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**TECHNICAL REPORT ON
STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (S.I.W.E.S)**

HELD

AT

ABRASH FISH FARM

NO. 10, OLADUTUN ABISOYE STREET, AKEJA, OTTA, OGUN STATE.

BY

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SUBMITTED

TO

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KWARA STATE POLYTECHNIC, ILORIN

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1.0 INTRODUCTION TO THE TRAINING PROGRAM

A. Purpose of Training

The students industrial work experience scheme (SIWES) was initiated in 1973 by the industrial training fund (ITF).

This was to update practical knowledge of students in the universities, polytechnics and colleges of technology. it was aimed at bridging the gap between the theoretical knowledge acquired in classes and technical knowledge in the industrial by providing students with opportunities to apply their education knowledge in real work situations.

Over the years, SIWES has contributed immensely to building the common pool of technical and allied skills available to the Nigeria economy which are needed for the nation industrial development.

Furthermore, the place and relevance of Siwes is underscored by the fact that the scheme contributes to improving the quality of technical skills generally available in the pool from which employers' source technical manpower.

It also gives students the opportunity to blend theoretical knowledge acquired in the classroom with practical hands on application of knowledge required to perform work in the industry, also it prepares students for employment and makes the transition from school to the world of work easier after graduation.

Aims and Objectives of Student Industrial Work Experience Scheme (S.I.W.E.S)

Siwes provides avenue for student to acquire industrial skills and experience in their course of study, this is few objectives of Siwes,

- 1) Provision of avenue for students in the Nigerian universities to gain industrial skills and experience in their course of study.
- 2) To expose students to work methods and techniques in handling equipment and machinery that may not be available in the universities.
- 3) To prepare students for work situation they are likely to meet after graduation.
- 4) To provide students with an opportunity to apply their theoretical knowledge in real work situation, thereby bridging the gap between university work and actual practice.
- 5) To enlist and strengthen employers involvement in entire educational process of preparing university graduates for employment.

2.0 Company Profile (ABRASH FISH FARM), No. 10, Oladutun Anbisoye Street, Akeja, Otta, Ogun State.

Abrash Fish Farming Nigeria limited, is one of the fast growing, productive and focused integrated farm in kwara state and also Nigeria, and the tempo of the said development has been kept and maintained in that dynamic momentum. The fishery was established in May 2000 and was incorporated in 2008. The fishery farm is strategically located in the Agricultural Farming Settlement Apalara Area Ilorin, Kwara State. In achieving these monumental growth and development in the industry we are mindful and considered the listed factors:

These outlay will be possible because the management is focus and articulate, they always take customers complains very serious and timely decisions are taken on important issues concerning the operational and revenue generation of the company.

Presently we are concerned with the production and sales/marketing of fish production and products as well as imbibing our knowledge and expertise into our services for the mutual benefit of our establishment and our esteem clientele. We produce the most giant and highest cat fish and tilapia volume in Ilorin ., Fish fingerlings / juvenile and feeds for our customers to excel.





At Abrash fishery, customer relationship is very vital and critical to us because "No buyers, No seller" and there will be nothing to produce, all we produce and sell are at a very competitive price and a commensurate discount for our customers to grow. We also transport products to our customer as prompt as possible in good condition at a reasonable cost. We are also comfortable in moving our products round the country and beyond. We just don't serve our customers but we always appreciate feed back from the customer and prompt follow-up is always provided so that continuity and a better result is achieved. We also have retailing outlets to get our products to every corners of the country and become a household name in kwara state. Selective credit facility within a reasonable time frame is offered to some selective customers.

We also render services like

1. Consultancy
2. Training programmes (IT & SIWES Training for student)
3. Expert advice of cost and production of cat fish
4. Livestock buying and vaccination
5. Feeds for fisheries

B) Introduction to Cat Fish Farming

The story of aquaculture in Nigeria is essentially the story of catfish culture and the hope of fish supply in Nigeria hang on its development and culture. Recent trends all over the world, point to a decline in landing from capture fisheries, an indicator that fish stocks have approached or even exceeded the point of maximum sustainable yield. Aquaculture therefore remains the only viable alternative for increasing fish production in order to meet the protein need of the people

Fishery: An industry or occupation that are capable of processing or selling of fish

Fisheries: The science of producing fish and other aquatic resources for the purpose of providing human food, fish product such as fish oil

Aquaculture: Is the practice of cultivating aquatic animals and plants in managed aquatic environment

Polyculture or Composite Fish Culture: Is a type of fish culture in which different types of fishes of different feeding habit are cultured to exploit the different kinds of food that is present in the different parts of the ponds. This type of farming is also called mixed farming.

