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SECOND TERM E-LEARNING NOTE

SUBJECT: AGRICULTURAL SCIENCE **CLASS: JSS1**

SCHEME OF WORK

WEEK	**TOPIC**
1	Revision
2	Farm Animals I (meaning, identification and types)
3	Farm Animals II (Criteria for classifying farm animals and classes)
4	Characteristics of selected farm Animals
5.	Characteristics of Farm Animals (Contd)
6.	Importance of Farm Animals
7	Weeds: Meaning of weeds, Common farm weeds, characteristics of weeds
8.	Pest: Meaning of Pests, Classification of pests
9.	Weeds and Pest Control
10.	Revision
11.	Examinations

REFERENCE BOOKS

1. Essential Agricultural science for senior secondary schools by O. A. Iwena
2. WABP Junior Secondary Agriculture for Nigerian Schools, Book 1, by A. Youdeowei et al.

WEEK ONE **DATE:……**
TOPIC: REVISION OF LAST TERM'S WORK
CONTENT

- Answers to last term's objective questions
- Answers to last term's theory questions

WEEK TWO **DATE:……**
TOPIC: FARM ANIMALS (identification and types)
CONTENT

- Meaning of farm animals.
- Types of farm animals.

Farm animals are animals which are domesticated and reared by man. They are generally referred to as livestock. Examples are cattle, sheep, goat, poultry, rabbit, camel, horse, donkey, grass cutter, fish, snail etc.

Types of farm animals

Farm animals have different features and are useful for different purpose.

Some animals possess fur, wool or hair and breast feed their young, they are referred to as **mammals**. Examples of mammals are rabbit, cattle, sheep, goat etc.

Some farm animals possesses feathers, and have beaks for feeding, they are referred to as **birds** or **poultry** animals examples are chicken, duck, goose, quail etc.

Some have scale, gills for respiration and live inside water they are called **fishes**. Examples are mackerel (titus), horse mackerel (kote), herring (shawa), tilapia, (blue whiting, hake (panla)), alaska pollock (okporopo), argentina silus (ojuyobo), catfish.

Other forms of farm animals are invertebrates (lacking back bone):**mollusc**e.g snail and **insect** e.g bee.

Each of these animals have different features, scientific name and breed. Below are details of common farm animals.

EVALUATION

1. What are farm animals
2. List three types of farm animals with examples

Cattle (Bosspp)
They are hoofed mammals which may be humped animals (Bosindicus) or humpless (Bostaurus), horned or polled. Breed of cattle includes sokoto gudali, keteku, red bororo, N'dama, muturu, white Fulani etc.

Goat (Caprahircus)
They are hoofed mammals with male and female animals having horns. The male goat possess beards and have a unique smell. Breeds of goat are sokoto red, angora, west African dwarf, kano brown etc.

Sheep (Ovisaries)
They are hoofed mammals very similar to goat even in sound (bleat) but possess wool on its body. It may be polled or horned but female do not have horns. Breed of sheep includes ouda, yankasa, balami etc.

Pig (Susdomesticus)
These are mammals whose nose is modified into snout possessing two holes. They are highly prolific animals. They do not possess sweat pore and are usual found bathing in muddy places to lower their body temperature when reared extensively. Breeds of pigs are duroc, Yorkshire, Berkshire, Poland china, large white etc.

Chicken (Gallusdomesticus)
These are birds, they have beak for feeding, long toes with claws for scavenging and feathers to cover their body. Breeds includes Cornish, sussex, barred ply mouth rock, rhode island red etc.

Rabbit (Oryctolagus cuniculus)

These are small farm animals with fur and highly developed sense of smell. They are referred to as pseudo ruminants because despite having concentrates as their basic feed stuff they can easily digest grasses like ruminant animals. Breeds include chinchilla, Flemish giant, French giant etc.

Note: breed refers to a stock of animals of same species having a distinctive appearance. This appearance might be the fur or skin colour pattern, behavior or abilities.

The distribution of these animals is affected by pest and disease, climate of an area in terms of rainfall distribution, availability of water, cultural belief, religion, and availability of food.

GENERAL EVALUATION

1. Mention three breeds of goat
2. What does breed mean in animal husbandry
3. What are livestock?
4. What is the scientific name of sheep, pig and rabbit?

