / over 1500 mm per year

Soil: Loamy soil best,
Rich in nutrients e.g. alluvial,
Rich in nitrogen / phosphates / potash,
Allow infiltration / drainage of excess water.

Q.5. **Name a cash crop grown in Pakistan. Explain the advantages and disadvantages of increasing its cultivation.**

Ans.　**Cotton, Rice, Wheat, Tobacco, oilseeds, Sugar-cane**.

Advantages:	Increased – farm income, exports, GDP, raw materials for manufacturing industries, production of manufactured / processed goods. reduction in imports, more jobs.
Disadvantages:	Less food crops grown, high cost of machinery / HYVs / irrigation,
	Lack of land, machinery, skilled farmers, water, Greater losses if diseases / storms / floods occur, Water pollution from pesticides / fertilizers.

M a i z e (Corn)

It is a food grain as well as a raw material for edible oil production. It is used in the manufacture of custard powder and other processed food. It is also used as fodder for animals and poultry. Maize is grown as a Kharif crop and sown twice a year, i.e. (February to October).

(a) Spring Crop　(February to March) and harvested after two months.
(b) Summer Crop　(June to July) and harvested after two months.

Maize Crop As a System

Inputs	**Processes**	**Outputs**
Natural / Physical sale.	e.g.	Maize / Corn　**For**
Land	Ploughing	
Soil	Sowing	
Climate (Temperature & Rain)	Irrigation	
Sunshine	Fertilizing	
Human Factors	Weeding	
Capital	Harvesting	
Machines / Mechanization	Transporting	
Fertilizers		
Labor (skilled & unskilled)		
Knowledge (modern)		
Irrigation (Canals & tubewells)		
HYVs (Hybrid varieties)		
Pesticides & Insecticides		**Profit**

Profit invested back into farm.

Photograph of Maize Crop

Photograph of Maize Crop

Geographical Requirements for Maize Crop

Temperature: Required temperature 20 - 30 C at the time of sowing and at the time of harvesting same temperature is needed.

Rainfall: 50 mms to 500 mms.

Soil: Loamy soil is the best.

Land: Level land is the best.

Maize Producing areas:

Punjab Province:

Sargodha. Faisalabad. Jhang. T.T. Singh. Sahiwal. Okara. Khanewal. Attock. Rawalpindi.

Khyberpakhtunkhan:

Manshera. Abbottabad. Mardan. Peshawar. Charsadha. Nowshera.

Fruit Farming

Fruit farming is a dynamic segment of Pakistan's agriculture and covers considerable part of human diet in Pakistan. It is a source of income for farmer and businessmen. Pakistan earns foreign exchange from the export of some fruits to abroad.

There are **two** types of fruits.
1. Tropical fruits.   **2. Temperate fruits**.

1. Tropical Fruits: These fruits are the following.

1. Citrus Fruits.   **2. Mangoes.**   **3. Dates.**   **4. Bananas**

1. Citrus Fruits

Oranges, Lemon and Tangerine. It needs warm to hot climate. These fruits grow all over the Pakistan, so important cities are the following.

Punjab: Sargodha. Faisalabad. T.T.Singh. Sahiwal. Okara. Khanewal. Layyah. R.Y.Khan.

Sindh: Khairpur. Nausharo Feroz.

NWFP.:   Nowshera. H~ipui. Swat. Dir. Malakand.

Balochistan: Turbat. Nasirabad.

2. Mangoes

Mangoes are tropical fruits that needs hot climate. Mangoes grow in Punjab and Sindh provinces, important cities are the following.

Puinjab: Multan. Vehari. Muzafargarh. Khanewal. R.Y.Khan. Faisalabad. Jhang. Okara. **Sindh**:   Khairpur. Nawabshah. Mirpur Khas. Sanghar. Hyderabad. Naushero Feroz.Badin.

3. Dates

Dates are tropical fruits. They are important in oasis (an area in the desert where there is water and where plants grow) like Miri and Sharak near Turbat in Kech Valley. In Khairpur District the large areas are devoted to dates. Dates need hot climate.

4. <u>Bananas</u>

Bananas need hot climate and grow in all over the Pakistan. Main cities are the Following.

Punjab: Sahiwal. Faisalabad. Pakpattan and R.Y.Khan.

Sindh: Khairpur. Nawabshah. Naushero Feroz. Sanghar. Mirpur Khas. Huderabad. Badin. Thatta.

NWFP: Bannu.

Balochistan: Lasbela.

2. <u>Temperate Fruits</u>: These fruits are the following.

1. Apple.   2. Apricot.   3. Almond.   4. Grapes.

1. <u>Apple</u>

Apple needs cool climate and grow in cool hilly areas of Pakistan. Apples grow in the following cities.

Punjab: Rawalpindi.

NWFP: Manshera. Abbottabad. Swat. Dir. Chitral.

Baluchistan: Quetta. Pishin. Zhob. Ziarat. Kalat. Loralai.

2. <u>Apricot</u>

Apricot also grow in the same season and in same areas as above.

3. <u>Almond</u>

Almonds also grow in the same season and in same areas as above.

4. <u>Grapes</u>

Grapes need winter rain climate and grow twice time a year when the temperature is mild. Grapes grow in Quetta Chaman region.

