

CHAPTER ONE

1.0 INTRODUCTION

The Industrial attachment is a 6 months program officially supervised by the Industrial Training Fund (ITF) with funding provided by the Federal government. This program is organized by the Students Industrial Work Experience Scheme (SIWES) in tertiary institution.

In the course of this program, students are empowered with practical knowledge of their various discipline which helps provide an avenue of acquired work experience in their field of study.

I had the opportunity of being attached at Anambra State College of Agriculture, Mgbakwu during which I was placed under the supervision of Mr. Ezechi C. U. (H.O.D of Animal and health science department).

1.1 Brief History of Students Industrial Work Experience Scheme (SIWES)

Students Industrial Work Experience Scheme (SIWES) was introduced by the Federal Government of Nigeria to bridge the gap between theory and practice among products of our tertiary institutions. The scheme was first initiated and funded by the Industrial Training Fund (ITF) during the formative years 1973/1974.

As a result of increasing number of students' enrolment in higher Institutions of learning, the administration of this function of funding the scheme became enormous, hence ITF withdrew from the scheme in 1978 and the scheme was taken over by the Federal Government in 1979 and handed to both the National Board for Technical Education (NBTE). By 1979, the Colleges of Education were not part of the scheme and later in 1984; the Federal Government reverted back to

Industrial Training Fund which took over the Scheme officially in 1985 with funding provided by the Federal Government.

1.2 Objectives of SIWES

Some specific objectives of SIWES include to;

1. Provide placements in industries for students of higher Institutions of learning approved by relevant regulating authority (NUC, NBTE, and NCCE) to acquire work experience and skills relevant to their course of study.
2. Prepare students for real work situation they will meet after graduation
3. Expose students to work methods and techniques in the handling of equipment and machinery that may not be available in school.
4. Make transition from school to the labor market smooth and enhance students contact for later job placement.
5. Provide students with the opportunity to apply their knowledge in real life work situation thereby bridging the gap between theory and practice.
6. Strengthen employer involvement in the entire educational process and prepare students for employment in industry.
7. Promote the desired technological knowhow required for the advancement of the nation.

1.3 History of ANSCOAM's farm

The Anambra State College of Agriculture was established in 1979 by the defunct Anambra State government as school of agriculture at Igbariam. Following the resource inspection visit, the accreditation granted by National Institute of Science and Technical Education (NISTE) was withdrawn in 1989 as a result of the failure of the then government to meet the required conditions for full accreditation of the institution.

In 2007, the college was relocated from Igbariam to the former state of Anambra Imo River basin development authority at Mgbakwu to make way for the new Anambra State University Igbariam campus.

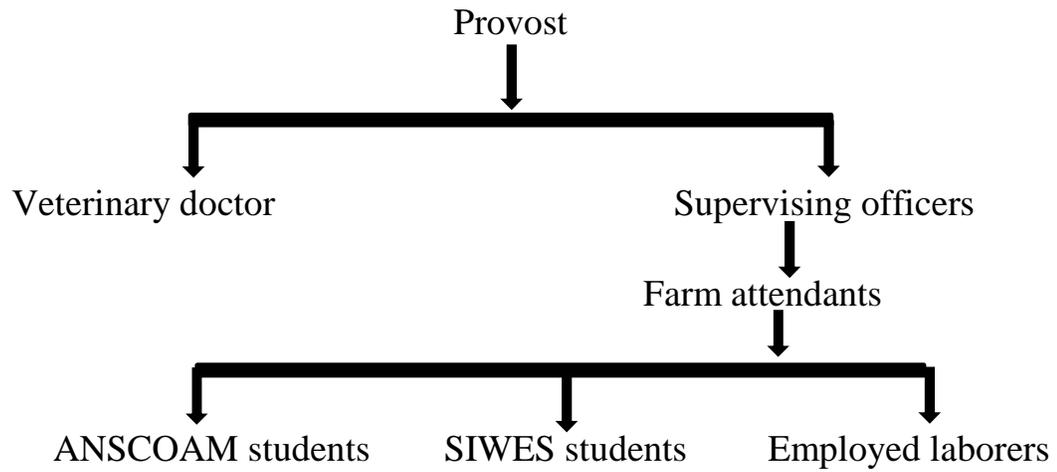
1.4 Objectives of ANSCOAM's Farm

-) To provide income for the school
-) To help the student practice what they are taught in the classroom
-) To produce food for the society.

1.5 ANSCOAM's Farm Management Structure

The coordination of management of the farm is always under the department of animal health and production. The head of department oversees the affairs of the farm as the general supervisor. He has six supervising officers and a veterinary doctor working under him. These supervising officers coordinate the different sections in the farm. These sections are the piggery, poultry, rabbit, fishery and ruminant (goat and sheep) sections. The veterinary doctor monitors the medical state of the animals and administers drug to them. All the sections in the farm have attendants that feed the animals clean the farm house and take record of activities like introduction of new animals, rate of growth, rate of production and reproduction etc. The farm attendants are made of ANSCOAM's students and employed labourers.

1.6 Organogram of ANSCOAM's Farm



CHAPTER TWO

2.0 POULTRY SECTION

Poultry refers to the group of birds reared domestically or commercially, basically or primarily for meat and egg. Poultry birds include chickens, ducks, turkey, quails, geese and guinea fowl. The poultry birds reared in ANSCOAM's farm are the chickens (*Gallus gallus domesticus*).

2.1 Importance of Poultry

1. They serve as source of food
2. They also serve as source of income/revenue
3. Source of employment
4. Production of manure via their droppings
5. Poultry is used for sports (cock fighting)
6. Poultry birds are as well used as sacrifices to gods

2.2 Branches of Poultry Found at ANSCOAM's Farm

There are three major branches of poultry found at ANSCOAM's farm. They include:

- Ñ **Egg Production poultry:** This is a branch of poultry that deals with the production of eggs. The eggs produced are known as the table eggs which are being produced without mating. This is made possible by choosing a high egg-laying strain.
- Ñ **Production of day-old chicks:** This branch of poultry refers to the production of new chicks from the hatchable eggs. Cleanliness in the hatchery is very important to the continued success in the production of high quality chicks.

