

### Scheme of Work for SS1 3rd term

1. Reviews of last term of 3rd term scheme of work
2. Maintenance practices and precautional measures (ii) Reasons for maintaining farm machines (iii) maintenance of farm machinery. check water and oil level, regular carry out routine service- keep the machine clean after use etc
2. Problems of agricultural mechanisation (i) meaning of agric mechanisation increased productivity (ii) reduced drudgery (iii) times liness of etc (iv) disadvantages of agric mechanism e.g displacement of workers desmiction of soil structure - environment pollution etc (v) limitation of farm mechanisation - economic limitation- technical know.how limitation.
4. Prospected of agricultural mechanisation (ii) identify ways of improving agric mechanism. development of less expensive mechanisms. establishing agric engineering schools
4. Prospected of agricultural mechanisation ii identify ways of improving agric mechanism. development of less expensive mechanisms. establishing agric engineering schools for personal and falirication of simple machine
5. Sources of farm power (I) human sources (ii) animal (iii) water sources (iv) mechanical (v) electrical (vi) solar (vii) Wind etc (2) advantages and disadvantages of each type
6. Classification of crops (ii) classification based on their life cycles
7. Mid\_term test/break
8. husbandry of selected crop, botanical names and local common name of the crop\_ varieties or types climatic and soil requirement, land propagation, method of propagation \_ planning date seed rate spacing\_ cultural practices: spacing, thinning, manuring and fertilizer application, weeding, pest and diseases control, harvesting, processing and storage of selected crops
- 9&10. Pasture and storage crop: meaning of pasture and forage crops\_ uses of forage crops\_ types of pasture: natural pasture and artificial pasture and their characteristics\_ common grasses and legumes used for growing live stock (i) their botanical names and legumes used for grazing live stock (ii) the affecting the distribution and productivity (iii) factors affecting the establishing of pasture and management practices of pasture
11. Revision
- 12&13. Examination, record and result processing

## **NOTE ON AGRICULTURE FOR SS1**

### **TOPIC: AGRICULTURAL MECHANIZATION**

This refers to the use of machines in carrying out agricultural operations. It is dated back to the historical period of industrial revolution. It was necessitated by the realisation that the use of work animals and total dependence on human labour for the production of food and fibre was no longer tenable. Without farm mechanization. It will be difficult to produce enough food for our teeming population.

The use of motorised equipment and modern equipment are also involved in mechanization.

### **MECHANIZED AGRICULTURAL OPERATION**

These are agricultural operations that are piloted by machines. They include:

- (1) The plough: it may be disc or mould board ploughs.
- (2) The harrows: it may be the disc. The spring tooth cultivators .
- (3) The ridgers
- (4) The planters
- (5) The harvester
- (6) The sprayers
- (7) The shellers
- (8) The incubators
- (9) The milking machines

### **ADVANTAGES OF MECHANIZATION**

- (1) it speeds up farm operations.
- (2) it increases farm production.
- (3) it improves food storability.
- (4) it increases revenue.
- (5) it reduces drugery
- (6) it saves labour
- (7) it promotes multiple operation
- (8) it encourages specialization

### **DISADVANTAGES OF FARM MECHANIZATION**

- (1) There is the displacement of workers.
- (2) it leads to the destruction of soil structure.

- (3) it causes environmental pollution.
- (4) it promotes erosion.

### **PROBLEMS FACING FARM MECHANIZATION**

- (1) lack of capital
- (2) land fragmentation
- (3) lack of technical know-how
- (4) Redundancy of machines
- (5) Shortage of spare parts
- (6) food glut
- (7) suitability of machines
- (8) Reduction of work quality

### **PROSPECTS OF FARM MECHANIZATION**

- (1) farmers should be educated on the use of machines
- (2) farmers should be encouraged to form cooperative societies
- (3) There should be the stoppage of land fragmentation
- (4) There should be the establishment of government tractor higher service.
- (5) There should be the production of less costly machines