<u>Importance / Advantages of Fruits</u>

1. Demand increasing due to increase in population.
2. Export to Gulf States and earn foreign exchange.
3: Extra income to farmer and Businessmen.
4. Used in food processing industries for the preparation of juices. e.g. Juices, Jam, Squashes.
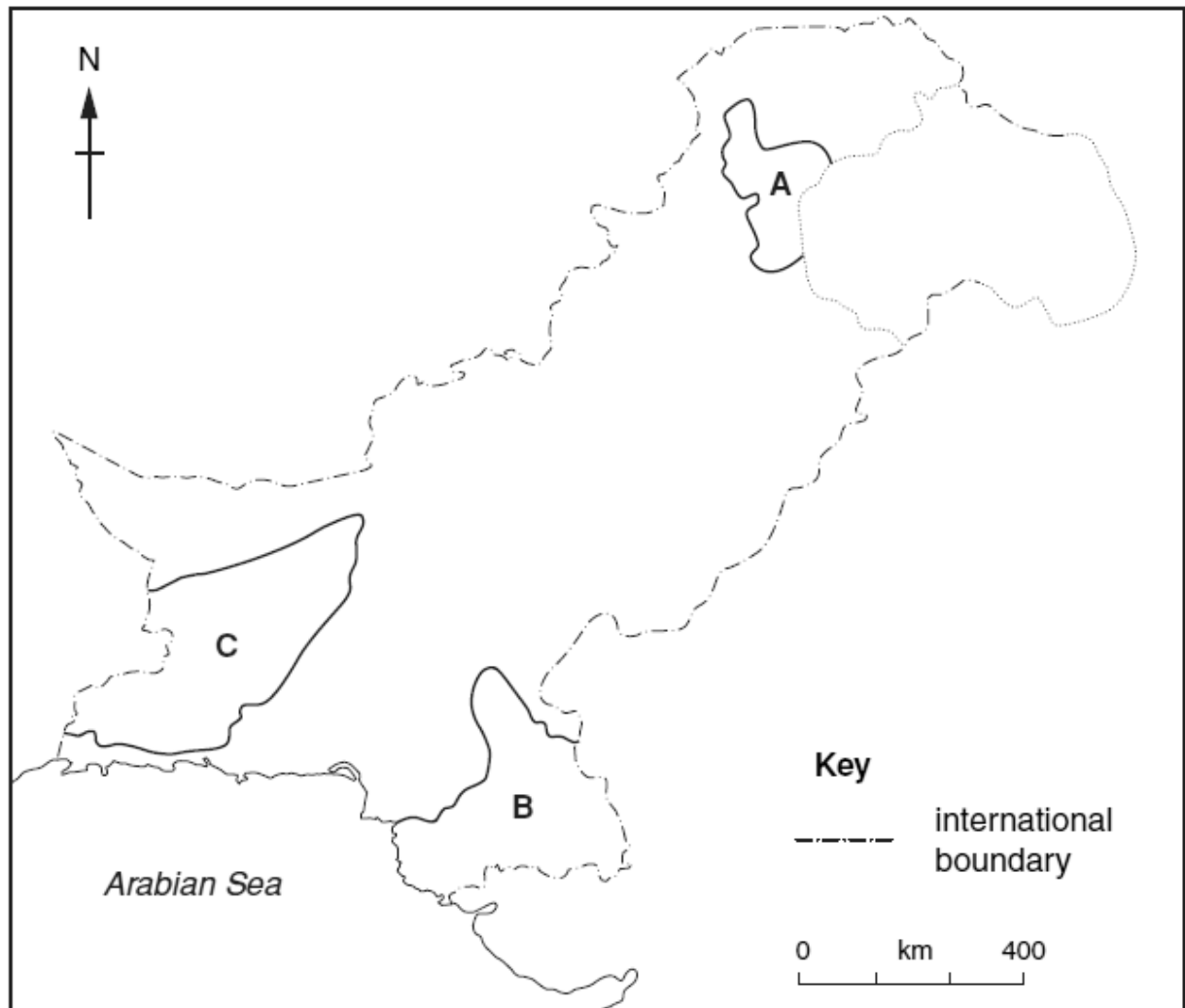**5**. Balance diet / source of vitamins.

Study **Fig.8** a map of Pakistan.

Fig.8

Q.1. **Name the two main fruit crops grown in area A**.
Ans. Apples, Apricots. Almonds.

Q.2. **Why are fruit crops grown in mountain valleys / Indus plain?**
Ans. Flat land.
Fertile soil.
Sunshine.
Rain / less snow.
Warmth.
Good transport. Irrigation facilities (plain areas).
Q.3. **Name one of the main fruit crops grown in area B.**
Ans. Bananas, Mangoes, Citrus fruits.
Q.4. **Why are fruit crops grown in this area?**
Ans. Monsoon / summer rainfall
Mild winter temperature / above 15 C
Irrigation (from River Indus).

Q.5. **Why are fruit crops grown mainly for local use?**
Ans. Perishable.
Small amount /not of export quality.
Heavy to transport.

Q.6. **Name one of the main fruit crops grown in area C.**
Ans. Date palms.

Q.7. **Name other types of crop grown in area C.**
Ans. Millet, Barley, Maize, Pulses, Tobacco, Vegetables.

Q.8. **How is crop growth improved by the date palms nearby?**
Ans. Shelter from winds / windbreak.
Shade from / sun / reduce evapotranspiration.