Therefore, the first step towards successful poultry farming is obtaining high quality day-old chicks.

Ñ **Broiler production:** This branch of poultry deals with the production of meat-type birds. Broiler production is becoming a very important aspect of poultry production because of its short generation interval and fast growth.

2.3 Housing Poultry

There are three main ways of housing of poultry birds. They include; the extensive, semi-intensive and intensive systems. The housing system adopted at ANSCOAM's farm was the intensive system of housing.

❖ **Intensive poultry housing system:** This system allows for the confinement of poultry birds into a particular housing unit. Birds were given limited space to move about. Here all the nutrients were provided. This housing system was divided into two forms; the caging system and the deep liter system.

Ñ **Caging system:** The birds were kept in cages constructed with wood and mesh wire. The floor was covered with mesh wire and was raised 0.6-0.9M above the cemented floor, so that droppings were accumulated directly on the cemented floor and the birds were safe from direct contact with the droppings.

➤ **Advantages of caging system**

1. The birds conserve their energy because they are confined
2. Unproductive birds can be identified easily
3. Culling is very easy to carry out
4. It allows for adequate and accurate record keeping
5. Labor can be conserved
6. Good hygiene can be assured and as such the spread of diseases and pests may be minimized

7. Mass vaccination against diseases is made possible

➤ **Disadvantages of caging system**

1. The spread of diseases may be very fast since animals are kept very close to each other and since they share the same feeding and watering troughs.
2. There is high cost in setting up the farm.
3. Since birds have no movement, then balanced diet must be provided or malnutrition may arise
4. Lack of freedom



Plate 1: Caging system of housing poultry

Ñ **Deep litter system:** This system involved the keeping of birds in pens of which the floor was made of concrete and was covered with straws, dried grasses, wood shavings or husks which absorbs the water associated with feces. The roof was made of iron sheets while the windows were covered with wire gauze

for proper ventilation. Birds were provided all their needs in terms of water and feeds. Saw dust can also be used as bedding on the floor of the deep litter house but most farmers despite its cheapness and its ability to absorb the water in the feces thereby making it dry detest the use of it since its fine nature makes it easier for birds to inhale the dust thereby leading to chest congestion, catarrh and other respiratory problems.

➤ **Advantages of deep litter system**

1. There is a reduction or loss of eggs to thieves, vermin and snakes.
2. Culling of sick birds can easily be carried out.
3. It minimizes the use of land.
4. Labor can also be minimized.
5. Very large stock of flocks can be managed.
6. The rate of growth and production is also increased.
7. It requires less capital than the caging system.

➤ **Disadvantages of deep litter system**

1. The cost of construction of the deep litter house may be high.
2. The cost of production is increased due to high litter requirement.
3. Birds tend to waste their feeds.
4. Vices like cannibalism. Pecking, fighting, egg eating, feather fluffing may be rampant.
5. The spread of diseases and pests is very rapid.
6. It is very difficult to cull unproductive birds since all of them lay their eggs irregularly.



Plate 2: Deep litter house

2.4 Management of Poultry

❖ **Chick management:** The brooder house is ideal for chick rearing. A brooder house usually refers to some type of heated enclosure for raising baby poultry. Typically the brooder house in ANSCOAM's farm contained a kerosene stove, a source of food and water for the chicks, and old newspapers or magazines as bedding. The essence of the newspapers or magazines was to prevent the chicks from staying in the cold bare floor and also for the absorption of the chicks' droppings. Tarpaulin was used to cover the open areas around the brooder house so as to control the penetration of sunlight and to provide warmth during cold weather.

➤ **Factors considered before placing an order for chicks**

- i. The purpose of keeping the birds
- ii. The number of chicks needed, which as well depends on the available space.
- iii. Livability.

- iv. Age at sexual maturity
- v. Egg laying ability (for layers)
- vi. Color for size of eggs
- vii. Feed consumption rate
- viii. Resistance to disease, parasite and other stress e.g. heat, cold and handling.

➤ **Before the arrival of the chicks**

The preparation for brooding chicks was started two weeks before the chicks were received. This was done to avoid a last minutes rush. In ANSCOAM's farm, all the appliances were moved out and the brooder house was then thoroughly washed with recommended disinfectant solution and was afterwards allowed to dry. No remnant of the old litter was allowed to remain since it could reduce the strength of the disinfectant subsequently used for washing after the litter clearance.

Two days before the arrival of the chicks, the floor was covered with old newspapers or magazines. The appliances were set up and a trial run with the brooders was made to ensure that they were properly working. The brooder's guard was installed. This kept the chicks confined within the brooder areas.

➤ **Brooding:** Brooding is the care of chicks from day old to about six weeks of age. It consists primarily of the provision of heat, air, water and feed. It is the efficient combination of these factors that determines the level of physical and physiological development and the mortality of the chicks. The mortality rate during this period normally was not supposed to exceed five percent. The temperature of the hover was usually about thirty-five degree centigrade. The chicks were not allowed to stay without feed for more than thirty seconds.

➤ **Routine Practices**

- (a.) Daily observation of birds for comfort, chick activity, color and consistency of droppings.
- (b.) Provision of clean water and feed daily.
- (c.) Washing of drinkers daily.
- (d.) Daily record keeping

➤ **Occasional practices**

- (a.) Extension and removal of brooder guards
- (b.) Reduction and removal of litter
- (c.) Change of tray feeders to bigger one after one week and drinker after 4 weeks
- (d.) Debeaking
- (e.) De-worming
- (f.) Medication: anti-stress, antibiotics, coccidiostats etc can be given prophylactically.
- (g.) Vaccination at due time
- (h.) Culling sick, injured or dead chicks from the flock.