### **CLASSIFICATION OF CROPS BASED ON THEIR USES**

The various classes are:

- (1) Root and tuber crops example: cassava, yams, cocoyam and potatoes
- (2) fruit crops example: oranges, banana, mango, pawpaw etc
- (3) cereal crops example: maize, rice, oat etc
- (4) Beverage crops example: Coco, coffee and tea
- (5) pulse (grain legume) example: cowpea, soya-beans, groundnut.
- (6) Vegetable crops example: bitter-leaf, water-leaf, cauliflower etc
- (7) oil crops example: oil palm, coconut, groundnut and melon
- (8) fibre crops example: cutting, sisal, jute, kenaf.
- (9) latex crops example: rubber.
- (10) spice crops example: pepper, onion, ginger and garlic.

### **CLASSIFICATION OF CROPS BASED ON THEIR LIFE SPAN**

- (1) Annual crops: They live just for one year after which they die, examples are maize, rice, groundnut, yam and most vegetables.

(2) biennial crops: They live for two (2) years after which they die examples: cassava, plantain, cocoyam.

(3) perennial crops: They live for more than two (2) years.

There are two types of perennial crops.

(1) herbaceous perennial

(2). Woody perennial

(1) herbaceous perennial: Their life span is from three to ten years, example: guava, pawpaw, Casto-seed plant.

(2) Woody perennial: These are plants whose life span is above ten years. examples: trees and shrubs

(4) Ephemeral: These are crops with very short span of life which can be repeated several times in the same season, example: spinach,, onion.

#### **AGRICULTURAL NOTE (CONTINUATION)**

#### **PRODUCTION OF ORANGES (CITRUS)**

Botanical name: \*Citrus sp\*.

Origin: S:E:Asia.

Varieties:

(1) Sweet Orange (Citrus sinensis)

(2) Grape (Citrus paradisi)

(3) Lemon (Citrus Limon)

(4) Lime (Citrus aurantifolia)

(5) Tangerine (Citrus Nobilis)

(6) Sour Orange (Citrus aurantium)

(7) Shaddock (Citrus maxima)

**METHOD OF PROPAGATION:** Oranges are propagated sexually through the use of seeds and asexually through budding or grafting.

**CLIMATE AND SOIL REQUIREMENT:** It needs a well drained deep fertile loamy soil and a rain fall of 125cm and temperature of 20°C.

**LAND PREPARATION:** The land is prepared into beds and flats.

**PLANTING DATE:** Seeds are sown in pre\_\_nursery between October\_December, The six months later the seedlings are transplanted to nursery ie between April\_may. The plant is then budded or grafted a year after being transplanted into the nursery. Then finally transferred to the field a year after budding or grafting which is between the next April \_May.

**SEED RATE:** A seed or seedling is planted per stand.

**PLANTING DEPTH:** The seeds are planted 3cm below the soil and seedlings is planted in a hole that is 15cm in diameter and 30cm deep.

**SPACING:** (For pre\_nursery) :3cm x 3cm in seed tray,  
For nursery: 60cm to 60cm between plants and rows.  
In the field: 6\_9m square depending on the variety.

**FERTILIZER APPLICATION:** At the early stage of growth of plant N:P:C.(8:6:10) Magnesium using the ring method. But at the later stage of growth, Nitrogenous, phosphatic or farmyard manure will be applied to promote its fruiting and maturity using the ring method.

**HARVESTING:** Oranges mature within 3\_7 years after planting depending on the specie. Mature and ripe fruits are picked by hand or by the use of go\_to\_hell to gather the fruits from the upper branches of the trees.

**STORAGE:** Fruits juice are stored into cans and bottles and may be sold locally or exported.

**DISEASES:** Gummosis (collar diseases), Citrus scab, die\_backs, Tri steza.

**PESTS:** Aphid, caterpillars, scale insects and mealybugs, fruit piercing moths.

### **AGRICULTURAL SCIENCE NOTE CONTINUATION**

The various classes of crops like cereals, legumes, root and tuber crops fruits, oil crops, vegetables, beverage crops, spice crops, fibre crops, and latex crops half their various sources or origin and methods of production.

