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Economic Importance of trees

- Factors affecting trees

Long day plants are plants that will not flower when the day is below 12 hrs, short day plants don't flower when the day is below 10 hrs.

Cocoa originates from Mexico.

Coconut originates from India.

Cypress was found in India but Spain played a vital role in distributing it to other parts of the world.

Major factors affecting trees

- Kind

- Temperature

- Altitude

- Soil

- Rainfall

- Thunderstorm

- Solar radiation

* Environmental factors are inter-changes and they don't operate in isolation.

Economic Importance

→ Trees are indispensable to life on earth. They are basically the lungs of the environment.

- Without trees, oxygen can't be released from the atmosphere.

- Trees help in carbon sequestration (the removal of carbon from the atmosphere).

- Trees help in temperature moderation (by providing shade).

- Trees serve as wind breaker (reducing the velocity of wind).

- Trees help in soil conservation (protection of soil against sediment and loss by erosion).

- Trees prevent direct impact of soil to the soil.

- Serves as a source of food.

- Trees as source of medicine (herbs).

- They serve as source of raw materials for industrial purposes.

- It is a source of income and exchange.

- It helps in wildlife conservation.

Tree Crops

11/06/18

* All tree crops are permanent crops e.g. oil palm. In terms of tree crop production, there are few measures to be considered. They are:

- Crop

- Soil

- Location

- Land size.

* Seed is a planting material.

Seedlings are young plants raised in the plant nursery. They are gotten from seeds.

* Underbrushing refers to the removal of small shrubs leaving the big plants.

* Stumping is the total removal of the whole plant from the planting area.

* Area of an hectare = $100m \times 100m = 10,000m^2$.

* Lining and marking are done with the use of surveying materials e.g. ranging poles.

* There might be no need to stump if underbrushing and lining is properly done at the affected areas.

Terminologies used in lining/markings

- Obstruction

obstruction

- Cut

cut

- On/off

on/off

- Tension

tension.

- Distance

* In planting, two figures must be involved for all tree crops. e.g. $6m \times 6m$ or $5m \times 4m$. For pineapple, it is triangular and it has three figures.

The planting distance of each crop is based on the canopy formation.

The various shapes of planting distances are:

- Triangular shaped

- Rectangular shaped

- Square shaped

* Debris gotten from underbrushing should be kept to decompose in order to provide nutrient for the soil.

How to dig in preparation for planting permanent crops

1) Use the spade to remove the topsoil first to the left.

2) Keep digging till you get to the red soil which is the sub-soil. Keep it at the right.

3) Obtain 60cm, then insert the seedling.

4) Get organic manure (compost manure), it should be poured into the hole. If manure isn't available, the top soil should be pounced back into the hole.

Methode involved are:

- Ball method/ball of earth method.

- Naked root method.

* Naked root method is practised where the soil is infected by nematodes.

In wide planting, the land must be ~~soil topography~~. It is used for slope stationing in sets in order to create pathways for handling during cultural practices or for wheelbarrows, tractors & machinery. The pathway should be up to 4cm wide.

Agricultural practices are limited & it involves loss of nutrients on a steep slope land, soil management materials, soil P meter, soil moisture meter, hydrometer.

Management practices

- Keeping
- Pest management
- Pruning.

To control weeds:

Cover crops can be introduced e.g. cowpeas

Effect of soil & environmental factors on tree crop production

Soil affects trees in so many ways primarily for mechanical support including trees which provides nutrients like the macro & micro nutrients.

It provides moisture - It helps to dissolve soil nutrients in form of ions for plants to absorb. Most tree crops can grow in a wide range of soil and wide range of pH they do well at 5-7-8.0. At acidic soil the nutrients are available but the availability for other trees is access which is reduced by trees.

Soil texture - i.e. the height of water table, the volume of the soil, soil that has no impermeable layer for roots to penetrate how it is determined.

- Parent material

- Quantity of rocks in the soil

Soil physical properties which are:

- texture, soil structure by the arrangement of the soil layers down the soil especially the proportion of sand, silt, loam & clay.