Plate 3: Vaccination of day old chicks



Plate 4: Brooder house

❖ Management of growers

Chickens that are between 8-20 weeks of age are referred to as grower. The growers were provided with a feeder space of 7.5-10cm. This enabled the growing pullets to eat at the same time when feed was served as a result promotes uniform growth.

➤ Routine Management practices

- (a.) Adequate feed was provided regularly
- (b.) The drinkers were washed daily and fresh clean water was as well supplied
- (c.) Records were kept daily
- (d.) Dead birds were removed and buried
- (e.) Sick and weak birds were isolated for treatment
- (f.) De-beaking was done 10-12 weeks if pecking was noticed

- (g.) Rats and mice were controlled by blocking their tracks using rat poison and traps or by keeping cats in the farm



Plate 5: De-beaking of pullets

➤ **Growth restrictions for growing pullets**

At ANSCOAM's farm, there were many methods used in restriction of growth in growing pullets especially in terms of fat acquisition. The major methods of growth restriction included:

- i. Feed rationing whereby high quality feed was provided for the pullets in small quantity. This method can provoke cannibalism and as well prevent timid and less vigorous birds from eating.
- ii. Control of photo-period whereby less hours of day light was provided for the pullets.

❖ **Management of layers**

Adequate management of the layers leads to maximum egg production while diseases, parasites and mortality are reduced. Poultry vices like cannibalism, egg eating, fighting etc. can also be minimized.

The birds were fed with the layers mash after 5% egg production. Birds begin laying at the 5th month of age (20-23weeks). The size of egg depends on the breed, size of layer, age at sexual maturity, quality and quantity of feed and adequacy of management. Feeding them with layers mash before the onset of laying was usually unnecessary and wasteful. Feeding space of 10-12.5cm/layer was provided on long feeders. Eggs were collected at least a day on the floor to prevent breakage in the process of laying or deliberate cracking and drinking of eggs.

- **Daily management:** Disinfectants was put in the foot bath, birds welfare were observed, dead birds were removed and buried, feed and fresh water were supplied, collection of eggs.
- **Occasional practices:** De-beaking, vaccination, de-worming, culling, monthly summarization of records of purchase of drugs, and repair of equipment or houses when necessary.

❖ **Management of broilers**

Broilers of ANSCOAM's farm were raised in cages as well as deep litter house. Nutritional requirement of broiler vary with age, hence, two different diets were commonly given to broiler. Broiler starter was fed to the broilers for the first 4weeks while broiler finisher was fed to them after 4weeks until market age between 8-10weeks. Broilers, unlike the layers were fed and watered ad-libitum.

Broilers were vaccinated against prevalent diseases e.g. Newcastle and gumboro.

2.5 Common Diseases Encountered at ANSCOAM's Farm

1. **Newcastle Disease:** This is an acute viral disease of domestic poultry and many other bird species.
 - **Etiology:** Newcastle is caused by avian paramyxovirus-1. Infection can result by aerosols and by ingesting contaminated water or feed.
 - **Clinical signs:** Respiratory signs of gasping, coughing, sneezing, and riles. Nervous signs of tremors, paralyzed wings and legs, twisted necks, circling and complete paralysis. Respiratory signs with depression, watery greenish diarrhea, and swelling of the tissues of the head, and neck are typical of the most virulent form of the disease. Varying degrees of depression and in appetite are observed.
 - **Lesions:** Pinpoint hemorrhages may be seen on serous membranes, hemorrhages of the periventricular mucosa and intestinal serosa, multifocal necrotic hemorrhagic areas or the mucosal surfaces at the intestine.
 - **Diagnosis:** History, clinical signs, post mortem findings and laboratory investigation
 - **Treatment:** There is no effective treatment, now ever broad spectrum antibiotics can be administered to prevent secondary bacterial infection.
 - **Prevention and control:** Vaccination at the appropriate age seems to be the most reliable prevention method, high level of farm hygiene is important.
2. **Infectious Bursal Disease (Gumboro Disease):** This is a highly contagious viral disease of chickens. The virus can be shed in feces of infected birds and transmitted from house to house by fomites. Infection is very difficult to eradicate from premises once there is an outbreak

- **Clinical signs:** Clinical signs depend on age and breed of chicken and virulence of the virus. Infection is common among age of 3-6weeks, though severe infections have been recorded in chicken up to 18 weeks old. Outbreak may be subclinical or clinical.
 - **Subclinical:** This is associated with severe, long-lasting immune suppression. Birds do not respond well to vaccination and are predisposed to infections with other normally non-pathogenic viruses and bacteria. Common diseases are usually aggravated.
 - **Clinical infections:** Sudden onset of disease. Affected chicken exhibit severe prostration, in-coordination, watery diarrhea, soiled vent picking. Mortality may be up to 60% with virulent strain.
 - **Lesions:** Cloaca bursa is swollen, edematous, yellowish, and occasionally hemorrhagic in dead birds. Congestion and hemorrhage of the pectoral, thigh and leg muscles is common.
 - **Diagnosis, Treatment, Prevention and control:** same as for Newcastle disease.
3. **Coccidiosis:** Coccidiosis is caused by protozoa. In poultry, most species belong to the genus *Eimeria* and infect various sites in the intestine. Both droppings, which contaminate feed, dust water litter and soil. Pathogenicity is influenced by host genetic, nutritional factors, concurrent diseases, and species of coccidium. *Eimeria necatrix* and *E. tenella* are the most pathogenic in chickens.
- **Clinical findings:** Signs range from decreased growth rate to high percentage of visibly sick birds, severe diarrhea and high mortality. Reduced feed and water intake, weight loss, decreased egg production. In chicken, *E. tenella* infection are found only in the caeca and can be recognized by accumulation of blood in the caeca and by bloody droppings.