READING ASSIGNMENT

Answer all the revision questions on page 69 of WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al

BOOK REVIEW

WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al pages 57 - 69

WEEKEND ASSIGNMENT

1. Animals that have fur, hair or wool on their bodies are called _____ A. fishes B. rabbit C. mammals D. insects
2. Polled cattle are cattle that _____ A. are humpless B. have hump C. have horns D. do not have horns
3. Bosindicus is the scientific name of _____ A. rabbit B. humped cattle C. humpless cattle D. horned goat
4. Which is the odd one out A. Duroc B. Sussex C. Flemish giant D. Muturu
5. Which of the following does not affect production and distribution of farm animals? A Rainfall distribution B. Light C. Religion D. Availability of food

THEORY

1. What is a farm animal?
2. What is the name of the meat gotten from A. goat B. cattle C. pig D. sheep

WEEK THREE
TOPIC: FARM ANIMALS II
CONTENT

- Criteria for classifying farm animals and classes
  - Size
  - Habitat
  - Reproduction
  - Stomach type
  - Uses

Animal husbandry is the science of breeding and caring for farm animals. The farm animals being cared for are referred to as livestock. There are five categories of livestock based on some criteria. Animals can be classified according to their sizes, habitat, reproduction pattern, stomach type or digestive system and uses or purpose for which they are kept/reared.

Classification of animals based on their size: this criterion focuses on how big or small the animal is. There are two classes based on size

1 **Largefarmanimals** e.g horse, cattle, camel, donkey.
2 **Smallfarmanimals** e.g rabbit, snail, goat, sheep, pig, chicken etc.

Classification of animals based on their habitat: animal habitat refers to the home or dwelling place of an animal. The place an animals is adapted to living is either in water or on land. Animals that lives on land are referred to as **terrestrialanimals** e.g goat, chicken, rabbit etc. Animals that live in water are referred to as **aquaticanimals** e.g fish

Classification of animals based on reproduction:this criterion focuses on the way they birth the young or give rise to offspring. Some animals birth their young in live form, they are called **mammals** e.g pig, rabbit, sheep, horse etc. some animals **laysegg** which later matures to give rise to their young e.g fish, poultry, snail, bees etc.

Classification of animals based on stomach type: some animals have simple stomach and basically feed on concentrate feed stuff they are called **monogastric** or **non-ruminant** animals e.g chicken, pig etc. Some animals possess complex stomach which have four compartments (rumen, reticulum, omasum and abomasum) they are called **ruminant or polygastric** animalse.g cattle, sheep, goat etc. these ruminant animals chew cud i.e regurgitate consumed forage and chew properly for a second swallow.

Note: it is important to know that some animals can maintain a constant body temperature, they are called warm blooded animals e.g cattle, sheep, goat etc while some cannot maintain a constant body temperature; their body temperature is dictated by the temperature of their environment e.g fishes.

EVALUATION

1. What do you understand by animal husbandry?

2. What are the criteria for classifying farm animals?
3. List the classes under each criteria and give examples.

Classification of animals based on their uses:farm animals are classified into

1. **Work/draught animals:** Theses are animals which are used as a source of farm power or labour. For example: bulls are used to draw plough and carts, oxen and buffalo are used to pull wagons and plough, while horses, donkeys and camels are used as beast of burden.

Characteristics of work animals are:

a. They are strong
b. They can withstand stress
c. They have large frame
d. They are docile i.e easy to control

2. **Dairy animals:** they are livestock whose females are used for milk production. The types of livestock that are used for milk production are: cattle, sheep and goats.

Characteristics of dairy animals are:

a. They have well-formed udder
b. Have a well-developed milk veins
c. Have a narrow and deep belly
d. Have a placid disposition.

3. **Guard animals:** these are animals which are raised and trained to provide protection for man and his properties. E.g dog and goose.

Characteristics of guard animals are:

a. They are smart
b. They react quickly to stimuli e.g smell, noise and movements.
c. They are aggressive in nature.

4. **Pet animals:**These are animals which are kept as friend or companion of man. e.g rabbit, guinea pig and dogs.

Characteristics of pet animals are:

a. They are attractive and good looking
b. They are calm and easy to control
c. They are always close to the owner/keeper.

5. **Meatanimals**: these are animals kept for their flesh. There are various delicacies that can be derived from flesh of different animals. Commonly consumed flsh are beef (cattle meat), pork (pig meat), mutton (sheep meat), chevon (goat meat), chicken, fish, turkey, chicken, veal (calf meat) etc. Common delicacies gotten from these flesh includes cow tail peper soup, catfish pepper soup, isi ewu, bokoto, pomo pepper stew, fish sauce etc.