Amount of organic matter

Plantains, bananas are heavy feeders of organic matter.

O₂-N₂ needs especially during seedling

In waterlogged soil there's no O₂, O₂ does not grow more in a well drained under shaded water

ORIGIN AND DISTRIBUTION OF VEGETABLES

To define what is a vegetable is not very easy. Rather, the meaning of the word was based on what local people considered to be vegetables. In Africa, most vegetables are used as condiments which accompanies starchy staple foods. However, the term "vegetable" has been applied for those horticultural food crops which do not fall into the category of cereal foods, ripe pulses, nuts, herbs, stores or large starchy root crops.

In every day usage, the vegetable is any part of a plant that is consumed by humans as foods, as part of a savoury meal.

Vegetable growing in home gardens are becoming increasingly important to people and many of which are regarded as referred to as indigenous vegetables. Horticultural activities have created

especially when migrants from different ethnic zones bring their crop seeds with them.

This has perhaps been a bit difficult to trace the origin of vegetables. Several species are consumed by people from a particular locality but their origin are different. For instance, vegetables like leaves of Cassava and

sweet potatoes or the leaves & flowers of plants which are often consumed in African countries originated in South or Central America.

Similarly, people in Senegal appreciate the leaves of Unnionia glabra. But, in reality it is native of Asia. In the same way, Amaranthus cruentus which originates from the North of Central America is widely grown & eaten by African continent.

However, the possibility that seeds of some plants found their way to Africa as early as 2500 years ago is an indisputable fact.

African people who were brought to America as slaves did carry seeds of their

Plants - Amaranthus which one day but can produce a living crop a few weeks could have been of strategic interest to travellers sailing new and unknown territories.

This can explain why Amaranthus Cuscuta and related species can be found in many tropical and subtropical regions around the world while their origin is considered to be in America. Certain crops which have a part African & part African includes;

- Common Okra
- Spider plants

- Waterleaf

African crops that originated in the forest of African crops that originated in the forest zone includes a wide range of vegetables such as the

- Fluted pumpkin

- Bitterleaf

- West African Okra

The ecological zone between forest & savanna is the home of Cowpeas & Potatoes, whereas typical savanna crops includes

- Cassava & common Okra -

Typical crops from semi- and arid areas are;

- Watermelon & Sesame

Vegetable crops of economic importance (Types of Vegetables)

- Leafy vegetables:

- True Vegetables -

* Leafy vegetables include;

1) Amaranthus spp.

2) African spinach.

3) Fluted pumpkin.

4) Tetragonia occidentalis

5) Amaranthus spinosus

6) Lettuce - *Lactuca sativa*

7) Waterleaf

8) Cabbage - *Brassica oleracea*.

Fruit Vegetables included

Waterleaf - *Veronica amplexicaulis*.

8) Tomato

9) Pepper

10) Eggplant

11) Cucumber

12) Green eggplant

13) Cucumber

Bulb Vegetables (onion, garlic)

Climatic requirements of vegetables

1) Most vegetables grow under tropical conditions especially in the West African Sub-tropical regions are known to thrive in a warm climatic condition. They also can survive on a relatively adequate amount of rainfall.

Temperature is essential especially during the reproductive season. Shortage of water will result in early flowering especially in such vegetables like Amaranth. Examples of some vegetables known to be work-season plants include Okra, tomatoes, pepper, eggplants etc. Lettuce on the other hand is best grown at room temperature and it is sensitive to higher temperature. It is a known fact that seeds of lettuce will never germinate at high temperature of about 49°C.

Soil requirement: Most soil required for the profitable cultivation of vegetables are those soil which are rich in organic matter. They often grow well in well-tilled garden soil. In poor soil condition or infertile soil, additional fertilizer application is needed. Soils rich in Nitrogen & Phosphorus is recommended for vegetable cultivation.

