

LESSON FOR WEEKNINE (9) ENDING 7TH NOV, 2025.

SUBJECT: AGRICULTURAL SCIENCE.
TOPIC: ENVIRONMENTAL FACTORS AFFECTING AGRICULTURAL PRODUCTION
CLASS SS1
DATE: 3RD NOV, 2025

Meaning of climate.

Climate refers to the general average weather conditions in an area over a long period, at least thirty-five years.

Weather is a term used in describing the prevailing atmospheric conditions of a place at a particular time. The element or factors of climate that influences agricultural production are rain fall, humidity, temperature, light, pressure and wind.

IMPORTANCE OF CLIMATE IN AGRICULTURAL PRODUCTION

1. Climate affects the duration of a cropping season.
2. It determines the yield of crops and animals.
3. It limits the types of crops or livestock to be grow or reared in an area
4. It also affects vegetation distribution and soil formation.
5. It affects the incidence of pest and disease.

CLIMATE FACTORS AFFECTING AGRICULTURAL PRODUCTION.

1. **Rainfall:** Rainfall is defined as the release of excess condensed water vapour in the atmosphere into the earth.

EFFECT OF RAINFALL ON CROP PRODUCTION.

- I) It determines the length of planting season.
 - II) It determines the type of crops grown without irrigation.
 - III) It determines the distribution of crops and animals.
 - IV) It is necessary for seed germination
 - V) It helps to dissolves nutrient in the soil etc.
2. **Temperature:** Temperature is defined as the degree of hotness or coldness of a place.

EFFECT OF TEMPERATURE ON AGRICULTURAL PRODUCTION.

- i) It controls seed germination.
 - ii) It affects the distribution of plants and animals.
 - iii) Unfavourable temperature may result in seed dormancy.
 - iv) High temperature reduces the performance of livestock.
 - v) It controls the spread of infectious disease etc.
3. **Sunlight:** Sunlight is the amount of and the period the sun's rays are received at a place. Sun light controls day length, thus some plants are classified as a long day, short day, neutral, day- neutral plants. These plants are photosensitive or photo periodic. Light divides plants into three periods:
 - **Long day plants:** These plants require longer day light of between 13 – 15 hours of sunshine e.g. millet, sorghum, potato.
 - **Short day plants:** These plants require shorter day light of between 8 – 10 hours of sunshine e.g. cocoa, kola, oil palm etc.
 - **Day-neutral plants:** These plants require equal period of day and night, that is about 12 hours of sunshine and 12 hours of darkness e.g. tomato

EFFECTS OF SUNLIGHT ON AGRICULTURAL PRODUCTION

- i) Light affects evapotranspiration.
- ii) It affects the period of feeding for animals in the range system of management.
- iii) It controls flowering in light-sensitive plants etc.

Wind: Wind is air in motion and has impact on soil, plant and animals.

EFFECTS OF WIND IN AGRICULTURAL PRODUCTION

- 1. It causes wind erosion in dry areas.
- 2. It spread fungal diseases.
- 3. It damaged plants and buildings in areas without wind breaks.
- 4. It helps in weed dispersal.
- 5. It is responsible for the seasons I West Africa etc.

BIOTIC FACTORS

These are living organisms which affects agricultural production and the distribution of crops and animals. while Some are macro organisms. they may be plant(flora) or animals (fauna).

Biotic factors that affect agricultural production are;

EFFECT OF PREDATORS ON AGRICULTURAL PRODUCTION.

- 1. These are births, rodents, praying mantis etc.
- 2. Some are beneficial in agricultural
- 3. Some are used to control some harmful pests of crops and animals
- 4. Some feeds on farm animals e.g. hawks feed on chicks

Soil organisms: These include bacteria, fungi, earth worm, rodent and termite.

EFFECTS OF SOIL LIVING ORGANISMS.

- 1. Some, like bacteria and fungi can cause disease.
- 2. Some aid aeration of soil, percolation and fertility.
- 3. Some, like the root nodule bacteria can fix nutrients directly to plant and soil.
- 4. Some open up wounds n plant or animals for other pathogen to enter.
- 5. Some help in the decomposition of plants materials to form humus.

Pests: These include insect, rodents, birds and some mammals.

EFFECTS OF PESTS.

- 1. They reduce the yield of crops and animals
- 2. They also reduce the quality of crops and animals.
- 3. Some are vectors or carriers of diseases.
- 4. They reduce the income of the farmer.

Parasite: These include ticks, liver flukes, tapeworms and lice.

EFFECTS OF PARASITE.

- 1. Some transmits diseases.
- 2. They reduce the quality or yield of produce
- 3. They may cause the death of plants and animals.
- 4. They increase cost of controlling them, etc.

Disease: they may be diseases caused by viruses, bacteria, fungi, protozoa, etc.

EFFECT OF DISEASES.

- 1. They cause reduction in yield of crops and animals.
- 2. They can cause the loss or death of crops and animals
- 3. The cost of controlling diseases increase cost of production
- 4. They cause reduction in farmer's income, etc.

EDAPHIC FACTORS THAT AFFECTS AGRICULTURAL PRODUCTION.

The edaphic factors that affect agricultural productivities are;

- i. Soil pH
- ii. Soil texture
- iii. Soil structure
- iv. Soil type.
- v. Topography
- vi. Soil fertility.
- vii. Soil erosion.

Soil pH: This measure degree of acidity and alkalinity of the soil.

EFFECT OF SOIL PH.

1. It affects the growth of plants.
2. It also affects the availability of soil nutrients.
3. It affects the activities of soil micro-organisms.
4. It causes toxicity (poisonous) to plants and animals in the soil etc.

Soil texture: This refers to the proportion of sand, silt, and clay in a given soil sample. It also refers to as the degree of coarseness or fineness of the soil.

EFFECT OF SOIL TEXTURE.

1. It determines the type of soil in an area.
2. It limits the level of soil fertility.
3. It determines the type of crops to be grown.
4. It affects the level of leaching and erosion etc.

Soil structure: This is the arrangement of soil particles into aggregates or peds.

EFFECTS OF SOIL STRUCTURE.

1. It determines the fertility of the soil
2. It determines the water- retaining capacity of the soil.
3. It determines the level of soil organisms.
4. It limits the level of soil aeration and percolation (filtration of a liquid through a porous substance).

Soil type: This includes sandy, clayey and loamy soil.

EFFECTS OF SOIL TYPES.

1. Loamy soil is rich in soil nutrients; hence it is the best soil for agriculture.
2. Sandy soil does not contain enough nutrients, hence it cannot support crop growth
3. Sandy soil encourages leaching and soil erosion.
4. Clayey soil encourages water- logging and erosion but prevents leaching of plant nutrients.

EFFECTS OF SOIL FERTILITY.

1. Fertile soil leads to the production of forage crops and plants for grazing.
2. Fertile soil aids the production of food and cash crops.
3. It minimizes the use of fertilizers and manures.
4. It leads to multiplication of beneficial soil organisms.
5. Fertile soil leads to reduction in cost of production etc.

EVALUATION.

1. Define climate.
2. List the element of climate that affects agricultural production.
3. What are biotic factors

4. List the edaphic factors that affect agricultural production.
5. Explain the effect of diseases on crop production.

ASSIGNMENT.

1. Explain the following;
 - (i) Competition
 - (ii) Parasitism
 - (iii) Symbiosis
 - (iv) Commensalism
2. Explain the effects of the following on agricultural production; topography, erosion and humidity.