

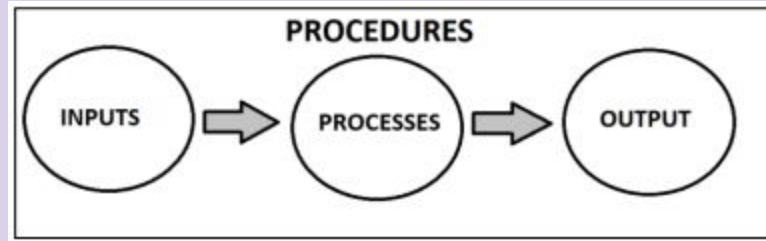
Agriculture

Agriculture is the process by which food crops and other goods are produced.



Inputs (Human)

There are both human and physical or natural resources that goes into the farm as input.



Human inputs include ‘

1. Capital
2. Fertilizer
3. Insecticide
4. labour
5. Seeds
6. Land reforms
7. Government support or funds

Physical Input

1. Soil

A soil suitable for growth contains sufficient minerals for crop growth and also has sufficient pore spacing. Pore spacing is important as it controls the amount of air and water available for plant roots.

The best soil is loamy soil, which contains sufficient pore spaces (to allow for sufficient air and moisture). Spaces aren't too big; so the soil does retain nutrients, which are not leached into the soil. The soil must be deep and must contain nitrates and phosphates; which are required for crop growth.

2. Climate

Every crop has its own distinct climatic requirements. This includes rainfall, humidity, temperature, amount of sunlight etc. In Pakistan, these requirements basically fall into two groups, Kharif and Rabi

Process

1. Ploughing (turning over the upper layers of soil to bury seeds and the remains of previous crops, thereby, allowing them to break down, meanwhile bringing fresh nutrients to the surface)
2. Sowing the seeds
3. Spraying on the newly grown crops (Use of insecticides)
4. Hoeing (weed control by means of a hoe)
5. Adding fertilizer to replace the nutrients used in soil.
6. Harvesting the grown up crop (cutting the crop)
7. Threshing only in grain crops like Wheat, Maize, Rice, Millet (separating edible part of cereal from the scaly chaff)
8. Selling

1. Food crop
2. Seeds
3. Crop wastes
4. By products(if any)

Outputs

Types of farming

Subsistence

This type of farming is concerned with those farmers whose primary aim is to grow food to feed their own families. Any surplus of products produced during good years (when rainfall is plentiful and pests don't attack) is sold in local markets for some extra income. Surpluses are rare because traditional farming techniques are used, which give low production.

Commercial

This type of farming is concerned with making a vast profit by investing heavily in human inputs. This is done to achieve maximum possible yields and earn the highest possible level of profit upon sale.

Subsistence farming

1. Wooden plough pulled by a bull
2. Desi variety of seeds used which give low yields
3. Variation in rainfall, Variance in amount means that one year we have a lot of rainfall and in the next year there is low amount of rainfall.
4. Cattle/buffalo dung is used as a fertilizer for crops; this dung decomposes slowly, hence plant roots receive nutrients in small amounts as compared to artificial fertilizers.
5. The farmer's crop is totally vulnerable to any attacks by fungi or pests because the farmer doesn't use any fungicide or pesticide.
6. don't have much money to re-invest in the farm.
7. Labour not available as its uneconomical.
8. The farmer get sick and may not be fit on time (due to poor medical facilities in rural areas)

Commercial farming

1. Cash is the most important commodity for a commercial farmer. It is used to buy fertilizers, seeds, pesticides, machines etc. A commercial farmer he must have a lot of cash
2. High Yielding Varieties of Seeds these are the varieties of seeds which have been developed through selective breeding,
3. The fertilizer is added on to the soil, and then water is sprayed on it. Fertilizers replace the nutrients in soil which have been used up.
4. Pesticides are well used
5. Proper canaled irrigation
6. Machines like combined harvesters quickly harvest the wheat crop; they separate the grain from the chaff.
7. By using a harvester a farmer can quickly harvest his crop before the storm hits. These machines are also very efficient
- 8.