6. **Sportanimals**: these are animals kept for sporting activities. Some sporting activities in which farm animals can be engaged in are cockfight, ram fighting, polo, fishing etc.

Characteristics of sport animals are:

a. They are strong.
b. They can withstand stress.
c. They have large frame.
d. They are fast.

EVALUATION QUESTIONS

Give three characteristicseach of:

a. Guard animals.
b. Sport animals.
c. Pet animals.

GENERAL EVALUATION/REVISION QUESTIONS

1. What is a farm animal?
2. Define Dairy animal?
3. Mention three characteristics of dairy animals.
4. What are guard animals?
5. List two examples of work animals.

READING ASSIGNMENT

Answer all the revision questions on page 77 of WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al.

BOOK REVIEW

WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al., pages 70 – 77.

WEEKEND ASSIGNMENT

1. The following animals are used for milk production except A. Horse B. Sheep C. Goat D. Cattle.
2. _____ animal react quickly to stimuli A. Work B. Meat C. Guard D. Dairy
3. All these animals possess a simple stomach except A. Geese B. Cow C. Duck D. Sheep.
4. _____ are animals which are kept as friend or companion of man. A. Aquatic animals B. Pet C. Poultry D. Guard animals.
5. Which is the odd one out A. Rumen B. Reticulum C. Gullet D. Abomasum

THEORY

1. List five uses of farm animals?
2. List five criteria used in classifying farm animals.
3. State five examples of poultry birds.

WEEK FOUR **DATE:……**

TOPIC: CHARACTERISTICS OF SELECTED FARM ANIMALS

CONTENT

- Cattle
- Sheep
- Goat

Cattle (Bosspp)

Belong to the family of animals called hoofed animals, reared majorly for meat and milk. Humped cattle are scientifically called Bosindicus, while humpless cattle are called Bostaurus. They may or may not have horns.

Characteristics of cattle

1. They have large body size
2. They belong to the family of mammals called Bovine
3. They are mammals because they give birth to their young ones alive.
4. They are ruminants
5. Male and female cattle possess horns
6. A female cow can produce one calf a year (gestation period is 283 days)
7. Beef cattle are usually stocky, i.e. has a lot of flesh/meat while dairy cattle are usually bony.
8. Cattle generally feed on forage crops.

Breed of cattle includes sokoto gudali, keteku, red bororo, N'dama, muturu, white Fulani etc.

EVALUATION

1. Humped and humpless cattle are called _____ and _____.
2. Cattle belong to which family of animals?

Sheep (Ovisaries)

Sheep also belongs to the family of hoofed animals. They are reared in all countries and provide meat (mutton), milk and wool for man's use.

Characteristics of Sheep

1. They are ruminant animals
2. They are mammals.
3. They possess or have medium body size with long legs
4. They possess long and droopy earlobes
5. Usually reared for its meat, wool, leather, milk and fleece.
6. Male sheep have horns while the female are polled (don't have horns).
7. They mostly give birth to twins and can give birth to its young ones up to three times in two years (gestation period is 150 days).
8. They possess long, thick tails which hang down.

Breed of sheep includes ouda, yankasa, balami etc.

Goat (Caprahircus)

Goat also belongs to the family of hoofed animals. They are reared in all countries and provide meat (chevon) and milk man's use.Goats are important animals because: they can

adapt to harsh environments, it can survive on anything including wastes, it is resistant to wide variety of diseases and high temperature in the tropics, it can fend for itself.

Characteristics of Goats

1. They possess medium body size
2. Both male and female goats possess horns
3. They are tough animals and are able to withstand unfavourable weather conditions
4. They are kept for the production of meat, milk and skin.
5. Male goats have beards
6. It can give birth to its young ones up to three times in two years (gestation period is 150 days).
7. It can survive by feeding on almost any available food including kitchen waste.

Breeds of goat are sokoto red, angora, west African dwarf, kano brown etc.

GENERAL EVALUATION/REVISION QUESTIONS

1. State five characteristics of each of these animals.
   a. Cattle
   b. Sheep
2. State four features of a goat.

READING ASSIGNMENT

Answer revision question 3 on page 69 of WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al.

BOOK REVIEW

WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al., pages 58 - 63.