- **Diagnosis:** Coccidial infections are readily confirmed by demonstration of oocytes in feces and intestinal scrapings.
- **Treatment:** Use of coccidiostat.
- **Prevention and control:** Good management practice is essential, commercial vaccines consisting of low doses of live, sporulated oocysts of various coccidial species administered at low doses to day old chicks.

CHAPTER THREE

3.0 RABBIT SECTION

Rabbitry is a place where rabbits are reared for either consumption or commercial purposes. The production of rabbit in ANSCOAM's farm is found under mini/micro livestock production.

3.1 Scientific Classification of Rabbit

Kingdom	Animalia
Phylum	Chordata
Subphylum	Vertebrata
Class	Mammalia
Order	Lagomorpha
Family	Leporidae
Genus	Oryctolagus
Species	<i>Oryctolagus cuniculus</i>

3.2 Terminologies Used in Rabbit Rearing

Buck	:	Male rabbit
Dam	:	Mother of a rabbit
Doe	:	Female rabbit
Kit	:	Baby rabbit
Sire	:	Male with an offspring

3.3 Advantages in Rabbit Raising Over and Above Other Species of Livestock.

- (1.) It does not require heavy capital investment
- (2.) It does not require much space, thus it is suitable for both urban and rural dwellers.
- (3.) Rabbits are easy to manage.
- (4.) Rabbits thrive and do well on cheap materials such as green vegetables and kitchen wastes.
- (5.) Rabbits are very prolific with gestation period of 31 days and an average of 6 kittens per litter and about 5-6 litters a year.
- (6.) Rabbit carcass has higher meat to bone ratio when compared with cattle, sheep, or goat.

3.4 Breeds of Rabbits Found in ANSCOAM's Farm

In ANSCOAM's farm, only three breeds of rabbit are been reared and they include:

-) New Zealand white
-) Californian
-) Chinchilla

3.5 Housing

The rabbits are usually kept in hutches. A colony system is being adopted in ANSCOAM's farm in the rearing of young rabbits from weaning at 4weeks of age until slaughter weight is reached. 2-3 rabbits of same sex are kept in one hutch.

The hutches are constructed in such a way that the comfort of the rabbits are met protecting them from wind, rain, bright sun and provide adequate light and fresh air.



Plate 6: Rabbit hutch

3.6 Care and Handling

Proper care and handling reduces injuries on the rabbits. Rabbits are not lifted by the ears or legs. The small rabbits of ANSCOAM's farm were carried by grasping the fold of skin over the shoulder with the right hand and supported with the left hand. The toe-nails were periodically cut to prevent them being caught in wire-mesh floor.

3.7 Feeding

Rabbits are simple stomach herbivores. In ANSCOAM's farm, the rabbits were fed with poultry grower's mash and since the mash was dry and dusty, water was sprinkled on it before feeding the rabbits to prevent nasal irritation and wastage of feeds. The rabbits were sometimes fed with succulent forage crops and grasses which included *Talinum triangulare* (water leaf), *Amaranthus spp.* (usually preferred to vegetables), *Centrosema pubescence* (Centro), *Panicum maximum* (guinea grass) and *Pennisetum purpureum* (elephant grass). Water was supplied regularly. Young rabbits required more water intake than the adults because water shortage can lead to retarded growth. All feeds and water were supplied in feeding troughs and watering troughs respectively.

3.8 Breeding

The minimum age at which a rabbit can be mated depends mostly on the breed. Most of the large breeds are bred when they are 6-9 months old. Rabbits of ANSCOAM's farm were given enough time to mature and were not rushed into reproduction so that they can withstand the strain of breeding and nursing. The bucks matured at about the same age as the does. One matured buck can service as many as ten does if the mating was spread-out. The buck was not used more than three times a week.

It is advisable to begin with young rabbits that have never produced before. This enabled the owner keep good records, understand and get acquainted with the rabbits. It is also advisable to start on a small scale and increase the flock as the owner gains experience in raising rabbits. Rabbit production requires high level of

management practice and a farmer can run into problems if the management is poor.

3.9 Mating

When on heat, the doe showed such signs as restlessness, nervousness, rubbing chin on feeders and waterers, and attempting to join rabbits in other pens. These signs indicated that the doe wanted to be served. When mating, the doe was always taken to the buck's pen. Results were better when this was done in the morning or in the evening during feeding. Mating occurred immediately or in 3-4 minutes after which the doe was returned to her hutch. If no mating occurred, the doe was taken back to the buck another time until mating occurred. The gestation period of rabbits was 31 days. The young were weaned at 4-8 weeks and a good doe usually raised 6-8 young in a litter and many continued producing until they were about 3 years old.

3.10 False Pregnancies

At times the doe gave every indication of being pregnant by showing signs of milk production and plucking of fur in preparation for making a nest. Usually, these symptoms were exhibited by a doe that has been left for some time between one litter and the next without mating. It has been estimated that a false pregnancy will last 17-18 days. If such does were taken back to the buck, the mating usually results in true pregnancy.

3.11 Kindling

This is the act of giving birth to young. A doe usually consumed less feed than normal for two or three days before kindling. A nest box constructed with block

and plank was made 24 hours after mating. The doe usually removed fur from her body to line the nest box.

Majority of the litter was kindled in the night. As each kitten was delivered, the doe licked it and nursed it immediately. Excitation of the does at the stage was avoided. Dead and deformed young ones were removed and as well handling of others was minimized to avoid rejection by the mother.