There are two types of seasonal crops

Rabi and khariff crops

Kharif season consists of crops planted around April-June and harvested in October-November. These include cotton, sugarcane, rice etc. These crops need high temperatures (25-40°C), so they can fulfil their necessary heat units required for their successful growth and harvest. Also, monsoon rains help to bridge the gap between amount of water available from irrigation and the water required by the crop. These crops also require a dry season for harvest

Rabi season consists of crops planted around Mid November- December and harvested during April – May. These crops require temperatures ranging from 15-35°C for their growth and harvest. Water requirements are moderate as compared to Kharif crops. These crops include Wheat, Maize, Pulses, and Oilseeds etc

Land based types of crops

Barani farming

It is practiced in areas like the Potwar Plateau which have low amounts of seasonal rainfall.

Important crops grown are wheat, maize, millet etc all which require low amounts of water and sunlight ,When the rains arrive or are about to arrive,

the land is ploughed so it becomes soft. Immediately after the rain, the seeds are sown and the periodic cycle of sunny weather in between light rainy days continues till the harvest.

Floodplain farming

Sometimes floodplain farming may also take place (usually in the flood plains of Sulaiman and Kirthar Mountains). The farmers wait for the rains and build bunds around the edge of their fields (nearer to the valley sides). When the rain torrents arrive, they build bunds on the mountain side (so as to trap water)

Importance of Crops in Pakistan

1. Most of Pakistan's population lives in rural areas, where the primary occupation is related to farming.
2. Agriculture provides food (wheat being the staple diet) for the ever growing population of Pakistan.
3. Increase in crop yields is required to reduce imports (become self-sufficient) and increase exports
4. Agriculture also provides a permanent source of income for the many landless peasants throughout the year in both summers (Kharif crop) and winters (Rabi crop).
5. It encourages the growth of agro-based industries like fertilizers etc. Increasing local production of fertilizers.

Green Revolution Pakistan

1. There was “Green revolution”, which changed the fate of the country, brought prosperity by flourishing the agricultural sector.
2. In the Ayub Khan's regime , he established dams, boosted up an irrigation system and gave incentives to farmers.
3. Green Revolution is associated with agricultural production. It is the period when agriculture of the country was converted into an industrial system due to the adoption of modern methods and techniques like the use of high yielding variety seeds, tractors, irrigation facilities, pesticides, and fertilizers.
4. The adoption rates for the two major Green Revolution crops in Pakistan, wheat and rice were higher than the adoption rates for other countries in South Asia. The same was true for the adoption of potatoes and lentils.

It can be seen from 1965-1980 the production of crops doubled and then the average increases slowly from then on. The increase in agricultural productivity made the production of more crops a priority to the Pakistan government; as more crops meant more money

Cotton

Cotton is a Kharif crop that is planted in April-June and harvested in October-November. It is mainly grown in southern (arid) parts of Punjab, with other growing areas in eastern Sindh and other parts of southern Punjab

Harvest


- Temperature during harvest must be from 30-32°C
- Harvesting is carried out when the bolls become dry and become fully open
- 1st picking is at 120 days, 2nd at 140 days and 3rd at 160 days. These pickings are done by women and children since the use of machines for cotton picking is expensive
- The diseased/ damaged bolls are kept separate from the fine quality bolls


