COTTON FARMING

SOIL REQUIREMENTS: -

- Cotton prefers a slightly acidic to neutral soil pH range between 6.0 to 7.5. If the soil pH is too low or too high, it can affect the availability of essential nutrients to the plants.
- Cotton grows best in soils that are well-drained and have a loamy texture. Heavy clay soils can lead to poor drainage and increased soil compaction, which can negatively impact root development and crop growth.
- Cotton requires a well-balanced supply of essential nutrients, including nitrogen, phosphorus, potassium, sulfur, calcium, and magnesium. Soil fertility can be improved using organic fertilizers, covering crops, and crop rotations.
- Cotton requires adequate soil moisture throughout the growing season, but excess water can lead to waterlogging and increased disease pressure. Irrigation can be used to supplement rainfall and maintain optimal soil moisture levels.
- Soil structure is important for cotton growth, as it affects root development, water infiltration, and nutrient uptake. Soil compaction can be managed through practices such as reduced tillage, cover cropping, and crop rotation.

CLIMATE & TEMPARATURE: -

Temperature: Cotton requires warm temperatures to grow, with optimal temperatures for growth ranging between 60 to 95°F (15 to 35°C). Temperatures above 95°F (35°C) can lead to heat stress and reduced yields, while temperatures below 60°F (15°C) can slow down growth and development.

Frost-free growing season: Cotton plants are sensitive to frost and cannot tolerate temperatures below 28°F (-2°C). Therefore, cotton farming requires a long growing season that is free from frost, typically lasting around 150 to 180 days.

Sunlight: Cotton plants require full sunlight for optimal growth and development. A minimum of 6 hours of direct sunlight per day is recommended.

Humidity: Cotton requires moderate to high humidity levels, with a range of 60 to 80% being ideal. High humidity levels can increase the risk of disease and pest pressure, but low humidity can lead to water stress and reduced yields. Overall, the temperature and climate requirements for coffee farming are crucial to ensure the production of high-quality coffee beans.

VARIETIES OF COTTON: -

1. Gossypium arboreum: -

- Gossypium arboreum, commonly called tree cotton, is a species of cotton native to India, Pakistan and Bangladesh and other tropical and subtropical regions of the Old World. There is evidence of its cultivation as long ago as the Harappan civilization of the Indus Valley to produce cotton textiles.

2. **Gossypium hirsutism: -**

Gossypium hirsutism includes several varieties or cross-bred cultivars with varying fibre lengths and tolerances to several growing conditions. The longer length varieties are called "long staple upland" and the shorter length varieties are referred to as "short staple upland". The long staple varieties are the most widely cultivated in commercial production.

3. Gossypium Barbadense: -

Gossypium Barbadense is one of several species of cotton. It is in the mallow family. It has been cultivated since antiquity but has been especially prized since a form with particularly long fibbers was developed in the 1800s. Other names associated with this species cotton.

The species is a tropical, frost-sensitive that produces yellow flowers and has black seeds. It grows as a bush or small tree and yields cotton with unusually long, silky fibres.

PLANTING SESSION & MATERIAL: -

- The selection of high-quality cotton seed is critical for a successful cotton crop. Farmers should look for seed varieties that are well-suited to their region and have good resistance to pests and diseases.

- Cotton seeds can be treated with fungicides and insecticides to protect against seedling diseases and pests. This can improve germination rates and early crop growth.

- Cotton is typically planted in rows with a spacing of 30 to 40 inches (75 to 100 cm) between rows and 6 to 8 inches (15 to 20 cm) between plants within the row. This can vary depending on the equipment used and the desired yield.

- Prior to planting, the soil should be tilled and prepared to create a loose, weed-free seedbed. This can be done using a variety of equipment, including plods, disks, and cultivators.

- Cotton requires a well-balanced supply of essential nutrients, including nitrogen, phosphorus, and potassium. Fertilizers can be applied before planting or during the growing season to maintain optimal nutrient levels.

- Adequate soil moisture is critical for cotton growth and yield. Irrigation can be used to supplement rainfall and maintain optimal soil moisture levels.

PLANTING METHOD: -

Cotton can be planted using several methods, depending on the specific growing conditions and equipment available. Here are some of the most common planting methods for cotton farming:

Conventional tillage: This involves ploughing and disking the soil to create a seedbed and planting the cotton seed using a planter or drill.

This method is effective for controlling weeds and incorporating crop residues but can lead to soil erosion and reduced soil quality over time.

Reduced tillage: This involves minimizing soil disturbance by using a minimum tillage system or no-till planting. This method can help to reduce soil erosion and preserve soil structure and organic matter but may require additional weed management practices.

Strip-till: This involves tilling only a narrow strip of soil where the cotton seed will be planted, leaving the rest of the soil undisturbed. This method can help to reduce soil erosion and improve soil structure, while also providing a suitable seedbed for planting.

Precision planting: This involves using specialized equipment to precisely place cotton seed at the desired depth and spacing, using GPS technology and computer control systems. This method can help to optimize plant growth and yield, while also reducing the amount of seed and fertilizer required.

FERTILIZERS: -

Cotton requires a well-balanced supply of essential nutrients, including nitrogen, phosphorus, potassium, sulphur, and micronutrients, to achieve optimal growth and yield.

PESTS AND DISEASES: -

Cotton is susceptible to a variety of pests and diseases that can reduce yield and quality. Here are some of the most common pests and diseases in cotton farming:

Boll weevils: These beetles feed on cotton buds and damage the developing bolls, leading to reduced yield and quality. Boll weevils can

be controlled using insecticides or cultural practices such as crop rotation.

Cotton aphids: These small insects feed on plant sap and can cause stunted growth and reduced yield. Cotton aphids can be controlled using insecticides or by introducing natural predators such as ladybugs.

Fusarium wilt: This soil-borne fungus infects the cotton plant's vascular system, leading to wilting and death of the plant. Fusarium wilt can be controlled by planting resistant cultivars and using cultural practices such as crop rotation and soil sterilization.

Verticillium wilt: This soil-borne fungus infects the cotton plant's vascular system, leading to wilting and death of the plant. Verticillium wilt can be controlled by planting resistant cultivars and using cultural practices such as crop rotation and soil sterilization.

Cotton leaf curl virus: This virus is transmitted by whiteflies and causes yellowing and curling of leaves, leading to reduced yield and quality. Cotton leaf curl virus can be controlled using insecticides and by using resistant cultivars.

Pink bollworm: These moths lay eggs in cotton bolls, and the resulting larvae feed on the cotton fibbers, reducing yield and quality. Pink bollworms can be controlled using insecticides or cultural practices such as crop rotation.

HARVESTING OF COTTON: -

- Cotton is harvested when the bolls (the fruit capsules that contain the cotton fibbers) are fully mature and have burst open, revealing the fluffy white fibbers inside.

- Overall, efficient and timely harvest of cotton is critical for achieving optimal yield and quality. By using the right harvesting methods and maintaining proper equipment, farmers can maximize their cotton production and profitability.