Ten to eleven days after birth the young rabbits were able to open their eyes. Occasionally however, their eyes become infected and failed to open normally. The inflamed eyelids were washed with warm water to soften the tissue; afterwards they were separated by pressing lightly on them. Antibiotic eye ointment was applied when pus was discovered on succeeding days.



Plate 7: Day old rabbits

3.12 Foster Mother

Most does have eight nipples but litter size was usually somewhat less than that. The best litter was six to eight. Any excess was transferred to a foster mother with smaller litter. A foster mother should have a litter of about same age and a number of six or less. For best result, young rabbits do not vary more than three or four days in age when transferred, otherwise the foster mother detects that they do not belong to her, and may as a result kill them. This was avoided by putting a scented substance or even butter on her nose and on all the babies for the first day. After she has fed them once, she will accept them.

3.13 Determining Sex:

In ANSCOAM's farm, this was done at weaning time or earlier. The rabbit was held on its back in a place where there is good light. Directly above the anus a slit-like opening that is the external opening of the sex organs was seen. A thumb was placed below this slit and above the finger above it, pressing gently. As this was pressed down, a small mound of tissue protruded through the opening and a small hole in the middle of this mound was seen. In the male, a round mound was seen while in the female, a slit with slight depression on the end towards the anus was seen instead. For older rabbits, the testicles were clearly seen in the males and in most cases the scrotal area appeared hairless.

3.14 Health

An unhealthy rabbit is observed in its hutch as healthy ones are usually active and have good appetite. The nose is clean and dry as respiratory diseases are characterized by sneezing and nasal discharge. The eyes are bright and wide open, as sick rabbits often huddle with eyes half closed. The inside of the ear is clean.

The body is fleshed and covered with glossy hair. Watery feces around the anal area indicate that the rabbit is suffering from diarrhea.

3.15 Health Problems Encountered at Rabbit Section

1. **Ear mange or Ear canker:** This problem was caused by mites which burrow under the skin and cause irritation. Excess moisture and crusts was seen on inner surface of the ear. Rabbit often shook its head or scratched on the ears with its feet.
 - **Treatment:** The crust is being removed by soaking with soapy warm water or cotton soaked in dilute hydrogen peroxide. The area is swabbed with 0.25% lindane in vegetable oil. The medication is being applied around the external ear and down the side of the head and neck as well. The application is repeated after 6-10days. The hutches used by affected rabbits is cleaned and disinfected carefully.
2. **Skin Mange:** Also caused by mites which burrow into the skin of the rabbits. Rabbits may be observed scratching their body because of itch and irritation that these mites cause. The skin becomes reddened, hair may fall and a yellowish crust formed.
 - **Treatment:** Treated as in ear mange described above.

CHAPTER FOUR

4.0 FISHERY SECTION

Fish farming is the production as well as raising of fish commercially in tanks or enclosures, usually for food and income. The breeds of fish reared in ANSCOAM's farm include *Clarias gariepinus*, *Heterobranchus spp.* and hybrid of the two.



Plate 8: Hybrid of *Clarias gariepinus* and *Heterobranchus spp.*(*Clariabanchus spp.*)

4.1 Importance of Fish Farming

- (1.) Fish contains large quantities of protein, which is necessary for the growth and development of the body; consequently it is important in our diet.

- (2.) Fish is commercially a lucrative agricultural practice all over the world and there is no religious prohibition or ban to fish, this gives it advantage over meats like pork or beef.
- (3.) Some whole fish and fish bones are used to make livestock feeds.
- (4.) Fish oils are also used in the manufacture of soap besides serving as food.

4.2 Conditions Necessary for Setting a Fish Pond

1. The chosen site must have a suitable topography which will enable the farmer to fill and drain ponds using gravity ponds built on a slope that can be drained easily.
2. There must be constant supply of water in good quantity to the ponds
3. Avoid seepage from the bottom of the pond.
4. There must be availability of fast-growing fingerlings with high feed convertibility.
5. The size depends on the availability of fund and type of fish farming to be practiced.
6. Availability of feed
7. Location of market
8. Availability of labor

4.3 Types of Ponds

In ANSCOAM's farm, there are three types of ponds, they include;

1. **Hatching pond:** Fertilized eggs are hatched into fry until they develop to fingerlings.



Plate 9: Hatching pond

2. **Rearing ponds (Vat and plastic ponds):** Fingerlings are reared in these ponds.



Plate 10: Plastic pond



Plate 11: Vat/tarpaulin pond

3. **Growing pond (Concrete pond):** Fish are raised here until market size is attained.



Plate12: Concrete pond

4.4 Stocking of Fish Pond

This is the introduction of fish into a fish pond. It also means the number of a particular species of fish a pond can accommodate at a time. The fingerlings used in the stocking of rearing pond in ANSCOAM's farm were spawned, hatched and nursed in the farm. The brood stocks were got from the matured fish from the concrete pond or bought from a reliable farm. Matured females have brighter color, swollen abdomen (abdomen turn brownish in color when pressure was applied). Matured males possess dark red or rosy genital organ.

4.5 Procedures Involved in Hatching and Fertilization of Fish

- **Hypophysation:** This is the hormone treatment of the matured female fish with eggs to induce final maturation and ovulation of eggs. Here the matured female was injected with ovaprim injection 10-12hours before spawning. The injection dosage to the female fish was 0.3-0.4ml/kg.



Plate13: Ovaprim injection

- **Procurement of Semen:** The male matured fish was sacrificed during the artificial insemination. The male fish was first demobilized by cutting the spinal cord. Afterwards the fish was dissected through the dorsal side to obtain the milt sac at the distal part of the abdomen. The milt sac was prevented from making contact with water. It was kept in a sterilized container.
- **Procurement of ripe eggs:** The ripe eggs were obtained through stripping. The female belly was stripped gently (i.e. gentle massage of the ventral side) to obtain the eggs.