Sowing

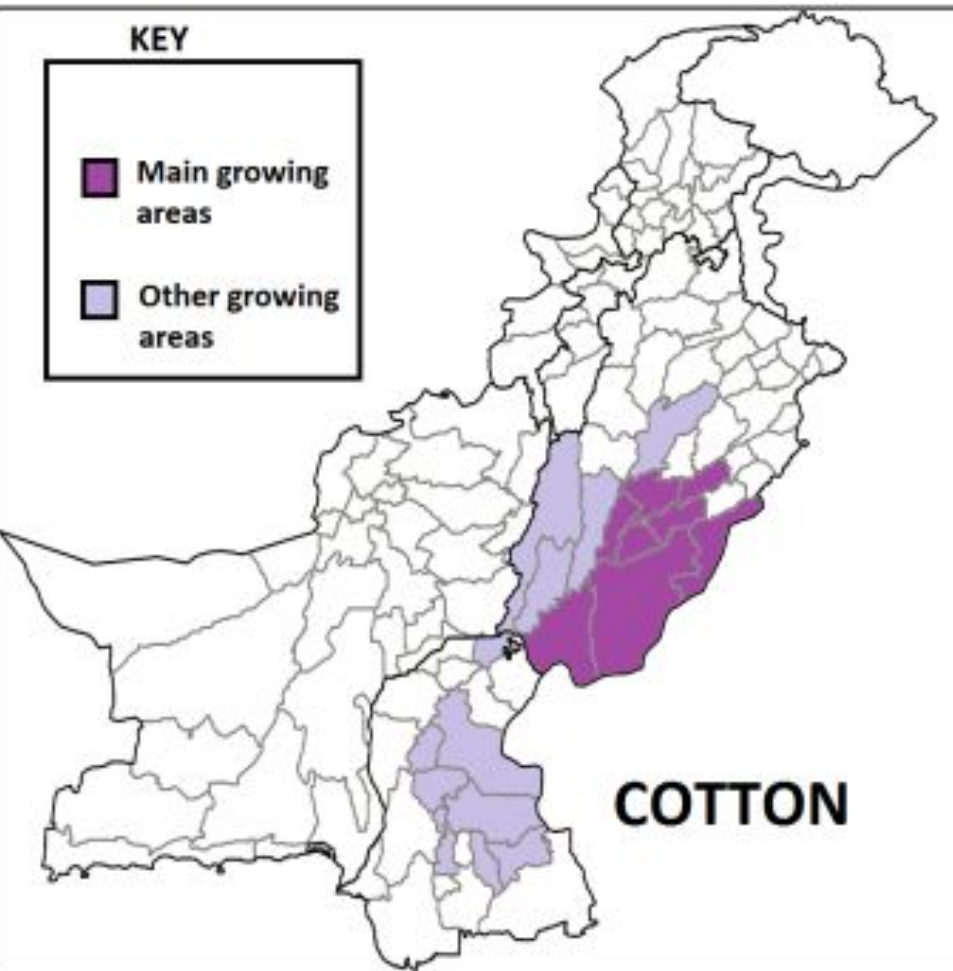
- Temperature during sowing must be from 25-30°C
- Before sowing, the seeds must be treated with chemicals to prevent seed born diseases
- The seeds must be sown with a driller to ensure a uniform depth of all the sowed seeds; this is to make sure that the plants reach stage of harvest at the same time. This is so because if the seed is sown too deep it won't germinate or if it even does so then its growth would be slow or stunted

Sowing must occur in the anticipation of rain or immediately after it to take advantage of any moisture left in the soil