Q.9. **Explain how karez irrigation helps date palms to grow in the oases of area C**.
Ans. Provides water for irrigation
Underground canals
Reduces evaporation
More rain on mountains / higher slopes

Barani farming / Crop

Crops grown without irrigation / grown in rainy season. e.g. Potwar plateau.
Farmers cultivate the following crops:
Wheat. Barely. Groundnuts. Millet / bajra. Pulses / gram / mash/ masoor / moong.
Jowar. Oil seed / rape / mustard. Maize.

Characteristics (of barani farming)

Depends on rainfall / rain-fed area.
Field size varies considerably / small / large fields.
Ploughing after / if rain falls.
Farmers too poor to own tractors / lack of machines / traditional methods.
Use of animal dung / no fertilizer.
Some years rainfall is insufficient / crops fail.
Low yields.
Often sheep / goats reared as alternative source of food / income.
Family labour.

Q.1. **Describe the methods of cultivation of wheat on barani (rain-fed) lands.**
Ans. When the rain falls
Preparation of land / ploughing.
Seed sown.
In winter / October – November.
Use of fertilizer / dung.
Harvested when ripe after 3 – 6 months.
Allow leveling of land / terracing.
Allowing collection of rainfall in ponds / tanks.
Weed control / weeding / hoeing.
Pest control / pesticides.

Q.2. **What reasons for the low farm incomes in barani areas?**

Ans. Lack of water.
Traditional farming methods give low yield.
Small farms so little mechanization.
Illiteracy / lack of education so no improvement.
Storms destroy the crops.
Little money to spend on better seed, fertilizer.
Poor climate so difficult to grow good crops.
Waterlogging and salinity reduces cultivable area / yield.
Lack of government support / investment.

Q.3. **Describe the barani method of wheat cultivation with reference to the temperatures and rainfall shown on Fig.9.**

Ans. Sown at beginning of winter / Oct –Dec
As rainfall increases 16-41mms
When temperatures are mild 4-19 C
Grain swells in March – April
With higher rainfall 88 – 107 mms
Crops ripens / is harvested in spring / April – May
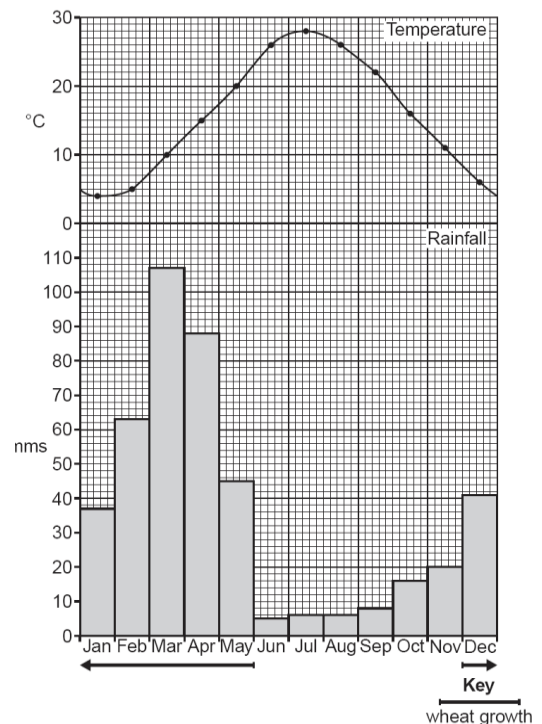When temperatures warmer 12 -23 C.

Fig.9

Q.4. **To what extent could government action increase agriculture production in Pakistan?**

Ans. **Possibilities:**
Improve education e.g. model farms, training centres, colleges
Loans e.g. for machinery, HYVs, fertilizer
Subsidies e.g. for imported machinery
More fertilizer / pesticides
More machinery factories or imports
Land reforms e.g. consolidation
Improve water availability e.g. reservoirs, canals
Cure of waterlogging and salinity e.g. SCARP
Weather forecasts, Media e.g. radio, TV.

Problems:
Lack of money, illiteracy, high population,
Fears of unemployment due to mechanisation
Land reforms may fail due to corruption.

Q.5. **To what extent can training and land reform be successful in increasing agricultural production?**

Ans. **Training:**
Better management / efficiency e.g. knowledge of weather, understanding of soils,
Better methods of cultivation, knowledge of diseases, better seeds use of HYVS,
Proper use of fertilizers and pesticides, use of machinery, better marketing,
Better money management / can get loans.

Livestock Farming

Keeping of animals called livestock farming.

Rearing animals is one of the oldest and most common occupations in Pakistan. Normally every village has its grazing fields, or '**Shamilat**' (Where cattle, goats and sheep are allowed to graze). In rural areas every family raise animals for domestic need and commercial purposes.

In Pakistan livestock farming is still in developing stage and in areas like, Cholistan, Thar desert, Baluchistan and some areas of KPK. Tribal and Northern areas, animal keeping is in nomadic form and it is at subsistence level, while in settled population areas, particularly in canal irrigated areas, every village family raise animals for their home needs (milk, meat, wool, manure and skins). Livestock farming can be divided into **two** types.

1. Subsistence livestock farming
2. Commercial livestock farming

1. Subsistence livestock farming

In this farming, animals are reared to be consumed by the people who rear them. There are three types of subsistence livestock farming.

Subsistence Livestock Farming As a System

Inputs	Processes	Outputs	
Natural grazing fields for food.	Natural Breeding.	Milk.	
Water from ponds and lakes. the	Feeding.	Meat.	For
			use of
Open land. Family.	Milking manually.	Wool.	
Labor (family members). Women and children.	Slaughtering. Shearing wool from sheep.	Eggs.	