Nursery practices in vegetable crop production
A nursery bed is a special piece of land normally of varying sizes prepared for raising seedlings of certain crops which normally will not be sown directly into the field before they are transplanted. Nursery practices refers to all activities carried out when preparing and managing nursery beds. A seedling bed is a special type of nursery bed used for raising seedlings that has been removed from an overcrowded nursery bed before they are ready for transplanting.

Importance of a nursery in crop production

- Production of many seedlings in an area.
- Easy management practices.
- Best conditions for growth can be achieved.
- In a nursery, only healthy and vigorously growing seedlings are obtained.
- Mature seedlings are transplanted, any excess from the nursery bed can be sold to earn income.

Procedure for establishing a vegetable nursery bed

- 1) A suitable site is selected and marked out.
- 2) Remove all the vegetation and foreign objects such as stones, roots using appropriate tools.
- 3) Drag plough the soil to dislodge perennial weeds.
- 4) Broadcast organic manure or fertilizers on the nursery bed and work it well into the soil.
- 5) Measure and mark the width of the nursery bed and of any appropriate length.
- 6) Make raised or sunken beds depending on the weather condition of the place.
- 7) Make shallow drills 10 - 20 cm apart and plant the seeds uniformly and cover lightly with soil to prevent excessive moisture loss and grass crop infestation.

Agropractices in Vegetable Crop Production

Sustainable vegetable farming system is a relatively high cost per hectare requiring extensive management system. Profit and loss are affected by uncontrollable factors including weather, market fluctuations, pest invasions and legislation. Therefore, growers must pay close attention to variables which they can control. Wise selection of cultural practices improves production efficiency, lowers production cost and increases profitability.

(1) Crop Selection: The selection of vegetable kinds and varieties for production is the initial step in the development of a successful vegetable farming operation. Although, vegetables are widely adaptable, successful production in a given area will be influenced by factors such as;

- Water
- Soil
- Wind
- Temperature
- Light
- Nutrients
- Market

Therefore, crop selection should be based on the ability of these factors within a given location to grow during the season.

Irrigation: This means sufficient quantities of quality water must be available to sustain vegetable farming. As the state's population continues to increase, less water may be available for

vegetable production. Water use efficiency can be increased through effective transmission application schedule, water reduction can occur if moisture stress occurs during critical growth stages of the crop.

9/2/18

Bulky vegetables 9-9 onion
Root Vegetables 7-9 Carrot
Tuber Vegetables 2-9 Potatoes

Importance of vegetables in man

Vegetable plays an important role in human nutrition. Most are low in fats and calories but are bulky and filling. They supply dietary fibre and are important sources of essential vitamins, minerals and trace elements.

When vegetables are included in a diet, it is found to be a reduction in cancer incidents, cardiovascular disease and other chronic ailments.

The nutritional content of vegetables varies considerably, some contains useful amount of protein and varies proportions of vitamins. Such as, vitamins A, K & B, C, dietary minerals & carbohydrates.

Assessment: What is a vegetable? Market gardens and their features?

10/07/18

(2) Temperature: Growing season temperature influences crop production.

Vegetables are classified as warm or cool season crops based on their ability to grow within a given temperature. Warm season crops are those that produce higher yields under high temperatures (Tomato, Peppermint) while cool season crops are those that produce best under cool temperatures (Carrot, Cabbage, apple etc.).

(3) Light: sunlight is intensity, quality and duration affects vegetable growth.

With light intensity, little can be done to alter quality under field conditions. However, crops with row covers and selecting planting dates which provide the most desirable daylength is important in onion production. Daylength influences onion bulking rate.

(Removal of excess) Cutting off
leaving from the top excess leaves
at growing site. In a plant Reducing (separating disease
leaves & burning)

1. Thinning 2. pruning 3. Raking

equal day & night.

Flowering occurs between 1st
& 3rd September annually
Soltice occurs around 1st
& November.

than flowering as it is in most other vegetable crops. Onion growers manage the influence of daylength by selecting varieties with the appropriate daylength condition in the growing areas. They sow onion seeds at a time when shorter days and begins to form bulds when daylength increases.