KEY


 Main growing areas

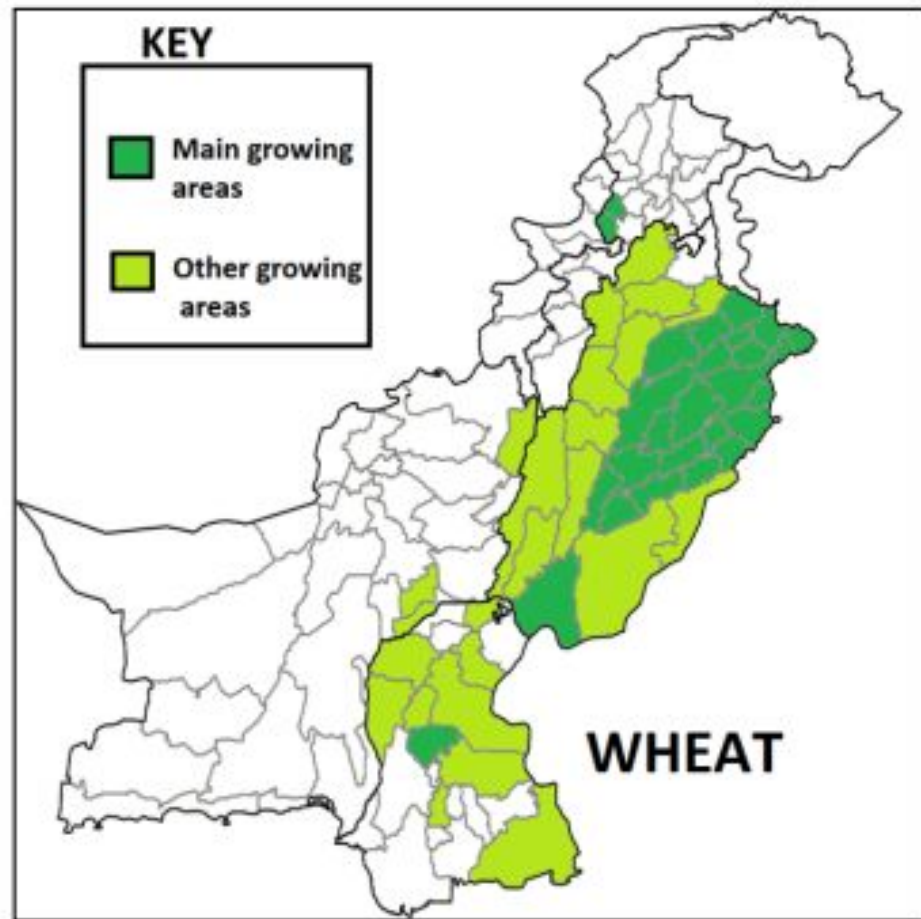
 Other growing areas



KEY

 Main growing areas

 Other growing areas



Wheat

Wheat is a Rabi crop it is planted in Mid November – December and harvested around April - May. It is mostly grown throughout the central parts of Punjab with other growing areas including the rest of Punjab. Other growing areas are in eastern, central and western parts of Sindh



Sowing

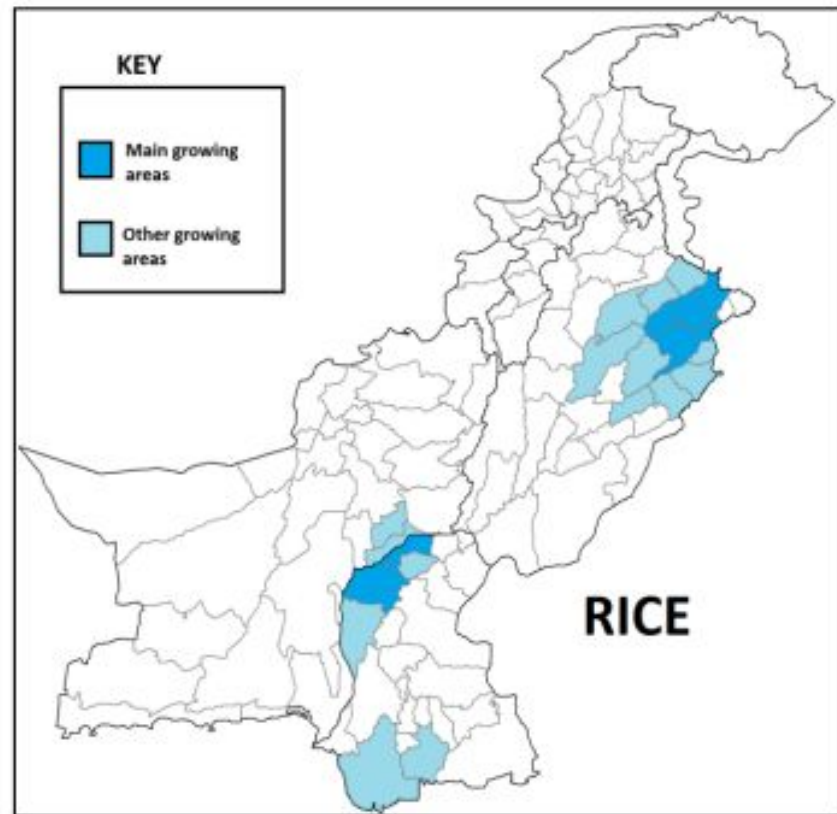
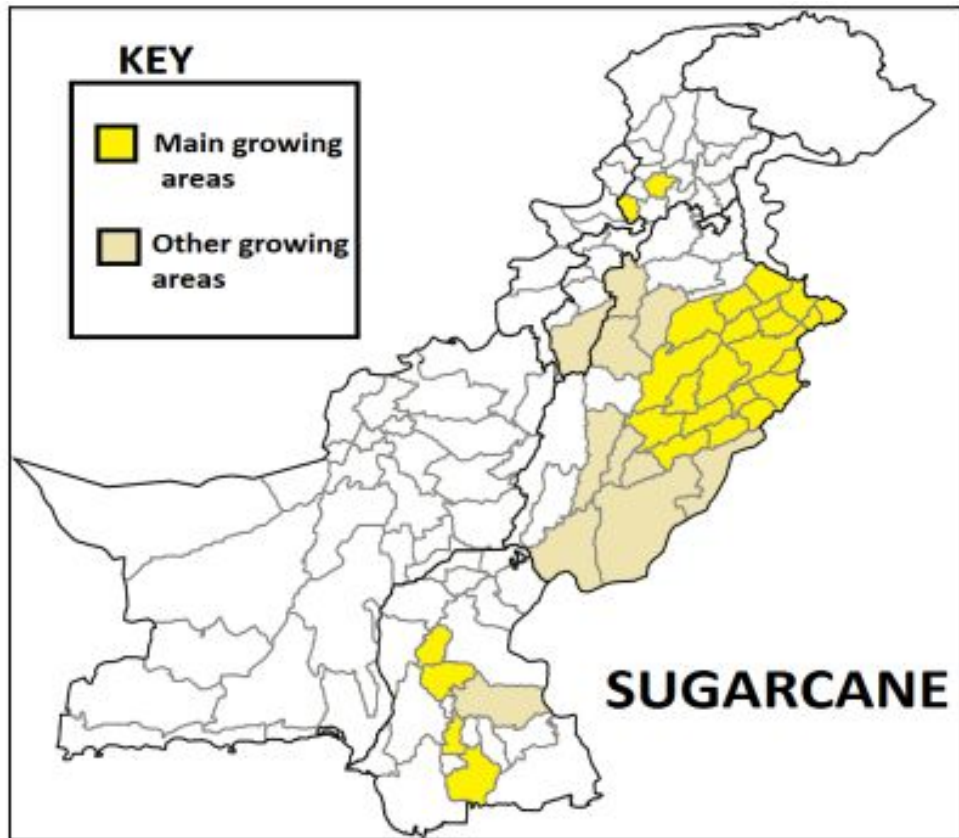
- Temperature during the sowing must be from 4 - 25°C
- Before sowing, the seeds must be treated with fungicides to prevent born diseases
- The seeds must be sown with a driller to make sure uniform depth of sowed seeds. This is so because if the seed is sown too deep it won't germinate or if it even does so then its growth would be slow or stunted
- Sowing must occur in anticipation of rain from Western Depression or immediately after it to take advantage of any moisture left in the soil