Photograph of Natural Grazing Fields.

Photograph of Natural Grazing Fields

There are **three** types of subsistence livestock farming.

i. <u>Subsistence Livestock Farming by Nomadic People</u>

Movement of the people from one place to another place with their animals in search of food and water several time of the year.

In many under developed areas of Pakistan, people live nomadic life and their subsistence is in animal keeping. Due to harsh cold dry or hot dry climate agriculture, in vast areas of Baluchistan, Thar desert, Cholistan and Thal desert in not possible. People raise animals and move from place to place in search of food and water along with their animals. Normally they rear sheep, goat, cattle and camels. Sheep and goats provide them food in the form of meat and milk and camel carry their loads for long distance. People sell a few animals for their clothing and other needs of daily use.

Q.1.   **Name the animals that are reared by nomads**.
Ans.   Goats. Sheep. Cattle. Camels.

Q.2.   **Explain the importance of their livestock to the nomads.**
Ans.   Food-milk, meat, butter etc.
             Clothing - wool, hides etc.
             Income / for selling.
             Transport
             Tents / shelter
             Wealth.

Q.3. **Describe the nomadic method of farming.**
Ans. Moving / settle for a few weeks.
In search of water.
In search of food / pasture.
Subsistence farming.

Q.4. **Explain the reasons for it being nomadic.**
Ans. Pastures exhausted.
Water source dries up.
Move in search of water / food.
High pastures covered by snow in winter.
Highland pastures do not grow in winter.
Animals driven to market. etc.

Q.5. **Why are there many nomadic farmers in Balochistan?**
Ans. Shortage of / to search for grazing / food.
Shortage of / to search for water.
Agriculture / cultivation / crop growth difficult or impossible.
Low population.

Q.6. **What are the advantages and disadvantages of keeping animals in a nomadic way?**
Ans. <u>**Advantages**</u>
Source of income, source of food
Dung for soil
Sheep and goats eat poor quality grass.
Low cost / free, In areas of poor soil / land

<u>**Disadvantages**</u>
Overgrazing / soil erosion
Low incomes, animals may die, difficult to improve
Lack of veterinary care / diseases spreads easily
Poor breeding.

ii. <u>Subsistence Livestock Farming by Settled People</u>

People reside permanently in one place and keep animals (Buffaloes and Cattle).

Subsistence farming is also practiced in the villages of canal-irrigated areas of Punjab, Sindh and KPK. They keep few animals with their agriculture practice, Buffaloes and Cattle are raised for ploughing, transport of agricultural goods, milk, meat and skins. They process milk to make butter or ghee, while sheep and goats are raised for milk, meat, wool, skins and poultry for meat and eggs. These animals provide manure to fertilize the fields and dung cakes are used for cooking and other fuel purposes. Some people sell animals, milk and ghee for other necessities of life.

iii. <u>Transhumance / Semi Nomadic</u>

Seasonal movement to higher pastures in mountains in summer and return in winter.

Transhumance is the system of livestock farming in which the animals are kept on pastures high up in the mountains in summer and brought down to lower pastures in winter. In areas with severe winters at lower levels, the animals are often kept in sheds. Goats, sheep and cattle are the main animals framed in this way. Meat, dairy products and wool are the main outputs all of which may be sold if there is any excess over subsistence needs.

Q.l. **Describe the method of farming called 'transhumance' which is used in areas such as the Hunza.**

Ans. Seasonal movement.
They keep Goats, Sheep and cattle.
Move to higher slopes in summer / to summer pastures.
Move to find food and water.
Get Milk, Meat. Wool and Skins.
Stay in valleys in winter / permanent homes in valley.
Animals kept in sheds in winter.
Storage of food crops.

Q.2. **What are the advantages and disadvantages of these types of livestock farming in <u>either</u> mountain <u>or</u> desert areas?**

Ans. <u>Advantages</u>
Access to good pasture
Low cost / free, In areas of poor soil / land
Source of income e.g. goods to sell, source of food
Dung for fertile soil, camels adapted to desert
Sheep and goats eat poor quality grass.

<u>Disadvantages</u>
Need to move about / no permanent home
Poor quality animals / difficult to be commercial / cannot keep buffalo
Lack of water in desert, Lack of vets in both areas
Overgrazing only in desert.

<u>Commercial Livestock Farming</u>

In this farming animals are reared for sale.

Commercial livestock farming is practiced on small scale by landless people (Private owners) and on large scale by government owned or military farms, but now some big landlords are practicing commercial livestock farms and this trend is increasing rapidly. However, the bulk of meat, milk, skins and other livestock products (wool, ghee) are still supplied by small-scale private owners. Around all our urban settlements, people keep buffaloes and cows, to supply milk to city people. Such dairy farms kept on vacant plots and often lacking appropriate drainage or water supplies. Food has to be brought in, from the nearest crop growing area, by lorries. A valuable by-products, cattle dung is collected and dried in circular cakes, plastered on convenient walls and sold to the market, to be used as manure or domestic fuel.

Commercial Livestock Farming As a System:

Inputs	Processes	Outputs
Farm with animals sheds.	Feeding.	Milk.
Ponds and fodder rooms. **Sale**.	Breeding.	Meat. **For**
Processed food with nutrients.	Milking by suction machines.	Eggs.
Specialized labor.	Extracting hides and wool.	Hides.
Veterinary facilities.	Preserving with refrigerator Facilities.	
Storage and processing facilities for animal products. **Profit**	Packing on same farms.	