WEEKEND ASSIGNMENT

1. Which animal can best adapt to harsh weather condition A.Sheep B.Cattle C.Goat
2. Which of these animals possess long and droopy earlobes A.Cattle B.Goat C.Sheep
3. Meat from cattle is called A.Beef B.Pork C.Mutton D.Red-meat.
4. Humpless cattle are called A.BosthaurusB.BosTaurusC.BosTaurrusD.Bostaurus
5. One distinctive feature between a male and female goat is thatA.male goats have beardsB.female goat have beardsC.male goat have hornsD.female goat have udder

THEORY

1. Mention two characteristics of sheep.
2. State three importance of goats.

WEEK FIVE **DATE:……**

TOPIC: CHARACTERISTICS OF FARM ANIMALS (CONTD)

CONTENT

- **Pig**
- **Rabbit**

- **Poultry**

Pig (Susdomesticus)
They are the most productive of all commonly reared farm animals producing from 8 – 16 piglets per litter.
Characteristics of Rabbits
1. They possess snout (modified nose)
2. They have long droopy/erect ears
3. They possess short curly tail
4. They do not have sweat pore.
5. They are highly prolific animals farrowing u to 16 piglets per litter.
6. They do not have horns
7. They are reared for their meat and fat (lard).

Breeds of pigs are duroc, Yorkshire, Berkshire, Poland china, large white etc.

Rabbits
Rabbits are found in tropical and temperate countries and raised for its meat and skin. It can reproduce up to four times in a year and can produce about 6-8 kits per litter.
Characteristics of Rabbits
1. Possess medium body size
2. Young ones are usually born blind.
3. They can give birth up to 4 times in a year
4. They do not possess horns
5. They are mammals, but non-ruminants.
6. Gestation period is about 32 days.
7. They give birth to large litters at once about 6-8.
8. They have good quality meat (white meat).

EVALUATION
1. List five characteristics of Rabbits.
2. Gestation period of a rabbit is ___.

Poultry
Usually reared for their meat and egg, they can be found anywhere. They are referred to as fowl or birds.
Characteristics of Poultry
1. They are monogastrics animals
2. They are medium sized animals
3. They are prolific egg layers. That is, they lay a lot of eggs.
4. They are non-mammals because they lay eggs which later hatch into chicks.
5. They possess beak modified for feeding
6. Their bodies are covered with feathers.
7. They are reared for meat, eggs and feathers.

Examples are duck, chicken, goose, turkey, pigeon, quail etc.

IMPORTANT DETAILS TO NOTE ABOUT COMMON FARM ANIMALS

ANIMAL	SCIENTIFIC NAME	MALE	FEMALE	YOUNG	MEAT	ACT OF PARTURITION	GESTATION PERIOD	GROUP/CLASS
Cattle	Bosspp	Bull	Cow	Calf	Beef	Calving	283 days	Mammal
Goat	Caprahircus	Buck	Doe	Kid	Chevon	Kidding	150 days	Mammal
Sheep	Ovisaries	Ram	Ewe	Lamb	Mutton	Lambing	150 days	Mammal
Pig	Susdomesticus	Boar	Sow	Piglet	Pork	Farrowing	114 days	Mammal
Rabbit	Oryctolaguscuniculus	Buck	Doe	Kit		Kindling	32 days	Mammal
Chicken	Gallusdomesticus	Cock	Hen	Chick		Hatching	21 days	Bird

GENERAL EVALUATION

1. Give three (3) reasons why cattle, sheep goat and rabbit are regarded as mammals.
2. State the names of the following types of meat:
   a. Goat meat
   b. Cattle meat
   c. Fowl meat

READING ASSIGNMENT

Answer revision questions 1, 2 and 4 on page 69 of WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al.

BOOK REVIEW

WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al., pages 63 – 69.

WEEKEND ASSIGNMENT

1. The most productive farm animal is? A. Sheep B. Goat C. PigD. horse.
2. Meat from sheep is called A. Chevon B. Mutton C. Pork D. Beef.
3. Which of these animals has the shortest gestation period A. Sheep B. Rabbit C. Goat D. Pig
4. Which of these farm animals can be used for work on the farm? A.Bullocks B.Rabbit C.Chicken D.Goat.
5. Which of these farm animals is a monogastrics animalA.CattleB.Camel C.Horse D.Chicken

THEORY

1. List four classes of farm animals based on uses.
2. Mention five characteristics of rabbits.

WEEK SIX ` **DATE:……**

CONTENT

- Importance of farm animals

IMPORTANCE OF FARM ANIMALS

Farm animals are used by man for the following purposes:

1. Food: Some products obtained from farm animals include meat, milk and eggs, which are eaten by man.
2. Clothing: Animals products such as wool, skin and furs are used for clothing, the skin and fibres of animals that are used for leather bags, drums, foot wear are gotten from animals like cattle, Goat and Sheep. Feather from poultry are used for stuffing pillows and cushions
3. Farm power or work: Some animals such as bullocks, horses, camels and donkeys could serve as sources of power to help with farm work.