Harvest

- Temperature during harvest must be from 35-38°C along with sunny conditions
- Harvesting is carried out when the stems become brown with their height around 4 feet. The grain becoming hard too
- Harvest must be carried out before thunderstorms in March-April because these can produce strong winds accompanied with rain. The winds break the stem and expose the grain to standing water of the soil, this can result in fungi attack in condition known as rust (causing total crop loss)

wheat





Rice

Rice is mainly grown in Western Sindh and Northeastern Punjab. Other growing areas include Eastern Punjab, Southern Sindh and parts of Eastern Balochistan

Preparation

- Firstly the rice seeds are planted in flooded nursery fields with uniform depth. They are kept in controlled temperatures and after 25 days they are transplanted in the fields
- Before transplantation the seeds must be treated with chemicals to prevent against seed born diseases



Sowing/Transplantation

- Temperature during transplantation must be from 30 - 35°C
- The land must be thoroughly ploughed and weeds should be removed before transplantation.
- Bunds are made and land is flooded

Harvest

Temperature during harvest must be from 30-32°C and the weather must be dry and sunny

When the earheads start to show a golden colour, the bunds are broken and the fields are drained

Harvesting is carried out when the earheads become golden and hard due to the weather

Sugar Cane

Sugarcane is a Kharif crop that is planted in April-June and harvested in October-November

Sugarcane is mostly grown in central Punjab, central Sindh, and Peshawar along with adjoining district in Khyber-Pakhtunkhwa. Other growing areas include Western and Southern Punjab, along with parts of Eastern Sindh

Plantation (Not sowing)