## MAIZE

Botanical name: Zea mays

Origin: Mexico in America

Varieties: Dent maize, flint maize, pop-corn and sweet corn.

METHOD OF PROPAGATION: By seed.

Climatic and soil requirement: maize needs a well drained loamy soil and rain fall of 76cm to 152cm.

LAND PREPARATION: land is prepared into flats, ridges and moulds.

PLANTING DATE: Mid March\_early April ( early maize) late August\_mid September ( late maize).

SEED RATE:( Number of seeds/ha):25\_30kg/ha.

SPACING:30cm along the rows and 90cm between the rows.

SOWING DEPT:2\_4cm

MANURING AND FERTILIZER APPLICATION: Sulphate of ammonia and N.P.K (10.10.20) are applied. The fertilizer should be supplied just after producing the first roots which will then make use of the fertilizer, use row application or ring methods.

HARVESTING: Maize mature after 14\_20 weeks of planting. It is harvested by tearing the cob is shelled and dried in the sun, smoked over fire and stored as cob in cribs and as grains air- tight and insect free containers such as silos and drums.

DISEASES: Corn smut, maize rust, leaf blight, leaf spot, maize streak.

PESTS: Army worm, stem borers and weevils.

## **PRODUCTION OF CASSAVA (MANIHOT SP)**

Origin: Brazil in South America. It is a root tuber, it is a latex producing plant. It is a handy crop and can grow well even in very poor soil and climate.

### **VARIETIES**

(1) The sweet cassava (MANIHOT PALMATA)

(2) The bitter cassava (MANIHOT UTILASIMA)

The bitter cassava contains a bitter juice which is poisonous to human and life stock called HYDROCYANIC ACID. The poison is detoxified by heating i.e boiling, frying, drying, baking and fermentation and oiling.

### **METHOD OF PROPAGATION**

It is propagated asexually through its stem cutting for the seeds are not viable.

### **CLIMATE AND SOIL REQUIREMENT**

It will be growing in different climate but give high yield on rich well drain loamy soil with a rainfall of 100\_150cm per year and well distributed. It requires no shade but can be adversely affected by strong winds.

### **CULTIVATION**

**LAND PREPARATION:** Though a handy crops, it can grow optionally on a well filled land that is made into flats, ridges and moulds before planting the cutting.

**PLANTING DATE:** Cassava is planted by March to October in the southern areas and June to August in Northern areas.

**SEED RATE:** A mature stem cuttings usually 20 to 30cm long is planted either in a slanting position or on a flat ground.

**PLANTING DEPT:** Two\_third(2/3) of the cutting is buried in the soil exposing 1/3 of the cutting. longer cutting of 60cm give higher yield.

**NURSERY REQUIREMENT:** The planted cutting start sprouting after 7 to 14 days. Thinning is done later followed by supplying because of late sprouters.

### **MANURING AND FERTILIZER APPLICATION**

Weeds before manuring with potassium fertilizer. Sulphate of ammonia and super phosphate or just 10.10.20 N.P.K fertilizer in general help to boost the yield. use ring or row application method in the fertilizer application.

**HARVESTING:** The tubers are ready for harvesting after 1 to 2 years of planting depending on the varieties. If tubers are left for too long in the soil, they become fibrous and unsuitable for eating.

**PROCESSING:** The tubers are processed into garri, flakes, chips, tapioca, meal and cassava flour for human consumption. The main industrial use of cassava is in manufacturing of starch and alcohol.

**STORAGE:** These processed forms except the meal and tapioca can be stored for a fairly long time in dry containers and bags.

### **DISEASES**

- (1) Cassava mosaic.
- (2) Bacterial blight.
- (3) Leaf spot.
- (4) Root rots.