EVALUATION

1. State three importance of Farm animals.
2. Feather from poultry are used for?

4. Fertilizer or Manure: Animal dropping such as excreta are used as organic fertilizer or farm manure to add nutrients to the soil or fertilize the soil.
5. Security or Protection: Some farm animals e.g dogs and geese are used by farmers to protect their property against thieves.
6. Sports: Farm animals like horses, ram, bull and chicken are used for sports e.g horse racing and playing polo etc.
7. Medicine: Medicine are manufactured from the thyroid glands of sheep and cattle and are used to cure diseased thyroid gland of human beings.

GENERAL EVALUATION

1. Mention five uses of farm animals.
2. List any five by-products that can be gotten from poultry birds.
3. State two reasons why dogs are used for security.
4. State three animals that are used for farm work.

READING ASSIGNMENT

Answer all the revision question on page 77 of WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al.

BOOK REVIEW

WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al., pages 73 – 74.

WEEKEND ASSIGNMENT

1 Which of the farm animals is used for protection? A.Sheep B.Goat C.GooseD.Horse.
2 Meat from cow is called A. Chevon B.Mutton C.Pork D.Beef.
3 _____ are manufactured from the thyroid glands of farm animals A. Milk B. Sweat C. Medicine D. Fertilizer.
4 Which of these farm animals can be used for work on the farm? A.Bullocks B.Rabbit C.Chicken D.Goat.
5 Which of these animals can be used for sport A. Sheep B.SnailC. Goat D. Pig

THEORY

1. List three examples of food gotten from farm animals.
2. Mention two examples of animals used for farm power.

WEEK SEVEN **DATE:……**

TOPIC: WEED

CONTENT

- Definition of Weeds.
- Common farm weeds.
- Characteristics of weeds.
- Advantages of weed.
- Disadvantages of weed.

DEFINITION OF WEED

Weed is any plant which is not cultivated and is growing where it is not wanted. Such a plant istherefore a nuisance to the farmer. Examples; commelina, goat weed or the common water leaf(Talinum triangulare) growing in a cassava field.

Types of Weeds according to lifecycle

A. Annual weed: They grow and complete their life cycle in one year
B. Perennial Weeds: They grow for more than one year.

Types of weeds according to the shape of their leaves

i. Broad-leaves Weeds: These are weed plants with broad leaves. They are dicotyledonous plants
ii. Grasses and sedges: These plants have long, thin leaves and are monocotyledonous plants.

Examples of weeds

Some common weeds found in Nigeria are:

Common name	Botanical name
1. Goat weed	Argeratumconyzoides
2. Guinea grass	Panicummaximum
3. Pig weed	Amaranthusspinosus
4. Bahama grass	Cynodondactylon
5. Elephant grass	Pennisetumpurpureum
6. Carpet grass	Axonopuscompresus
7. Tridax	Tridaxprocumbens
8. Spear grass	Heteropogoncontortus
9. Sida weed	Sidaacuta
10. Water leaf	Talinumtriangulare

Characteristics of Weeds

They are

i. Weeds grow very fast and cover the land area very quickly.
ii. Many weeds produce fruits and seeds which are easily carried and spread all over the place by humans, animals, wind and water.
iii. Many weeds are persistent, which means that they remain in the ground throughout the year and continue to grow as long as the weather conditions in the area permit and especially when cultivated crops are grown on the land.
iv. They compete with crops for nutrient, space, water and sunlight.
v. They are resistance to harsh climatic conditions.

EVALUATION QUESTIONS

1. What are weeds?
2. List five examples of weeds and their botanical names.

Advantages of weed

1. They serve as source of food to man.
2. They serve as source of feed to animals.
3. They increase fertility of nutrient status of soil directly or indirectly.
4. They help to control erosion.
5. They serve as source of medicinal herbs for man.