Profit invested back into farm

Photograph of Commercial Livestock Farming.

Photograph of Commercial Livestock Farming

Importance / Advantages of Livestock Farming

1. Draft power in the traditional fields.
2. Supply of nutritious food for the people (milk, butter, ghee, cheese, eggs, meat).
3. Raw material for domestic industry e.g. leather, mille
4. Export of livestock product.
5. Contributes **10 %** to G.D.P.
6. Provide employment opportunities.
7. Provision of natural manure (cow dung).

Problems of Livestock Farming

1. Lack of grazing grounds for cattle and sheep lead to overgrazing.
2. High prices of animal feed.
3. Inefficient marketing system of milk and other products leads to less profit and low investment in inputs.
4. Gap in price of livestock products in rural and urban areas.
5. Inadequate facilities for storage of meat.
6. Few veterinary hospitals & vaccination facilities.
7. Primitive breeding methods result in low quality animals.
8. Unhygienic conditions in animals husbandry lead to unhealthy animals.
9. Over grazing by sheep and goats causes soil erosion by wind.

Q.1. **How can livestock farming be improved in Pakistan?**
Ans. Capital/loans.
Selective / cross breeding.
Better feed.- for stronger, bigger animals.
More grazing land.- by irrigation, fertilize.
Control of diseases - e.g.
Research - diseases, breeding, feed.
Vaccination - to improve health.
More medicines to treat animals.
Education / training for modern methods.
Better hygiene conditions.
Mechanization e.g. milking machine for hygiene, speed

Q.2. **Explain the advantages and disadvantages of developing livestock farming in Pakistan.**
Ans. **Advantages**
More food / healthy food / great demand – e.g.
Other products – with examples (hides, horn).
Exports – with examples.
Employment / earnings.
Manure / dung for burning.
Processing industries – with examples.

Disadvantages
Loss of land / water for food crops.
Overgrazing problems.

Less investment in other forms of farming. Low income / low profit.
Disposal of waste / problem of cleanliness / pollution – with example.
Cost of setting up / fodder.
Some products not of export quality / banned by western countries.
Diseases transfer to humans.

Main Livestock Resources

These are the following.

1. Buffaloes   **2. Cattle (Bullock & Cow)**
3. Sheep & Goats   **4. Poultry.**

1. Buffaloes

Buffaloes are the main source of milk and meat. They are not important as work animals.
Some breeds of buffaloes are famous for their good supply of milk. Buffaloes produce 70 % of the total milk supply. They also produce meat and are slaughtered when they stop producing milk or are old. Buffaloes like to remain in water most of the time and the canal irrigated areas of the Punjab and Sindh are best suited to them.
Breeds of Buffalo

1. Nili - Ravi Buffalo
2. Kundi.

1. Nili - Ravi Buffalo

The Nili and the Ravi are considered **two** separate breeds and they derive their names from the Blue (Nili) water of the River Sutlej and the valley of River Ravi. This common breed found in the districts of Okara, Faisalabad, Sahiwal, Multan and T.T.Singh.

The Nili - Ravi buffalo is well known in the Punjab Province for its various qualities.
The average milk yield is 10 - 16 kg per day. The Nili - Ravi buffaloes are usually black in color but brown color is common (10 - 15 percent).

ii. Kundi Buffalo

An other important buffalo breed is '**Kundi'**. They are found in rice growing regions of Sindh Province in the districts of Karachi, Hyderabad, Larkana, Khairpur and whole of Sukkur. Kundi are comparatively smaller than the Nili - Ravi. The average milk production is 9 kg per day and usually black in color.

Photograph of Nili - Ravi Buffalo.

Photograph of Nili - Ravi Buffalo

2. <u>Cattle (Bullock & Cow)</u>

Cattle are the chief farm and draft animals, which are assisted by other draft animals like buffalo and camels on a limited scale. Cows are important suppliers of milk after buffaloes and also provide quality beef like buffalo and goats and sheep. In Pakistan the average daily yield of milk per cow is 3.6 liters.

<u>**Breeds of Cattle**</u>: These are the following.

1. Bhagnari.   **2. Dhani.**   **3. Red Sindhi.**   **4. Sahiwal.**   **5. Thari**

<u>Bhagnari</u>

All the breeds of cattle obtainable in Pakistan, Bhagnari cattle are the largest. They are capable of doing hard work for long hours at a fairly uniform speed and have a great importance as draft animals. The cows are rather poor milker and average milk production is less. This breed is available in Kachhi and Sibi districts.

<u>Dhani</u>

Dhani is essential a draft breed and is primarily used for draft purposes. The cattle is quick stepping and fast moving plough animals. Over all cows are poor milker and this breed is available in the districts of Attock, Chakwal, Rawalpindi, Jhelum and Sargodha.

Red Sindhi

The Red Sindhi cattle of Pakistan enjoy a worldwide reputation. The red sindhi cattle are of medium size. Cow are high milk producers. The bullock are suitable for all types of agricultural operations. This breed is available in lower sindh i.e. Hyderabad, kotri and Thatta.

Sahiwal

The Sahiwal cattle is famous for its milking qualities throughout the Indo – Pak subcontinent. The color of the breed is red. This breed is available in Punjab province specially in the districts of Sahiwal, Okara, Faisalabad and T.T.Singh.