### **PESTS**

- (1) Grass hopper.
- (2) White flies.
- (3) Green and red spidermites.
- (4) Ruminant in general.
- (5) Termites.
- (6) mealybugs.
- (7) Rodents.

### **AGRICULTURAL NOTE (CONTINUATION)**

#### **PASTURE AND FORAGE CROPS.**

##### **PASTURE**

The pasture is a piece of land/ field containing herbage which may be grass or legumes for sheep, goat, cattle and other farm animals to eat as the herbage grows.

##### **FORAGE CROPS**

These are crops grown to provide food for farm animals. This includes grasses or legumes which can be grown separately or as a mixture. A good pasture must

contain a high quality grasses, good proportion of legumes and a very small fraction of local weeds.

There are two types of pastures existing.

- (1) Natural grass land or pasture
- (2) Artificial (man established) pasture.

### **NATURAL GRASS LAND OR PASTURE**

In the savanna, grass is the dominant features but scattered among the grasses are shrubs, herbs, and a few legumes species. The natural grass land merge into tropics and desert in the arid tropics.

### **ARTIFICIAL (MAN ESTABLISHED) PASTURE**

The establishment of artificial pasture involves clearing the land of weeds and removing the thrash, light cultivation of the soil to aid root penetration and then planting of pasture crops.

### **EXAMPLES OF ARTIFICIAL (MAN ESTABLISHED) PASTURE ARE:**

- (1) Permanent or perennial pasture.
- (2) Short term pasture of leys.
- (3) Temporal or annual pasture.
- (4) Supplementary grazing.

### **QUALITIES OF A GOOD PASTURES**

A good pasture must contains high quality grasses and good proportion of legumes both of which should have a high leaf to stem ratio. The pasture must provide balance nutrients for livestock. It should be able to withstand transplanting and grow rapidly.

### **DESIRABLE QUALITIES OF A PASTURE AND FORAGE CROPS**

- (1) They should be productive (ie high yielding ability).
- (2) They should be palatable.
- (3) They should be nutritious.
- (4) They should be adaptable to adverse conditions in their habitat, example: drought resistant.
- (5) They should be easily established during propagation.

(6) They should be resistant to hard grazing and trampling.

### **SOME PASTURE CROP AND FORAGE CROPS**

Grasses and legumes suitable for pasture may be found whenever agricultural settlement has developed. Each species has strains adapted to a particular range of climatic and soil conditions. A few of the grass species found in pastures are:

- (1) *Cynodon plectostachyon* (giant star grass).
- (2) *Cynodon dactylon* (Bahama grass)
- (3) *Eleusine Indica*
- (4) *Andropogon tectorum*(gamba grass)
- (5) *Brachiaria deflexa*
- (6) *Axonopus compressus*(carpet grass)
- (7) *Panicum maximum* (Guinea grass)
- (8) *Panicum kerstingii*(Guinea grass)
- (9) *Pennisetum polystachyon*(elephant grass)
- (10) *Eragrostis ciliaris*
- (11) *Digitaria horizontalis*.
- (12) *Melinis tenuissima*.
- (13) *Paspalum commersonii*
- (14) *Paspalum conjugatum*.

Grasses can be grouped into three types according to growth habit: bunched, sod, and weed.

### **BUNCHED TYPE GRASSES**

These generally grow vertically. Examples are:

- (a) Elephant grass. (i) green type; (ii) purple type. Both types are propagated by root cuttings or by stem cuttings using the nodes which contains the aerial roots. The flowers are not viable.
- (b) Gamba grass: This has hairy leaves and stems. It is propagated by rhizomes or dried seeds. The planting distance is 90cm x 90cm and it will contain most sugar between 6pm and 12 midnight.
- (c) Guinea grass: This is propagated mainly by roots and seeds.

### **SOD TYPE GRASSES**

These are generally grow laterally. Examples are:

(a) Bahama grass (*Cynodon dactylon*). This has long rapidly growing runners and rhizomes, which root at the nodes.