Disadvantages of Weeds

1. Weeds compete with cultivated crops for the nutrients in the soil.
2. Weeds grow rapidly hence they crowd and cover cultivated plant thus prevent them from growing.
3. They make land cultivation difficult
4. Weeds which use crops as support can cause strangling to death of such crop. e.g Parasitic weeds.
5. Transmission of insects, fungi and other organism harmful to crops.
6. They results in the reduction in value and quality of farm produce.

7. Wastage of money in control.
8. They increase farmers cost of production.
9. They lead to loss of livestock when they consume poisonous weeds.

GENERAL EVALUATION/REVISION QUESTIONS

1. What is a weed?
2. Name three examples of weeds and their botanical names.
3. Mention three characteristics of weeds.
4. State five negative effects of weeds on crops and the economy.

READING ASSIGNMENT

Answer revision question 1 - 4 on page 88 of WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al.

BOOK REVIEW

WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al., pages 78 – 88.

WEEKEND ASSIGNMENT

1. _____ is an unwanted plant growing among cultivated crops. A. Weed B. Crops C. Plants D. Animals
2. The following are characteristics of weed except _____ A. they grow very fast B. they produce many fruits C. they remain in the ground through the year D. they are mainly annual weeds.
3. _____ are weeds which grow and complete their life cycle in one year

A. Perennial crop B. Perennial weed C. Annual weeds D. Biennial weed.

4. The following are effects of weed except a. They make land cultivation difficult, b. Weeds compete with cultivated crops for the nutrients in the soil c. Transmission of insects, fungi and other organism harmful to crops d. They results in the increase in value and quality of farm produce.
5. The scientific name of goat weed is ___ A. *Amaranthus spinosus* B. *Mimosa pudica* C. *Argeratum conyzoides* D. *Striga hermonthica.*

THEORY

1. Define weed.
2. Mention the common names and botanical names of four weed you know.

WEEK EIGHT **DATE:……**

TOPIC:PEST

CONTENT

- Meaning of Pests.
- Classification of pests.

A pest is any living organism (plant or animal) which can cause damage to cultivated crops, farm animals and humans.

Classification of animal pests

Animal pest can be classified as

i) Insect Pest- Insect pest are animals without backbones and they belong to the group of animals called Arthropods. Arthropods is a very large group of animals which, in addition to insects, include crabs, shrimps, millipedes, spiders, centipedes and scorpions, mites etc.

ii) Non-insect pest- These are animals such as vertebrates like nematodes, snails, slug's e.t.c. and vertebrates like rats, squirrels, monkeys, glasscutters, birds, jackals that can cause damage to crop.

EVALUATION QUESTIONS

1. What is a pest?
2. Mention two classes of animal pests.

Classification of Insect Pests

Insect can be classified based on their mouth parts which are different in different insect groups.

1. **BitingandChewingPests**: These insects possess a very hard biting jaws called mandibles, a second pair of jaws called maxillae, a flat upper lip called the labrum, and a lower lip known as the labium. The mandibles are used to bite off and chew parts of crops while the maxillae are used to push the parts of the crop into the mouth. Examples are grasshoppers, locusts, beetles and crickets, armyworms, termites, leaf worm, mantids etc.
2. **PiercingandSuckingPests**: These insects have sharp needle-like mouth parts which can pierce into stems or fruits and seeds of crops and suck juices from them. Examples are mosquitoes, aphids, mealy-bugs, tsetse flies, white flies, cotton stainer, capsid etc.
3. **Boringinsects**: these pests form holes into crops and live inside, feeding on the internal parts of the crop. Examples are bean beetle, stem borer, weevil etc

Nature of damage by insect pest

1. Destruction of crop tissues.
2. Stunted growth in crops and animals.
3. Weakened crop plant.
4. Pierced holes can be infested with harmful organism like fungi, bacteria and viruses
5. Transfer of harmful organism from infected crop to the healthy one.
6. It causes ill-health to man and livestock e.g sleeping sickness (tsetsefly), mange (mite), babesia (tick).

GENERAL EVALUATION AND REVISION QUESTIONS

1. What is a pest?
2. Name two classes of animal pests.

3. State two classes of insect-pests with two examples of each.
4. Mention five possible damages done by pest.

READING ASSIGNMENT
Answer revision question 3 and 13a and b on page 247 and 248 of Essential agricultural science for senior secondary schools by O. A. Iwena.