Plate 14: Procurement of eggs from the female

- **Artificial insemination:** Saline water was prepared with 0.9g of salt to 1litre of water. The milt sac was cut open to obtain the semen. The saline water was mixed with the semen. The mixture was then mixed with the eggs and poured into the hatching pond with water and a mosquito netting which enable easy extraction of the fries when needed and prevent much loss of fries during the change of water. The fertilized eggs were left to hatch. The unhatched eggs and dead hatchlings were removed by siphoning method and the water in the hatching pond was changed at intervals to create conducive environment for the hatchlings.

4.6 Fish Feed Compounding and Fish Feeding

Fish feed compounding and fish feeding are the most important aspects of fishery that determines ones success in the business.

Table1: Constitution of fish feed

Food Class	Sources
Plant protein	Blood meal, maggot meal etc.
Animal protein	Blood meal, maggot meal etc.
Fish protein	Fish meal, fish innards etc.
Carbohydrate	Maize, rice, wheat, millet etc.
Fats and oil	Soya oil, palm oil, groundnut oil etc.
Supplements and additives	Vitamins,minerals,binder(starch,flour,ca ssava,lysine,methionine, salt, premix etc.)

❖ Characteristics of fish feed

- (a.) Must be affordable and cost effective to the farmer
- (b.) It should be able to promote and assure fish growth
- (c.) The feed must be attractive and acceptable to fishes
- (d.) Fish feed must not be polluted to the water medium
- (e.) Fish feed remain stable in water for about ten minutes.

❖ Types of fish feed

1. **Compounded feed:** This feed is been compounded in the farm from relevant ingredients in the farm based on some professional fish feed formula. The contents and size of the pellet depends on the age and size of the fishes;

-) Powdered fish feed for fry
-) Granular fish feed for fingerlings
-) Pelleted fish feed for grown out fish



Plate15: Compounded fish feed

2. **Natural fish food:** examples are algae and protozoa
3. **Live food:** e.g. maggots, tadpoles, earthworms etc.
4. **Agricultural waste/ By-products:** Agricultural and by-products are also feeds to fish e.g. poultry waste, brewery wastes etc.



Plate 16: Sieving of maggots from wet poultry litter

4.7 Fish Diets

The crude protein in fish diet ranges from 30% depending on the age of the fish.

- a. Hatchling: 56-65% crude protein - 0.2mm-0.3mm
- b. Hatchling: 56-65% crude protein - 0.3mm-0.5mm
- c. Fingerlings: 42-45% crude protein - 0.5mm-0.8mm
- d. Juveniles: 42-45% crude protein - 4.5mm-3.0mm
- e. Adult: 40-42% crude protein - 4.5mm-10mm
- f. Brood stock: 30-35% crude protein- 6.0mm-10mm

4.8 Routine Inspection of the Fish

- (a.) Maintenance of ponds: ponds are checked every morning for leaks or cracks, and also top water.
- (b.) The fish feeds are dropped at a spot every day. This affords the opportunity to observe the fish daily.
- (c.) The ponds are checked to ensure that there are no frogs, rats, snakes in the pond



Plate17: Washing of concrete pond

4.9 Control of Diseases in Fish

The crowded nature of the fish pond environment is conducive for the easy spread of fish diseases. Good management keeps disease organisms away from the pond. If infection occurs; it is been treated with appropriate drugs like Malachile green, Copper sulphate, Dippterex, Bromex, formalin, tetracycline, vitalite (for multivitamin and mineral) etc.

4.10 Some Diseases Commonly Seen in Fish

1. **Saprolegnia:** It develops in injured, weakened, diseased or dead fish. It is manifested by wooly grey-white or light brown patches on the skin, fins, eyes, mouth or gills.
 - **Control:** It can be controlled by avoiding injuries, brutal handling and unhealthy surroundings, bad quality water and shunning overpopulation.
2. **Pisciola geometra(blood sucking leech):** this another common parasite of fish. The leech attaches itself to any part of the fish's body where it sucks the blood.
 - **Treatment:** treatment is by lime bath ie. Dipping the infected fish into water containing 2g/liter of water or the infected fish is dipped into a solution of Lysol which is a mixture of 50% cresol and 50% soap. A salt bath can also affect cure.

4.11 Methods of Treatment

- i. **Immersion:** Fish are immersed in solution (in batches/ holding tanks) because the skin permeable systematic drugs are applied in this way. The length of time depends on drug concentration, disease being treated, and drug action.
- ii. **Administration via feeds**
- iii. **By injecting individual fish**

iv. Preventive medicine via vaccination is also practiced in ANSCOAM's farm

4.12 Signs of sickness in fish

The symptoms of sickness in fish are as follow; anorexia, sluggish movement, spiral or circle movement, faded coloration, bulging eyes, hemorrhages in the eyes, skin or mouth swollen gills or rotten gills distended abdomen, ulcer on the skin, protruded vent.

CHAPTER FIVE

5.0 GOAT SECTION

In the goat section, different breeds of goats were being reared and managed at ANSCOAM's farm. The breeds of goat found in ANSCOAM's farm include the Bornu red and West African dwarf goats.



Plate18: Goat pen

5.1 Terminologies in Goat Management

Billy : Adult male goat

Nanny : adult female goat

Kid : young goat

Kidding : system of delivery

Wether	:	castrated male goat
Flock	:	group of goats
Chevon	:	meat of goat
Serving	:	system of mating
Sucking	:	female with its offspring
Meat	:	goat meat

5.2 General Characteristics of Goat

- ✓ They are very hardy and can survive unfavorable environmental conditions
- ✓ They have medium size
- ✓ Male and female have horns
- ✓ They are very prolific and can produce kids three times in two years
- ✓ Have unturned tail
- ✓ They are very inquisitive animals
- ✓ The gestation period is between 145-154 days or 4-5 months.