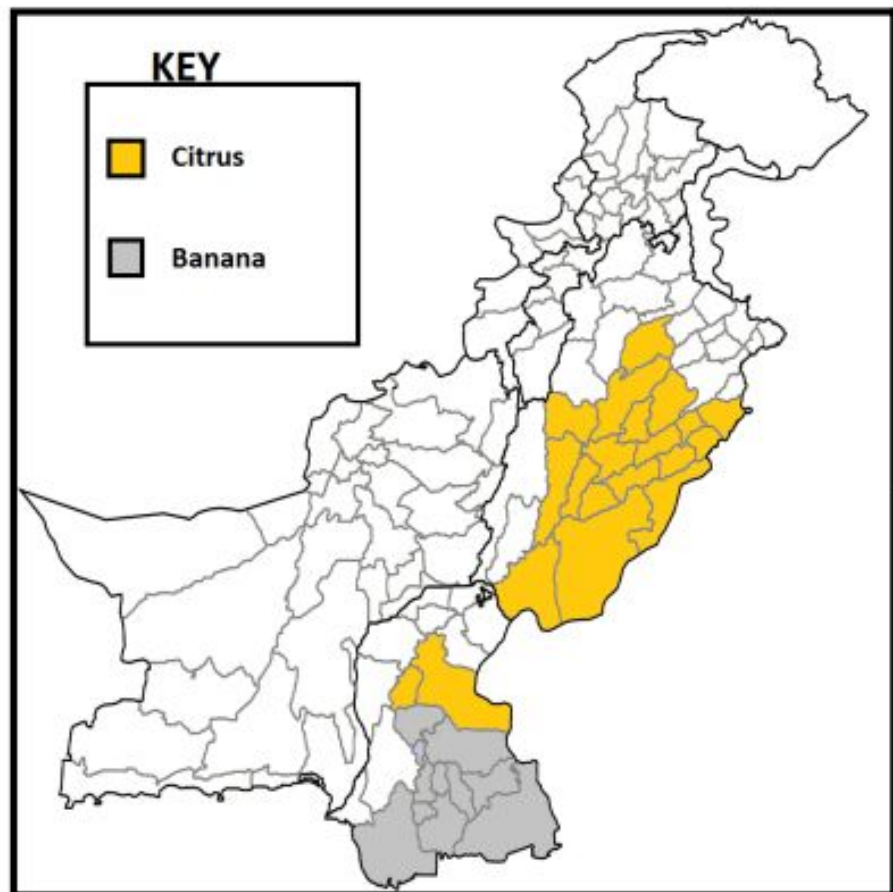
- Temperature during the plantation must be from 30 - 35°C
- Sugarcane stalks should be planted at a row spacing of 90 cm to 1 m with the depth of not more than 4 inches

Harvest

- Temperature during harvest must be from 30-32°C
- Harvesting is carried out when the stem becomes hard
- The stem is cut above the ground and is immediately transported as any delay can lead to loss of sugar content and weight