Thari

Thari cattle are dual purposes (draft and milk). The bullocks are very active, fast moving and willing worker. Thari cows are high milk producer. This breed is available in the district of Tharparker

Q.1. **In what ways are the uses of cattle and buffalo in Pakistan similar?**
Ans. Both produce milk / butter.
Both are used for meat.
Hides of both used for leather.
Manure / dung of both used for manure / fuel.
Both used as draught animals on farm.
Both used to pull carts (to market / town).

Q.2. **For what purposes are buffalo more important to Pakistan than cattle?**
Ans. Milk and meat.

Q.3. **Why do most farmers want to own a pair of bullocks?**
Ans. To pull the plough.
For threshing.
To lift water from wells.
To pull carts for transport to town / market.
Most farmers are poor they cannot afford machinery / bullocks are cheaper than machinery.
Bullocks are a sign of prestige.
Most fields are too small for tractors.

Photograph of Cow.

Photograph of Cow

Photograph (A) of Drawing Milk.

Study the **Photograph B**.

Study Photograph C

Photograph C

Q.5. **Describe the shelter shown on Photograph C, also marked X on photograph B and suggest why such shelters are needed for the buffalo.**

Ans. **Description**

Roofs covered with canes / straw / mazri.
Horizontal poles used as beams.
Supported on vertical poles.
Open sides.
White / stone / brick wall (at one end).
Feeding troughs.
Flat / hard floor.

Why needed

To protect buffalo from heat of the sun.
Milking / feeding.
Floor easy to clean.
Ventilation (open sides).

Q.6. **Why is a large supply of water necessary for this farm?**

Ans. For drinking.

For keeping the buffalo cool.

For washing.

For cleaning.

For adding to milk.

Q.7. **No fodder crops are grown on this farm. How are farms like this supplied with food for the buffalo?**

Ans. **1**. By road / lorry / tractor / cart.

2. In large amount.

3. From crops farms outside Karachi / lower Indus.

4. Plain areas near Hyderabad / Thatta / Badin.

5. Bought with money from sale of milk or other products.

6. Products of agriculture / industry.

Q.8. **Explain the importance of the buffalo farms to Karachi.**

Ans. **1**. Milk.

2. Butter /ghee / other dairy products.

3. Karachi has a huge population / increasing population.

4. Milk is expensive to transport.

5. Milk can be fresh.

6. Milk can be supplied regularly.

7. Supplies hides / skins.

8. Karachi is important for the production of leather goods.

9. Dung sold for fuel in markets / domestic use / homes.

Q.9. **Explain why buffalos are not reared in Balochistan.**

Ans. Lack of water to drink.

Lack of water to wash / lie in / bath in / keep cool.

Lack of water / buffalo need water.

Lack of fodder crops / poor grazing.

Lack of demand / few urban areas.

Study **Photograph A** and **B**, showing a buffalo farm in Punjab Province.

Photograph A

Photograph B

Q.10. **How do the Photographs show that these buffalo are being kept in good living conditions?**

Ans. **Photograph A**.
Covered shelters / shade / roof / shed etc.
Bricks.
Fodder / food.
Brick standing by troughs.
Clean conditions / dung cleared away.

Photograph B.

Water for bathing / washing / cooling / drinking.
Concrete pool.
Clean water / water from well.
Organized storage of fodder / dung.

Q.11. **Suggest why buffalo farms can often be found around urban areas.**

Ans. Food (for urban population) / demand for milk or meat.
Must be fresh / deteriorates quickly.
Can make delivers / supplied on a regular basis.
Products for processing, e.g. milk, ghee, butter.

3. Sheep and Goats

Sheep and goats domestication in Pakistan is as old as Indus Civilization and is a source of income for landless poor rural people and nomad tribes.

Sheep and Goats can live quite easily on rugged terrain as well as the more gentle plains. As they live off of dry grass, they can survive in fairly arid regions. As a result of their adaptability sheep and goats are evenly distributed throughout the country, in both hilly areas

as well as the plains. An environment that is inhospitable to cattle and buffaloes is generally suitable for sheep and goats.

Sheep and Goats are found in abundance in the tribal areas, the Balochistan Plateau, the Thal, Thar and Cholistan deserts as well as in the well-watered canal colonies of Punjab and Sindh. The number of sheep and goats has registered an increase even though the government has discouraged the raising of goats unless stall-fed because of the problem of overgrazing and consequent soil erosion.

Sheep are raised for wool, meat and skins, while goats are bred for meat, milk and skins, some varieties found in cold mountainous areas (Angora goat) produce fine **Pashmina** wool used in weaving of shawls. Sheep produce wool of which about 50 % is exported. The average wool production per sheep is small. The government is making efforts to introduce good breeds. Government sheep farm has been set up near Abbotabad. Meat is also exported to Gulf States.

Important Sheep Breeds

Lohi

Lohi sheep are found in Faisalabad, Jhang, T.T.Singh, Sheikhupura, Gujranwala and Lahore districts and raised for mutton, wool and for milk..

Kajli

The habitat of kajli sheep is Sargodha, Khushab and parts of Mianwali and Gujrat.
These are raised for mutton and wool. Being attractive males are highly apprised on occasion of Eid-ul-Azha.

Sipli

The habitat of Sipli sheep is irrigated areas of Bahawalpur and Bahawalnagar, it is mainly raised for wool.