5.3 Reproduction in Goat

Goat reaches puberty from 4 months. The doe displays courtship behavior during the heat period which occurs every 21 days. The buck urinates on his body to add to its odor, this serves as an attractant to the doe. Gestation period ranges between 145-152 days, and under normal circumstances, the doe can have multiple births.

5.4 Feeding

The goat is an herbivore and therefore the goats of ANSCOAM's farm were being fed with grasses, gmelina leaves, palm frond etc. at ANSCOAM's farm. Drinking water was provided on daily basis for them.



Plate19: Feeding of the goats

5.5 Housing

The intensive system of rearing is being adopted at ANSCOAM's farm, where the goats are confined in pens with low concrete walls to ensure proper ventilation and

roof made of iron sheets. The doors are made of wood while the floor is made of concrete to ensure easy cleaning of the pens. The goats were provided with feed, medications and water.

5.6 Health Care and Sanitation

1. The house was cleaned and washed at intervals
2. The feces and urine was cleared up at intervals and was used in the farm for preparation of farmyard manure
3. The sick animals were culled and cured
4. There was regular dipping of the animals to prevent pest and parasite attack
5. The goats were vaccinated against rinderpest, brucellosis, foot and mouth diseases and anthrax at recommended intervals



Plate 20: Tick-bathing of goat

5.7 Diseases of Goat

Common diseases of goat include: brucellosis, anthrax, rinderpest, redwater fever etc. Drugs and vaccines are always administered at appropriate time so as to prevent the disease outbreak.

CHAPTER SIX

6.0 SHEEP SECTION

Sheep are reared extensively for production of meat and for income earning.

6.1 Scientific Classification

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Family	Bovidea
Genus	Ovis
Species	<i>Ovis aeries</i>

6.2 Terminologies in Sheep Management

Ram	:	adult male
Ewe	:	adult female
Lambing	:	system of delivery
Lamb	:	young sheep
Tupping	:	system of mating
Suckling	:	female with its offspring
Flock	:	a group of sheep

6.3 Breeds of Sheep

There are so many breeds of sheep but the only breed found in ANSCOAM's farm is the Balami breed.

6.4 General Characteristics of Sheep

- ✓ They have medium size with long legs
- ✓ They possess long thick tail which hangs down
- ✓ The earlobes are long and drooping
- ✓ They are grazers and can also scavenge on relish of road side
- ✓ They are kept mostly for meat, wool, fleece and milk purposes
- ✓ They seem to be very stupid in appearance and behavior
- ✓ They thrive well under the extensive system of management
- ✓ Gestation period is between 151-154 days
- ✓ Twinning is very common
- ✓ They are ruminants
- ✓ Only the males have horns, but the females are polled.

6.5 Feeding in Sheep

The sheep is an herbivore and since the system of rearing adopted for sheep management at ANSCOAM's farm is the extensive system, the sheep were left to browse and graze within the farm. They fed on grasses and legumes. Feed additives like mineral salts and vitamins as well as feed supplements such as silage and hay were supplied to them.

6.6 Reproduction in Sheep

Reproduction in sheep is quite similar to that of goat. The ewe generally reaches maturity at 6-8 months of age, while the ram at 4-6 months. Ewe enters into oestrus

cycle about every 17 days, which lasts for approximately 30hours. The ewe emits a scent to indicate readiness to the ram. Sheep have a gestation period of around five months.

6.7 Health and Sanitation

1. The farm surroundings for grazing was kept clean always
2. Dead animals were buried
3. The sheep were dewormed at regular intervals
4. They were tick-bathed when the need arises
5. Sick animals were culled and cured

6.8 Diseases of Sheep

The common diseases of sheep are same as that of the goats; anthrax, rinderpest, brucellosis, red water fever etc. The sheep of ANSCOAM's farm were being infested by ectoparasites.



Plate 21: Vaccination of sheep against the infestation of fleas

CHAPTER SEVEN

7.0 PIGGERY SECTION

Piggery is a place where pigs are raised or kept.

7.1 Scientific Classification

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Artiodactyla
Family	Suidae
Genus	Sus
Species	<i>Sus scrofa</i>

7.2 Terminologies Used in Pig Management

Boar	:	Adult male pig
Sow	:	Adult female pig
Gilt	:	A female pig matured to reproduce or that has reproduced once
Piglet	:	A young pig
Weaners	:	Young pigs just separated from the mother
Fatteners	:	Old pigs reared for the market
Barrow	:	A castrated male pig

Farrowing	:	The act of parturition
In sow	:	Pregnant sow
Dry sow	:	Sow that is not pregnant
Bacon	:	Salted pig meat
Lard	:	Pig meat with fat

7.3 Breeds of Pig

There are only two breeds of pig found at ANSCOAM's farm, they are:

- Large white
- Hampshire

7.4 Characteristics of Pig

- ✓ Pigs mature very early
- ✓ They are good converters of feed into meat
- ✓ Pigs have an excellent dressing percentage, i.e. the proportion of flesh to bone is high
- ✓ Pigs are prolific in nature. At 8-9 months of age, a gilt is matured and can farrow twice a year producing 8-10 piglets per litter
- ✓ The salvage value of pig is high
- ✓ It has a short gestation period of 114 days
- ✓ A typical pig has a large head with a long snout

7.5 Feeding in Pigs

Pigs are monogastric omnivores with voracious appetite. At ANSCOAM's farm, the pigs were fed with roughages like yam peels, cassava peels, spent grain etc. They were also fed with pawpaw fruit, grasses, vegetables and overstayed bread from bakeries. The pigs were being provided with water in their wallowing troughs every day. The piglet was given creep feeding from about 2 weeks after farrowing. Weaners and breeders marsh was as well provided for the piglets.