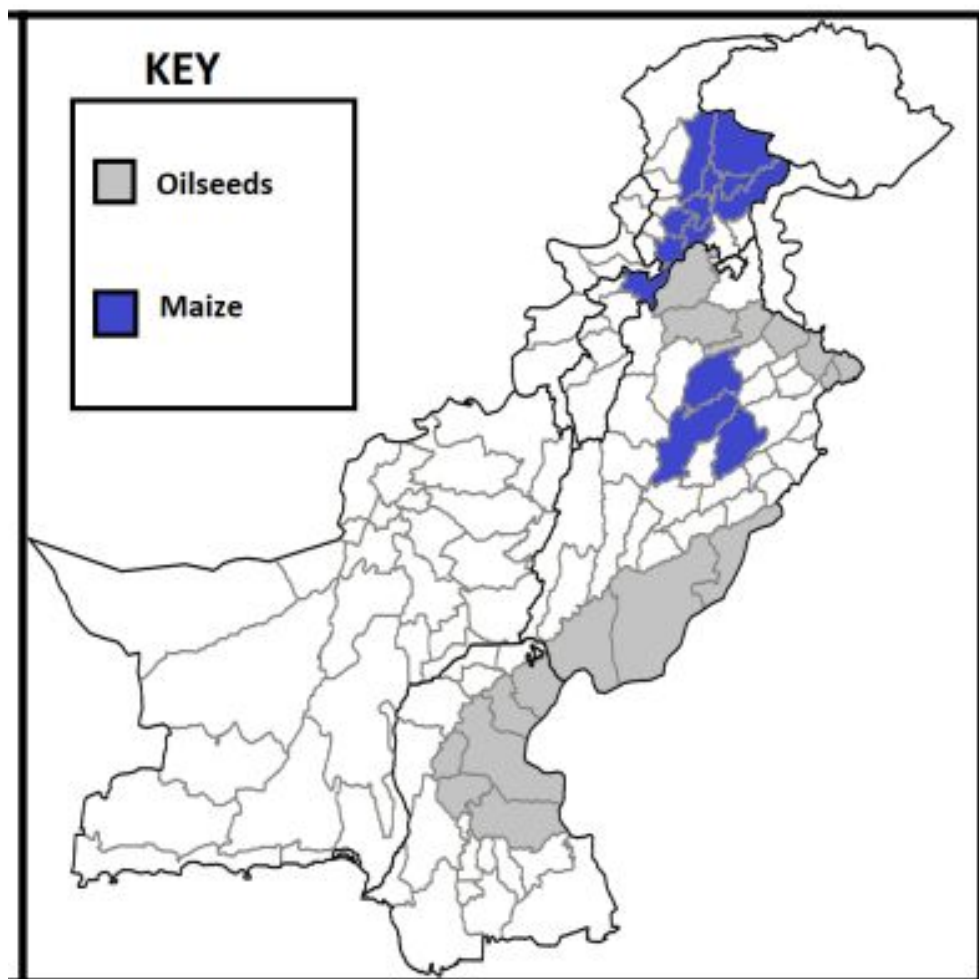
CTRUS

They grow in tropical or subtropical climate with hot summers and moderate rainfall. They are also sensitive to frost and strong winds. Most of the production is from Punjab including its central but mostly southern parts. Some citrus production also occurs in eastern parts of Sindh



OILSEEDS

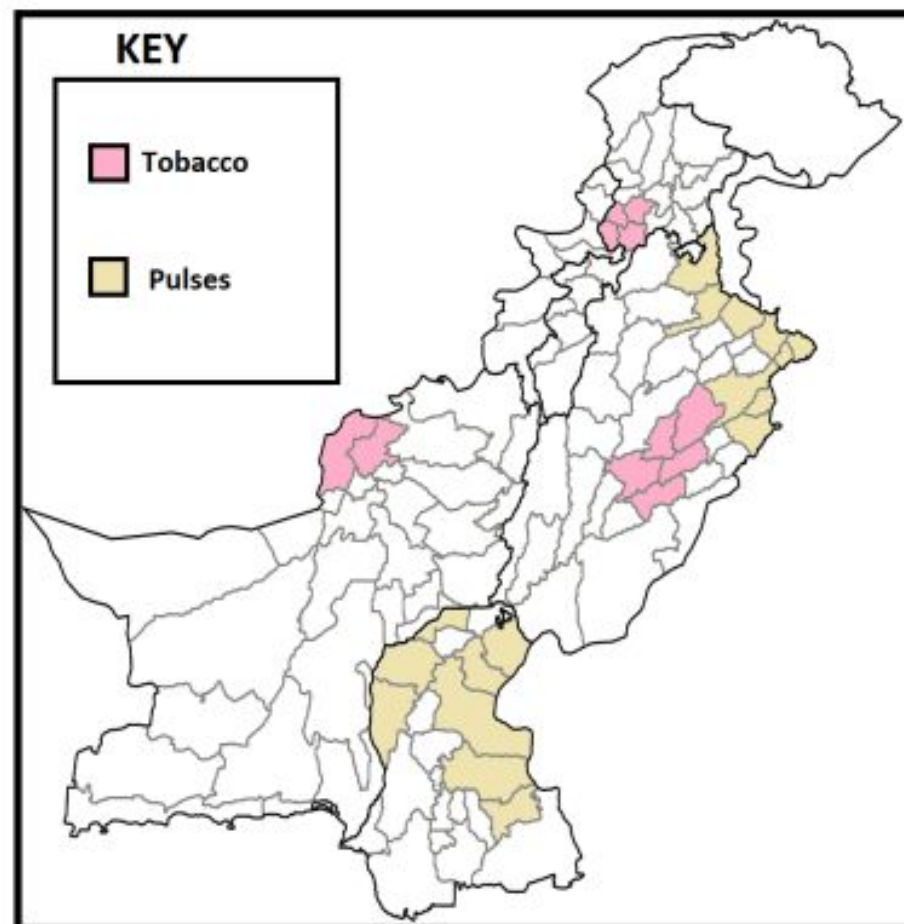
Oilseeds usually require average temperatures varying from 20-30°C. It must also be noted that high temperatures can hamper or delay growth and that frost kills the plants. Oilseeds are tolerant to drought for some periods and require well drained deep alluvial soils



PULSES

Pulses require high temperatures but are highly susceptible to frost. They can also tolerate high rainfall provided it doesn't come at time of pollination etc. Also the soil must not be waterlogged or saline. Pulses can be grown on sandy, loamy etc soils