(b) Giant star grass (*Cynodon plectostachyon*). This is similar to Bahama grass but bigger. It is propagated by root and stem cuttings. This is a stubborn grass and can withstand drought so it is a perennial. The flowers are not viable.

### **WEED TYPE GRASSES**

(a) *Digitaria horizontalis*.

(b) *Eragrostis ciliaris* (perennial). Spreading habit, thin-stemmed, and fine-leaved, growing 80\_90cm high.

### **PASTURE LEGUMES**

Legumes are rich in protein sources for grazing animals and thus have great nutrient value.

Legumes grown in a mixture with grasses introduce rich sweet taste into the pasture. At the same time legumes help to improve soil fertility by mixing nitrogen in the nodules of their roots.

### **COMMON LEGUMES OF WEST AFRICA ARE:**

- (1) *Calopogon mucunoides* (Calopo)
- (2) *Styloxanthes gracilis* (Stylo)
- (3) *Pueraria phaseoloides* (Tropical Kudo)
- (4) *Centrosema pubescens* (Centro)
- (5) Sun hemp.
- (6) *Stylobium* sp (velvet bean or mucana).
- (7) Alfalfa

### **ADVANTAGES OF GRASS/LEGUMES PASTURE**

- (1) It yields more fodder per hectare
- (2) The legumes add nitrogen to the soil.
- (3) The fodder obtained is more palatable and nutritive.
- (4) The life span of the pasture is longer.
- (5) The danger of bloat in farm animals is reduced.

### **MAINTENANCE OF PASTURES**

The main aim of managing of pasture is for the getting of maximum growth of the most desirable species and to obtain the maximum production of livestock products. The above mentioned objective (aim) can only be obtained if the animals in relation to the pasture and the problem to the pasture and the problem of pasture as a crop.

#### **THE VARIOUS WAYS OF MAINTAINING PASTURE ARE:**

- (1) Fencing and herding
- (2) Provision of shade to livestock.
- (3) use of the most suitable forage species to stock used.
- (4) Consideration of type of stock used.
- (5) Use of fertilizer.
- (6) Control of insects.
- (7) Conservation of water to increase yield of pasture.
- (8) Occasional harrowing to increase herbage yield.
- (9) Stocking rate.
- (10) Burning of pasture herbs so as to increase regeneration of the pasture.
- (11) Control and eradication of the weeds.

#### **AGRICULTURAL SCIENCE ASSIGNMENT FOR SS1 FIRST ASSIGNMENT**

- (1) The following are pre- cautionary maintain practices of farm machinery except:
  - (A) Guage the tyre pressure and inflate if low
  - (B) Drain out engine oil and replace.
  - (C) Patch punctured tubes and tyres.
  - (D) Check the water level in the radiator and refill when low.
- (2) Give three reasons why farm mechanisation should be discourage
- (3) Give two reasons why budding should be encouraged.
- (4) What are ephemeral crops? and then give two examples of each.
- (5) Give the botanical names of the following crops:
  - (i) P.w.d weeds
  - (ii) Tropical kudzu

#### **AGRICULTURAL SCIENCE ASSIGNMENT TWO FOR SS1**

- (1) What is power?

- (2) Give three units for measuring power.
- (3) It is assumed that ten horse\_power is used to do work in the farm calculate its equivalent in watts
- (4) Give two benefits that mechanical power has over human power.

\*Note: please be submitted by Friday being 24 July with this number 08112212687\* . THANKS

AGRICULTURAL SCIENCE  
THIRD ASSIGNMENT FOR SS1  
Draw a well levelled tractor

#### **FORTH ASSIGNMENT**

Draw a well labelled hatchery.

#### **NOTE**

This assignment should be submitted on or before Monday and please those of you that has not yet submitted your first and second assignment submit it also on or before Monday, Please my correct number is (08122112687) so send your answers using my correct number THANKS.