Plate 22: Mixing of pig feed

7.6 Housing in Pigs

The intensive system of housing is being adopted at ANSCOAM's farm. Houses are provided in form of pens. The pig pens are divided into paddocks of which the walls are built of blocks, the roof built of iron sheets while the floors are made of concrete. The gate of each paddock is made of iron bars. The house has both feeding and wallowing troughs.

7.7 Reproduction in Pig

The sow is ready to breed at 5 months of age and shows signs of heat. Some slow growing types and the underfed ones appear older when they reach puberty. The sow comes into heat every 3 weeks throughout the year if she is not mated.

7.8 Signs of Heat

The female pig coming into heat is restless and may not eat. The vulva becomes pink and swollen. When the pig is pressed hard with the hands on either side of her back she tends to stand still, showing she is ready to accept the male.

7.9 Pregnancy and Farrowing

Pregnancy in pig lasts for 3 months 3 weeks and 3 days. The well fed sow at ANSCOAM's farm produced at least 10 piglets from each pregnancy. The pregnant sow was detected when the sow showed no sign of being in heat 3 weeks after mating. The pregnancy lasted about 3 months 3 weeks and 3 days. The pregnant sow was well fed with feed high in nutrients. The sow became restless and made nest within 24 hours of giving birth. During farrowing, once the first piglet was born, the others and the afterbirth followed quickly. Farrowing was completed within 2-3 hours after which the navel cord broke and the piglets immediately searched for a teat and milk.

7.10 Care of the Piglets

- The navels of the freshly-born piglets were treated with tincture of iodine solution.
- The needle teeth of the piglets were clipped to prevent damage of the sow's teats during their nursing. Tooth nippers were used.
- The piglets were supplemented with iron after the first three weeks.

- The pens were heated on cold nights
- The surroundings of the pen was kept clean
- Creep feed rich in protein having 18-20% crude protein was given to the piglets from the third week following the decline of the quality of the mother's milk.
- Antibiotics were also being given to the piglets to prevent diseases.

7.11 Weaning

The piglets showed interest in solid feed when they were 1 or 2 weeks old. They were offered with cereals at ANSCOAM's farm for a start. The piglets took milk from the mother until they were about 7 weeks old. They gradually took less milk and ate more solid feed. The piglets were gradually given new feed to avoid digestive problems.



Plate 23: Weaned piglets

7.12 Hygiene in Pigs

- Regular dipping of pigs to prevent ectoparasites
- The pigs in the farm were dewormed regularly

- The wallow was cleaned regularly
- The pigs were vaccinated against certain diseases
- The pens were washed daily

7.13 Diseases of Pigs

Ñ Roundworm infection

Pigs were infected by different roundworms. In pigs 2-5 months old the worms cause diarrhea, weight loss and lung problems. The damage of the lungs can allow germs to attack and cause coughing and lung infections.

➤ Treatment and control of roundworms

Infected pigs were treated by dosing with a suitable treatment such as piperazine. Pregnant sows were treated before giving birth so as not to pass the infection to her litter. The pens were cleaned out and the walls and floors treated with caustic soda which was left for 2-3 days before being washed off.

Ñ Swine erysipelas

This is a disease that can kill the pig. Swine erysipelas is an infection of the pig's body which produces recognizable discoloration on the pig's body. These are reddish diamond-shaped areas on the skin or the animal may have a purplish color to the head and ears. Pigs with erysipelas have a high temperature and do not feed: they squeal if touched. The animal can die from an acute infection or in chronic cases the animal survives but suffers from swollen joints and lameness.



Plate 24: Sow suffering from swine erysipelas

➤ **Treatment**

Erysipelas was treated by of the antibiotic penicillin. Animals were also vaccinated against the disease.

CHAPTER EIGHT

7.0 RECORD KEEPING

Record keeping is one of the most important management practices of the farm to know the state of the farm whether it is making profit or loss.

8.1 Merits of Record Keeping

1. It allowed us to improve on the business
2. It was good for good decision making
3. It assisted our industrial based supervisor to know how many laborers to employ
4. It showed the financial position of the farm
5. Record keeping aided in present and future planning
6. It also aided in securing loans from the bank or other corporate organization
7. It as well helped in the determination of price of the products of the farm (eggs, bird etc.)
 - Challenges that could be encountered in farm record keeping were that it involved arithmetic and the farmer or laborer must be literate.

8.2 Formats of Farm Records

Name of the farm:

Breed collected:

Source:

Date of collection:

Table 2: Format of a Farm Record

Date	Total number of animals	Mortality	Balance	Remarks	Signature
20/07/15	100	5	95	Fair	
20/07/15	95	1	94	Good	

➤ **Vaccination/medication record**

Breed - - - - - - -

Source - - - - - - -

Date of collection - - - - -

Table 3: Vaccination/Medication Record

Date	Age	Drug administered	Vaccine given	State of the animal	Remarks
25/05/15	Day 1	Lasota	NDV	Normal	Good
07/06/15	2 weeks	Albiovit	-	Appetite loss	Fair

Table 4: Feed Record

Date	Age	Number of birds	Quantity of feed given	Remarks	Feed consumed	Remarks
06/06/15	2 weeks	100	200kg		2kg/bird	

Table 5: Daily Egg Collection Record

Date	Age	Number of birds	1 st collection	2 nd collection	Total collection	Number of crack	Balance	Remarks
15/06/15	22 weeks	50	20	10	12	4	38	Good
16/06/15	22 weeks	50	18	5	4	0	27	Fair

CONCLUSION AND RECOMMENDATION

The six months SIWES industrial attachment program has really exposed me to work methods and techniques in handling and management of certain animal production such as poultry production, fish production, rabbit production etc. It as well has got me prepared for real life work situation after graduation in terms of being self-employed even with a small capital.

I therefore thank the SIWES coordinators and as well recommend that they should continue with their good work in creation of such an opportunity as this and urge my successors to take the program more seriously.