Day length and light intensity also influences crop water requirement.

In general, the greater the intensity of light the greater the rate of transpiration and the

greater the need to replace water.

establishment.

Enhances plant stands & faster maturity

3) It helps to eliminate thinning.

TOBACCO

25/07/18

COMMON DISEASES AND PESTS OF TREE

AND VEGETABLE CROPS.

1) COCOA (*Theobroma cacao*)

a) Land preparation: Most vegetables have Cocoa belongs to the genus "Theobroma" in the small to medium size seeds. Consequently, proper seed bed preparation is important. If soil moisture is simply sufficient, the former is expected to irrigate in order to replenish moisture to replenish moisture to fill the capacity once the soil sufficiently dries,

which are used primarily in the manufacture of chocolate and other beverages. Cocoa is affected by a range of pests and diseases which can be bacterial, fungal or viral in nature. Also, some

bacterial, fungal or viral in nature. Also, some

insect pests may affect cocoa plants.

2) Bacterial diseases of Cocoa

- Crown Gall; It is caused by a bacterium

(*Agrobacterium tumefaciens*). It is the formation

of tumors (outgrowths) on the crown or cork of the plant. The pathogen has flagella that allow it to spin through the soil towards the immediate

surrounding of the roots, thus, making its way into the root of the plant - Symptoms;

presence of round rough surface galls.

Advantages of Transplanting

1) Enhances earlier harvest

2) Reduces impacts of adverse environmental conditions during the early seedling growth.

3) Reduced seed quantity needed for crops

- several mm or more in diameter usually black pod disease - It is the most serious disease across the soil, bud union or on roots and of Cocoa in West Africa especially in Nigeria on lower stem. The gall are at first cream colour. causative agent(s) - *Phytophthora palmivora*. Major damage are:
- 1) virgin and may die. Prevention & control:
 - a) use of nursery stalk free of disease
 - b) practising a five-year rotation or avoiding re-planting.
 - c) removing severely infected plants.
 - d) protecting the plant against injury.
 - e) keeping down weeds.
 - f) controlling root chewing insects and nematodes but for very young pods it takes 4 days.
 - g) cutting away large galls on trees and in this time the pod has turned black and gradually dries out from the tree as light weight.
 - b) Fungal Disease of Cocoa - There are shrivelled and hard fruit. The disease can be numerous diseases of fungal origin off the popularly name from this stage of producing cocoa plants. These includes:
 - Black Pod Disease; caused by (*Phytophthora* ~~on~~ ^{of} wilt on the fluted leaves of Cocoa with *palmivora*)
 - Anthracnose; caused by (*Gibberella* *conigata*) The spread of the fungus faces place through a tip brown and shrivelled.
 - Armillaria root rot; caused by (*Armillaria* innumerable spores produced by the fungus (*Mellea*)) The means of dissemination of those spores to the healthy crops areplashing or dropping rain drops, Squirrels, Insects, harvesting tools that are Infected. The disease is favoured by
 - Fusarium pod rot; caused by (*Fusarium* spp) the healthy crops are splashing or dropping
 - Ceratocystis wilt; caused by (*Ceratocystis* *fimbriata*)

heavy rainfall the wind blown rain is essential for the initiation of the primary infection prevention and control; These methods are aimed at reducing the infective spores available to cause new infections or preventing the spores from penetrating the healthy pods after reaching them.

1) Removal of Infected pods : It is important to remove newly infected pods which contains spores which may cause new infections, because they are covered with white powdery moulds. Trees should be inspected from time to time to check any evidence of small brown areas.

2) Weeding: Weeding plantations are more humid and thus favourable for easy germination of the spores which can cause new infection. Regular weeding and farm hygiene is therefore essential for reducing back pod infection. This exercise favours quicker drying of their effects on yields and known surfaces of the pods.

3) Chemical control: The crop rotation chemicals currently recommended for use against the disease in West Africa are;

- Perenox; Brestan; carbide-fordeaux mixtures; Lime fordeaux mixture.