Pulses are grown in eastern and western Sindh, along with north eastern Punjab



TOBACCO

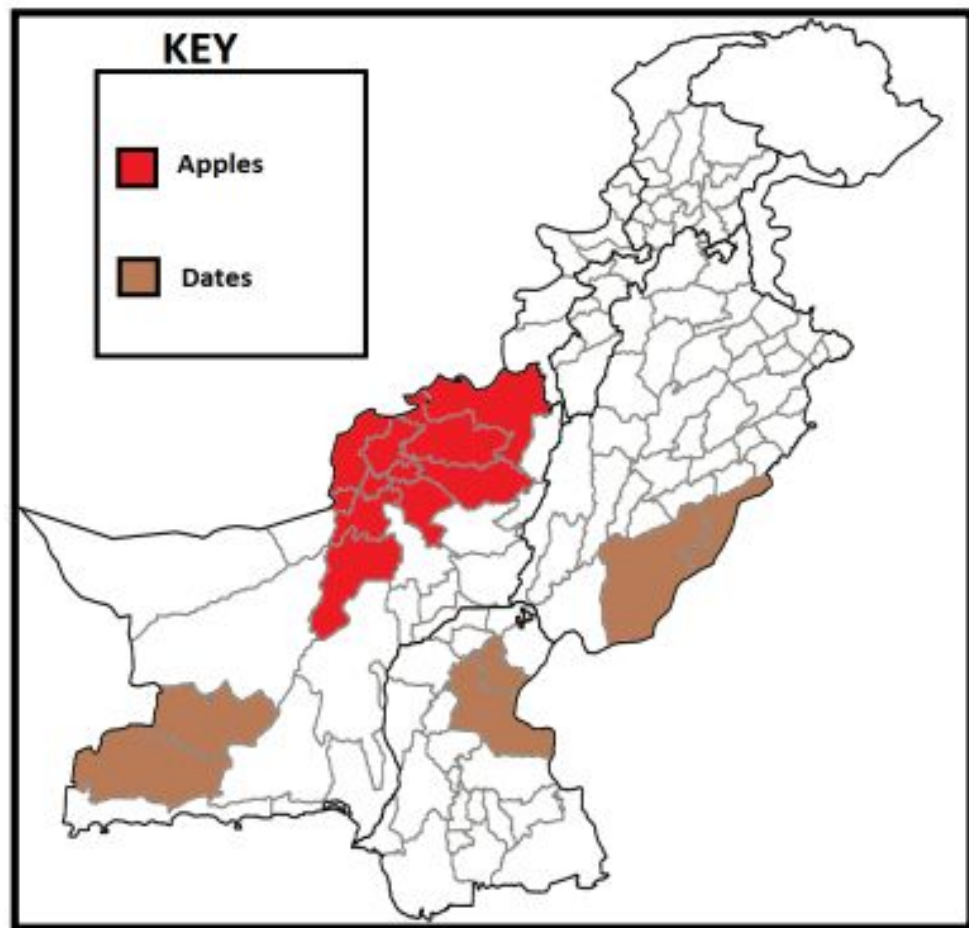
Tobacco plants are usually first grown in nurseries etc and then transplanted in the fields when the risk of frost has passed. They need light rainfall early on, followed by a period of bright sunshine with rains in between, followed by a dry period at harvest

Tobacco is grown in central parts of Punjab, northern Balochistan and central parts of Khyber-Pakhtunkhwa



DATE PALM

Dates are grown in parts of Balochistan and in parts of Tharparkar desert (southern Punjab and eastern Sindh). It needs long hot summers with high day and night temperatures. It can tolerate fluctuations in temperature whether cold or hot. Mild winters and a dry sunny time for harvest is also required. They can grow in salty soils but they must be well drained



Hoeing:

- **Meaning:** Hoeing is a gardening or farming activity where you use a tool called a hoe to break up the soil, remove weeds, and create a loose, well-aerated surface for plants to grow.
- **Example:** Imagine you have a vegetable garden, and the soil gets compacted or weeds start growing. Using a hoe, you can dig into the soil, break it up, and remove the weeds, creating a better environment for your plants. Hoeing helps in maintaining a healthy and fertile garden bed.

Harvesting:

- **Meaning:** Harvesting is like picking the ripe fruits or vegetables from the plants when they are ready to be collected.
- **Example:** Imagine you planted some tomatoes in your garden. When the tomatoes are red and fully grown, you go out and pick them from the plants. That's harvesting!

Threshing:

- **Meaning:** Threshing is the process of separating grains (like rice or wheat) from the stalks or husks that they grow on.
- **Example:** Let's say you have a bunch of wheat plants. After harvesting the wheat, you need to separate the actual grains from the rest of the plant. Threshing is like taking off the outer parts to get to the edible part, the grains.