Buchi

The tract of this sheep is Cholistan and parts of Multan and Muzaffargarh districts.

Lati

The habitat of this sheep is Potwar plateau and raised for mutton and wool.

Important Breeds of Goats

Beetal

The most famous goats are almost found in all irrigated areas of Punjab, particularly districts of Multan, Sahiwal, Okara, Faisalabad and Jhang. This breed is raised for meat, milk and high quality skins.

Teddy

Teddy breed was imported from Bangladesh. It is raised almost every where in Pakistan, mainly districts of Gujrat, Sargodha, Rawalpindi and Azad Kashmir. Teddy goats are raised for mutton.

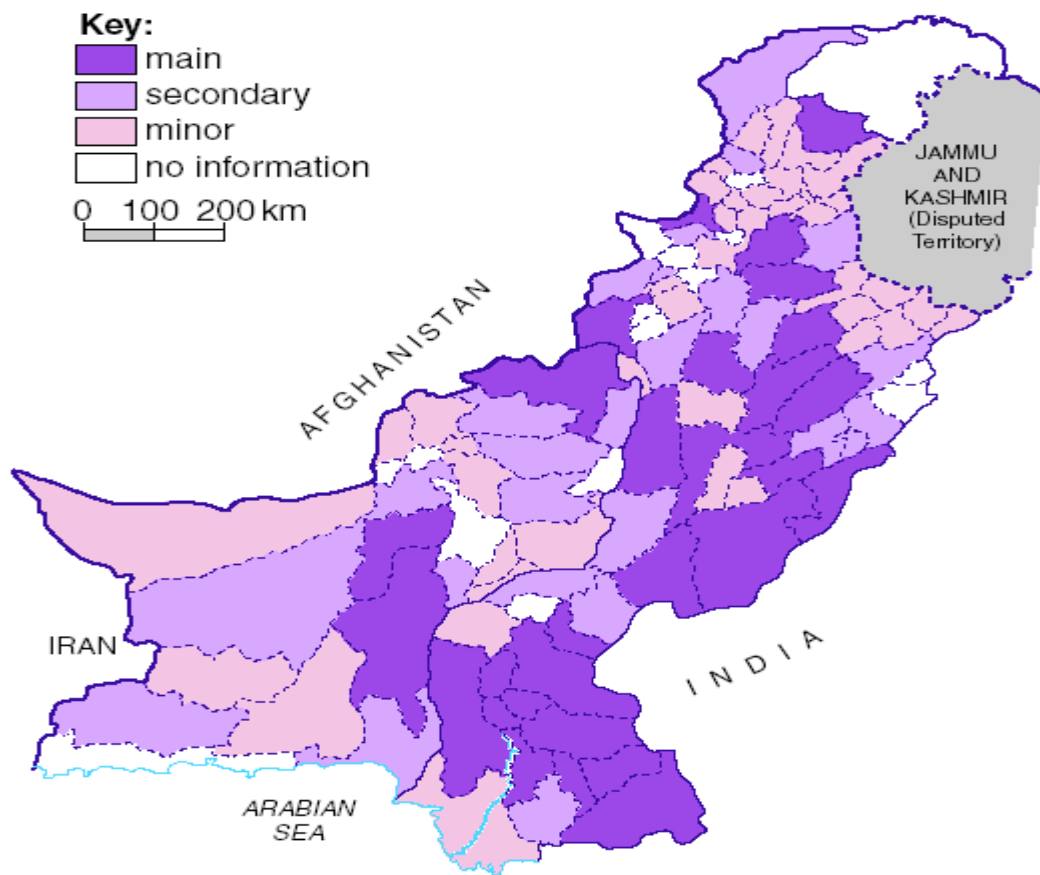Study **Fig.6**, which shows patterns of goat rearing in Pakistan.

Fig.6

Q.1. **Describe the distribution of goat raring in Balochistan.**
Ans. Widespread / low and moderate in most areas.
Main area in SE / E /Sindh boder.
Range / Indus plain.
Main area in North / NW / NWFP border / Zhob.
Low in West / Western borders / Chagai Hills.
No information for coastal and some other areas.
Q.2. **Explain why goats are so important in Pakistan.**
Ans. Areas where cattle / buffalo cannot survive.
Can live in areas of poor pasture / desert areas.
Can live in steep / rugged areas.
Important for meat.
Pakistan's main source of meat.
Provide milk.
Skins used Pashmina hair / angora used for shawls.
Government encourages stall-fed goats.
Sacrifices.

Q.3. **Explain why the number of goats has increased.**
Ans. Population growth .....
Increasing demand for meat.
Increased standard of living.
Government encouragement.

Q.4. **Name three processes carried out by farmers in the keeping of goats.**
Ans. Breeding.
Feeding.
Slaughtering.
Milking.
Cleaning.
Vaccinating.

Q.5. **Why does the Govt. of Pakistan encourage the keeping of stall-fed goats?**
Ans. Goats are notorious for overgrazing / cause soil erosion.

Q.6. **Suggest why the government of Pakistan discourages the rearing of goats.**
Ans. Overgrazing.
Loss of vegetation / deforestation.
Soil erosion.

4. <u>Poultry Farming</u>

Poultry products include chicken and eggs. Demand for poultry products has greatly increased in recent years with the increase in population. People also prefer to eat white meat as it is healthier and has less cholesterol. Chicken has emerged as a good substitute of beef and mutton. Important breeds of poultry like **Broiler** and **Layer**. Nearly every family in rural areas keeps chicken.