The lime fordeaux mixture is preferred because it is the cheapest. The proposal of using the fungicide is to kill or destroy the germination of crops on contact for effective disease prevention; spraying should start very early in the season to prevent the initial appearance of pod rots on trees.

Also, there should be repeated spraying because rain can wash away some of chemical and newly grown plants of the pod may not receive the chemicals.

c) Viral diseases of Cocoa

— Swollen shoot disease of cocoa; this is a viral disease first noticed in Nigeria in 1944. Cocoa growing areas like Ghana, Ivory Coast have witnessed similar disease about 20 (sub-group) strain of the virus recognised by the symptoms and the severity of the effects on yields are known.

in West Africa. The disease has been one of the most important factors limiting cocoa production in these areas.

Symptoms:

- 1) The first symptoms may not appear until 6 months or more after infection.

Symptoms are seen on herbage produced rarely more and are considered of little importance after infection especially the rapidly importance in the transmission of the virus.

Young shoots, leaves, stems, pods and roots. These symptoms include the following:

- On the young flush leaves, a network of moving crawlers which spread the disease
- Red vein banding appears [vein becoming red] with kola, sick cotton tree may contain the virus
- This soon develops into vein clearing or swollen shoot virus and can be transferred to the cocoa by the mealy bug.
- Chlorosis (when the green pigment starts to disappear and turning to yellow ones if it becomes almost transparent).

Prevention and Control:

- Removal of Infected trees: This is the most effective method.

- Root and stem symptoms appear after shooting viable option as the disease is difficult to cure.
- Infected pods appear rounded and small to cure.
- or show some mottling.
- Growth of infected Cocoa tree reduces, stems also reduces in diameter
- Also, seedling height, number of leaves, root length all reduce.
- **Pests of Cocoa**
- Regular Inspection for Infected trees.
- Control of weeds.
- Use of Improved varieties of cocoa.
- Use of viral free planting materials.

The spread of the disease;

- Mealy bugs; These are the bugs that carry Peels of Cola in West Africa. Young and mature seeds are mostly affected. They kill the plants and thereby decreasing the yield of the crop. They are also called "Cats". They can be brown mealy bugs (*Cathartococcus sinensis*) or black mealy bugs (*Distaphylus theobroma*) and are found mainly in the "Ife, Ondo and Akure" areas of Nigeria. The most rare type of mealy bugs (Crawlers) are mainly responsible for carrying the disease from one tree to another. The adult mealy bugs

mid is called "cocoa mosquito" (*Helopeltis*) after rains or when cocoa farms are regenerated. The following control methods should be taken;

- 1) Maintain a complete canopy by providing a thin overhead shade like that over the gap of the cocoa tree. This can be provided by forest trees or by planting Cassava or plantain trees.
- 2) Rational use of pesticides and spraying with recommended insecticides such as Confidor, Afrazuze, Adara, Granolin 20.
- 3) Use recommended spraying equipment, use motorised knapsack machine for mature cocoa of two (2) years or more. Use hand operated sprayer for young cocoa under two years.

yet they can cause the commonest type of damage die-back. In this case, the branches or canons die and the dead brown leaves remain attached to the tree. The alternate host plant Insects (kola tree species, Chrysanthemum and Cotton trees).

Control: Mids are a problem in farms where shade is thin or non-existent. This happens when shade or neighbouring trees are felled, when Cocoa trees die due to

5) Stem borer: This is a moth, it spreads or damages die and the dead brown leaves which kills the natural predators of these pests. They can also be found where no pesticide is used.

Symptoms - ① presence of sticky sap on Cocoa tree bark.

② Attack branches lose their leaves, dry out and die off.

3) presence of silk threads on branches

Control - (1) Rational use of pesticides to keep insect pests in check and preserve natural enemies of stem borers.
(2) plant a barrier crop that is not attractive to stem borers. e.g sweet potato, cocoyam and Leucena spp.