BOOK REVIEW
Essential agricultural science for senior secondary schools by O. A. Iwena pages 241 – 245.

WEEKEND ASSIGNMENT
1. Insect pest are animals without backbones and they belong to the group of animals called A. Chordates B. Arachnids C. Arthropods D. Annelids.
2. Possession of mandible and maxillae are special features of A. Piercing and sucking insect B. Biting and chewing insect B. Boring insect D. Piercing and chewing insect.
3. These insects have sharp needle-like mouth parts which suck juices from crop plant except A. aphids, B. beetle C. mealy-bugs D. tsetse flies.
4. Non-insect pest include the following except A. mites B. snails C. shrimps D. slugs.
5. Pierced holes of crop plant can be infested with the following except A.pest B. fungi C. bacteria D. viruses.

THEORY
1. What is a pest?
2. Describe the types of insect pest.

WEEK NINE **DATE:……**
TOPIC: WEEDS AND PEST CONTROL
CONTENT
- Definition of weed/pest control.
- Physical control, Chemical control and Biological control.
- Use Of Machines, Cultural control.

Methods of weed/pestControl
Weed control involves removal and preventing weeds from spreading quickly and causing damage to cultivated crops. Some very common methods of weed control are:

1. **PhysicalControl**: These involve picking of weeds and insects from the crop/animal by hand. It is called Hand picking. It is most useful for large insects like grasshoppers but very difficult to use on large farmland or if the number of pest is high.):- This is a slow and tedious method of controlling weeds. It is efficient in small farms. Regular weeding must be done using hand, cutlass or hoe during wet season when weeds tend to grow and spread rapidly. Other methods of physical control includes setting traps, use of scare crow, use of net, use of reflective plastic strips, use of empty tin cans.

2. **ChemicalControl**: The most common method of controlling insect pest and weed is by the use of chemicals. Chemicals which are poisonous to insects and weeds are called insecticides and herbicides respectively. The insecticides are applied by spraying by the machine known as sprayers.

EVALUATION

1. What is weed control?
2. Explain physical control of weed and pest.

3. **BiologicalControl**: These involve the use of natural enemies of insect pests and weeds against them. The natural enemies may be other insects that feed on them or on their laid eggs. For example, beetle can successfully control water weed and water hyacinth by feeding on their stems and leaves, cat can control rat, chicken can control insect.

4. **Mechanical control (Use of Machines):** It is use in large farms through the use of machines called cultivators or weeders to remove weeds efficiently and effectively. This method is suitable in farms where the crops are well planted in rows.

5. **Cultural Control (Use of Cropping Systems):** Crop rotation system is very useful, earl planting and timely harvesting in preventing weeds from growing and spreading. Also, cover crops can be grown to prevent weed growth. Cover crops have large leaves, spread very rapidly and thus can kill any young weed seedlings. Examples of cover crops are members of the bean family e.g. Mucuna and Centrosema

EVALUATION QUESTIONS

1. Define the following: a. Physical control b. Chemical control c. Biological control c. Mechanical control d. Cultural control
2. Chemicals which are poisonous to insects and weeds are called _____ and _____.

GENERAL EVALUATION/REVISION QUESTIONS

1. What is biological control?
2. Write short note on cultural control.
3. Define natural enemies.
4. Mention two examples of cover crops.

READING ASSIGNMENT

Answer revision question 5 – 8 on page 88 and 1 – 5 on page 102 of WABP Junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al.

BOOK REVIEW

WABP junior secondary agriculture for Nigerian schools book 1 by A. Youdeowei et al., pages 78 – 102.

WEEKEND ASSIGNMENT

1. Which of these is very difficult to use if the number of pest is high A. chemical control B. physical control C. biological control D. cultural control?
2. Pollution of water bodies can likely be reduced by A. washing of chemicals from farmland B. falling down of suspended chemicals in air with rain C. release of waste product of chemical producing industries D. adequate awareness by extension agents .
3. _____ involve the use of natural enemies of insect pests and weeds against them A. physical control B. chemical control C. cultural control D. biological control.
4. Which of the following is not a physical control methodA. Use of trapB. Use of net C.Use of chemicalD.Hand picking
5. Natural enemies of weed and water hyacinth is A. Beetle B. Ant C. Bees D. Spider.

THEORY

1. State and explain two of pest control method.
2. Give two examples each the methods stated above.

WEEK TEN
REVISION

WEEK ELEVEN
EXAMINATION