Commercial poultry farming is popular near all large towns to supply the needs of the town. Therefore large commercial poultry farms have grown on a large scale near Rawalpindi, Lahore, Karachi, Hyderabad, Faisalabad and Multan. Arifwala in Punjab has become an important center for poultry breeding.

In poultry development, Govt. of Pakistan has played vital role, because poultry department is providing extension services in poultry breeding, husbandry and marketing and assisting for establishment and modernization of village poultry and increased productivity. Govt. has established research institutes at Rawalpindi, Karachi and many other cities.

In rural areas, poultry department distributes better productive birds, (Layer and Broilers) vaccinate the birds and provide treatment of birds and poultry birds for small poultry units.

<u>By-Products of Livestock</u>.

The by-products of livestock are skins, hides, wool, horn and hooves, bones, fats, dung, heads, hair, blood and guts. A large tanning industry has also developed in the country using the local raw materials.

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Q.4. **Why does the Govt. of Pakistan encourage the keeping of stall-fed goats?**

Ans.   Goats are notorious for overgrazing / cause soil erosion.

Q.5. **To what extent can livestock farming increase food supply in Pakistan? Explain your answer.**

Ans.   ## Possibilities

Provides meat / milk / eggs / cheese
Provides protein
Provides raw material for food processing industry
Through selective breeding
Higher quality fodder
Through better husbandry
Cleanliness / preventing disease
Veterinary services / vaccinations

Problems

Lack of land
Cost of / lack of fodder / water
Lack of education
Lack of government support
Cost of modern methods / facilities.

Q.6. **Explain what is meant by sustainable livestock farming.**

Ans.   To meet the food / animal product needs of the present generation while protecting / minimising damage to the natural environment.

Land Reforms:

The principle of dividing land for farming into small pieces so that more people can own some.

Pakistan inherited a land tenure system based on feudalism. In 1947, 7 % of the landowners owned 53 % of the land. These big landlords had little incentives to cultivate all the land or to raise the productivity of the land. It was necessary to break up these landed assets to increase productivity and to provide security to landless peasants.

The Government of Pakistan was aware of the importance of land reforms and a number of measures were taken to abolish the "Zamindari" system. In 1948, a land reform committee was formed which gave its recommendations to the Government but they could not be approved because of the strong position of landlords in the National and Provincial Assemblies. These were **three** major land reforms introduced in **1959**, **1972** and **1977**.

Q.1. **What did the land reform laws aim / purpose to do?**
Ans. Redistribute land more equally.
Take land away from large landowners / give it to tenants.
Farmers / protect tenants from eviction.
Increasing productivity.

Q.2. **What are the advantages of land consolidation?**
Ans. Use of modem machinery / modern methods.
Easier to supervise.
Better irrigation.
Better opportunities for investment.
Easier to get loans.
Better opportunities for research.
Bring more land into cultivation.
Economic units.

Q.3. **Explain the effects / disadvantages of land reforms.**
Ans. Political instability.
No proper implementation.
Incomplete land record of barani lands.
Transfer of land from one generation to next without documentation.
Transfer of land according to land reforms was simply a paper exercise.

The Government Efforts (Improve Agricultural Production)

In order to increase agricultural production, the following measures are being taken by the government:

1. Increasing the production of fertilizers to encourage greater use of it.

2. The distribution of improved seed and regulation of quality of seeds through Government departments.

3. Developing a plant protection programme including regular checks for the detection of pests
and making aerial sprays available.

4. Providing financial resources to the farming community by issuing different Schemes of agricultural credit which include;

i. Production and development loans,
ii. Loans to small farmers,
iii. Making loans available for farm machinery,
iv. A 'one window' operation (under this scheme, all officials involved are available at one place
   on each Monday and Thursday).

Meaning (of the Terms)

Pashmina

Fine quality wool obtained from Angora goat used in the making of best quality shawls.

Zebu and Draft Cattle

Zebu is milk producing and draft are work animals.

Animal Husbandry

The cross breeding of imported breeds with local ones in order to get better breeds.

Stall-Fed

These are those goats reared on farms only and are not allowed to go to the grazing ground.

Grantee Cattle Farms

Such farms are set up by Govt. and then given to private groups on lease for efficient running.

Broilers

The breed of poultry raised for meat only.

Layers

The breed of poultry raised for eggs only.

Meaning of Sustainable Agriculture

Supplying the food / agricultural products need of the present generation while minimising environmental damage.

Q.1. **To what extent can agriculture be sustainable in Pakistan?**
Ans. **Possibilities**
   Less overcropping / multicropping
   Keeping vegetation cover
   Restrict use of heavy machinery
   Better water management / avoiding over watering / lining canals
   Organic farming / using manure

Use of appropriate knowledge / training
Problems
High demand for more food
Pressure on land e.g. for timber
Lack of education / awareness of sustainable methods
Lack of government will / support / investment
Resistance to changing traditional / modern methods.

Q.2. **To what extent can better education and training increase farm production?**

Ans. ## **Possibilities**
Prevention of waterlogging and salinity / better water management / irrigation
Knowledge of proper fertilizer / pesticide usage
Knowledge of better seed varieties
Ability to rapair / maintenance of farm machinery
Easier to get loans from banks
Problems
Lack of land,
Lack of money
Lack of infrastructure
Climatic problems
Reluctant to change from traditional mehtods.