Other pest of cocoa includes;

- Mt. Millipedes
- Termites
- Plant parasite (Mealybug)

DISEASES & PESTS OF OIL PALM

(*Elaeis guineensis*).

A) Nursery disease (Freckle).

i) Freckle; A characteristic symptom of this disease is a distinct brown spot surrounded by a yellow-orange halo (ring).

It is a fungal disease caused by (*Cercospora chidii*). It affects seedlings in the pre-nursery and nursery stages. If it is allowed to become severe, the growth of the seedlings will be checked and their figure retarded.

Control - This fungus disease to a considerable extent by spraying with fungicides at two weeks interval throughout the season.

ii) Anthracnose; This disease is also a fungal disease which attacks seedlings both in the pre-nursery and nursery. It is a general term referring to a ^{Complex} permanent disease condition by various fungi belonging to the following genera; - *Melanconium*,
- *Glomerella*,
- *Corticium*.

Symptoms; The symptom of the disease is first seen at the nursery but becomes more serious when the seedlings are planted out in the nursery. The general condition of the disease is the appearance of dark necrotic lesions on the leaves of seedlings usually at the pre-nursery and nursery stages. The lesions develop either at the margin or at the centre of the seedling leaves. The disease causes heavy losses if not controlled on time.

Control - (1) plant the seedlings at a low density in the pre-nursery.

(2) spraying of fungicides onto the seedlings. Captan powder or Kunam is used at the rate of 90g / 50L of water and 453.6g / 450L of water respectively.

B) Plantation diseases

i) Vascular wilt - Its causative agent is a very serious pest. They nest in swarms in the palm fronds completely defoliating them. Control can be achieved by spraying herbicides, shooting to scare them away and by the use of scarecrows.

(ii) Deficiency Diseases -

i) Confluent orange spotting; This is caused by potassium deficiency. Symptoms appear on the palm fronds and they become covered with orange coloured spots. In severe cases, the fronds dry up and die. It can be controlled by the application of potassium fertilizers e.g. Muriate of potash (MOP) at the rate of 2.5 kg per tree per year.

ii) Orange fronds; This is caused by magnesium deficiency in the soil. The leaflets (lamina if the whole surface of the leaf) shows prominent orange colour appearance. Control is through the application of magnesium fertilizer at the rate of 2.72 kg/tree/2 years.

Pests

The oil palm has a lower number of pests than most tropical tree crops like Cocoa and Kola. The major pests of oil palm includes the following:-

i) Weaver birds (*Querula querula*); These are

Termites - They usually attack the palm especially their roots. Control is by the use of Rodos 40 and Insecticides.

iii) Beetles (both adult & larva) - Attack by the larvae of these beetles is not as serious as the adults which constitutes a very serious damage to the plant especially within the crown (the upper part of the plant). Control is by hand-picking and application of Insecticides.

Other Pest Includes;

- Mites
- Red spiders.
- Grasshoppers.
- Locusts.

e.t.c

DISEASES AND PESTS OF COCONUT

(Cocos nucifera)

i) Bud rot; This is one of the worst diseases of coconut and is found in all coconut producing areas. Causative agent - *Phytophthora palmivora*.

Symptoms: (1) Form of all ages are suscep^t nutrient deficiency, Unfavourable soil cond^{it}s
ible to the diseases, but it is more freq^u (droughts, shallow and rocky places) where
root movement is Impeded also brings about
w^ent on young ones.

- (2) Yellowing of one or two young leaves surrounding the spindle.
- 3) Basal tissue of the leaf rot quickly and are separated from the crown.
- 4) Infection spreads to the other leaves causing older leaves upwards to the younger leaves sing sunken leaf spots covering the entire leaf blade.

5) In severely affected trees, the entire crown may rot and in a few months, the tree wilts.

Control: (1) Apply Bordeaux mixture at the initial stage of the disease when the spindle area entirely and select a suitable site.

This should be done after removing the affected tissues and proper cleaning prevents the spread.

2) All the healthy parts around diseases plant should be sprayed with bordeaux mixture or copper oxychloride (3g/l).

3) Badly affected trees which are beyond recovery should be cut down and burnt.

4) The coconut farm should be kept clean.

i) Bronze leaf wilt: This is caused by

Symptoms: (1) The older leaves turns bronze in colour while the younger ones have yellow tips, the disease progresses from the older leaves upwards to the younger leaves until the growing point wilts and the plant eventually dies.

Control: (1) Practice deep cultivation and apply organic manure to improve the soil structure and inorganic.

If this is not practicable, select discards the initial stage of the disease when the spindle area entirely and select a suitable site.

PESTS:

i) Rhinoceros beetles (*Oryctes rhinoceros*): This is the most serious pest of coconut palm. The insect is large, black or brown with erect or curved horn. Larvae are creamy white, and the beetles are nocturnal and fly at night.

Symptoms: (1) V-shaped cut in palm fronds or holes in leaf midrib caused by beetles boring holes into the crown to feed.

(2) The beetles feed on the substances around the growing point of the coconut.

(3) They chew up the young leaves which are

reformed when they expand

Control: ① Destroy all old stumps and decaying logs in the plantation, by chopping and ~~cut~~ burning to kill all larvae that may be hatched.

② Remove any dead tree from the plantation and destroy by burning them.

③ Inspect palms and note damage fronds of crown for holes that may be caused by adult beetles. Also, inspect the leaf litter at the base of the tree for the larvae or grubs.

Set up light traps following the first rains to attract and kill adult beetles.

Apply insecticides when necessary, apply mixture of neem seed powder and

the ratio of 1:2 at 150g per fortnight

in the base of the three innermost trees in the crown

- Diseases

- Light (sun)

- Humidity

- Wind

- Nutrients

* Use of irrigation

* Use of animal waste product.

→ There are about 17 essential nutrients which plants

needs to grow

Light → Infrared radiation → 49.4%

Ultra violet → 8%

Visible light → 42.3%

→ The green house materials are UV protected.

Rain, insects, birds and UV cannot penetrate the UV

Sunlight and diseases can penetrate the UV

Green House → This is a structure that is covered

with a transport material in which plants can grow

Under the condition of at least partial environment

Control: It should be large enough to allow workers to carry out their work

16/08/2018

CROP PRODUCTION IN GREENHOUSES

Factors that affects crop production

- Temperature ($15 - 30^{\circ}\text{C}$)

- Rainfall. (precipitation)

- Pests

In our environment, CO_2 is released through combustion (burning of fuel) of fossil fuels.

Advantages of green house effects:

- Cultivation can be carried out anywhere regardless of the environment.

Green houses are used mainly for vegetables grown in the green house before leaving which are horticultural crops -

Crops grown in the green house have premium value.

2) The crops can be grown all year round with green house. Crops grown in the green house last longer in the green house crop production is very high e.g. Tomato, cucumber, watermelon, sweet pepper. Green house yields can be as high as 10-12x.

3) There is superior quality of produce because of the reduction of Ultraviolet.

4) Pests and diseases can be controlled in the green house adequately.

fertilizer to use.

Soil test must be carried out.

b) It is a source of self-employment.

Methods of classifying green house gases.

* shape or style ~~frame~~

- Gable

- flat arch.

- Tunnel.

- Sawtooth

- Dome

- Igloo

* utility

- Active heating (-10° - -30°)

- Active cooling

* frame materials -

- Wooden frame (cheapest)

- Pipe frame ^{steel} pvc

- Trusses

* covering materials -

- Glass green houses.

- Plastic materials

- rigid panel -

* technology

- low - medium - high

GST 201 AST 201(2)

CHITEX

INSTITUTION

Technology, Owen (FNUO)

FACULTY

& Agricultural Technology (SAAT)

COURSE CODE

SST202

LEVEL

200 level

LECTURE

LECTURE DAY(S)

VENUE

TIME

which materials for green house construction -

- Glass -

- Wood -

- Galvanized iron -

- Steel -

- Aluminium sheet -

- PVC materials