Liming: Lime is used to improve the pond bottom and kill parasite in the pond. It also prevent water from becoming too acidic. Liming increases the alkalinity of the water there by increasing the availability of carbon dioxide

Fertilization: To make H₂O more productivity, fertilizers are added. They contain important nutrient which help in production of natural fish food organism (plan k ton)

Stages of Fish Growth

Larvae ↔ Fry ↔ Fingerlings ↔ Post fingerlings ↔ Juvenile ↔ Post juvenile ↔
Table Size

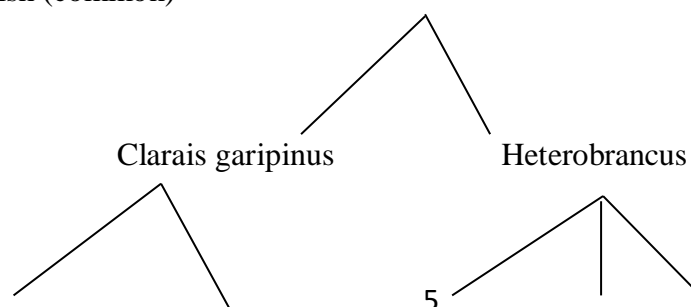
Importance of Healthy Fish Stock

Assurance of a profit oriented fish farming enterprise. Fish death due to poor health will rob a farmer not only of intended financial profit, but also of the total investment on the farm.

1. To ensure good growth of fish
2. To prevent disease transmission to man

African Catfish

Types of catfish (common)



Pattern non pattern bidorsalsi longflees aceto

B) Level of management input

1.Extensive Culture System: When food base in a pond is exclusively naturally occurring, without supplementation either feeds or fertilizer.

2.Semi intensive culture system: In this system there is occasional supplementary feeds addition and natural productivity is augmented with manure.

3.Intensive Culture System: This demands the highest level of management input feeds and fertilizers are intensively applied following appropriate recommended rates. Fish grow very fast when intensive managed and grow least in extensive management.

C) Fish Culture Practices: Pond can be classified as being monoculture or polyculture. Type

1.Monoculture: This is the practice of culturing only one species of fish in a pond unit. Under monoculture, a farmer may grow only tilapia in the pond or only clarias in the pond

2.Polyculture: This is the practice of culturing more than one species of fish in the same pond e.g clarias and tilapia fish yield under polyculture can be higher and foods in the pond properly utilized.

D) Scales of production

1. Homestead/Backyard ponds: This is a fish pond that is managed to augment family protein intake. The size of such a pond could vary according to land space available.

2. Commercial fish ponds/farm: This usually have an area of land not less than half hectare under culture. Such a farm will demand more attention from the fish farmer.

Commonly Culture fish species in freshwater pond in Nigeria

Common Name	scientific Name
Tilapia	<u>Oreochromis niloticus</u>
Mud cat-fish	Clarias gariepinus

Common Carp	Cyprinus carpio
Spotted Cat-fish	Heterobranchus bidorcalis
Niger Perch	Lates niloticus
African bony tongue	Heterotis niloticus
Grey cat fish	Ghysicililtry nitrodigitatus
Trunk- fish	Cymnarchus niloticus
Cat fish	Bagrus bayad
African carp	Labeo coubie
Moon fish	Citharinus citherus

Commonly cultured fish species in backish water ponds

Common Name	scientific Name
Flat head grey mullet	Mugil cephalus
Tilapia	Tilapia guinnessis
Atlantic Tarpon	Megalops atlanticus
West African Lady fish	Elops lacerta
Grey cat-fish	Chrysichthys nigrodigitatu
African red snapper	Lutjanus agennes

Commonly Culture Fish Species

Fast grower e.g Heterobranchus and Clarias

- Ii. Accept and utilized supplementary feeds properly e.g Tilapia, Clarias, Heterobranchus
- Iii Must be hardly and resistance to disease e.g clarias
- Iv Must be tolerant to poor water quality e.g Clarias
- V The fish must be easy to breed in captivity e.g Clarias and Tilapia
- Vi It must attract low production cost e.g Tilapia & clarias
- Vii Acceptable and marketable to consumer e.g carp, Heterobranchus, Tilapia and Clarias.

Problems Encounter in Hatching of Fish

1. Temperature
2. Inadequate of facilities

3. Inadequate supply of feeds

Catfish Production

1. Materials / Basic Requirement in Catfish Production

- a. Mature brood stock
- b. Weighing scale
- c. Thermometer
- d. Acetone
- e. Mortal & Pestle
- f. Calibrated jug
- g. Pair of pincers or hack saw
- h. Dissecting kit
- i. Syringe and needle
- j. Table salt
- k. Knife
- l. Hand basin
- m. Clean water
- n. Normal saline
- o. Blade

IMAGES OF EQUIPMENT FOR CATFISH



Acetone



Dissecting kit



Table salt



Mortal & Pestle



Weighing scale



Syringe and needle



Calibrated jug



Hand basin



Blade

IMAGES OF CAT FISH BROODING



Steps in Catfish Production

Step 1: Sampling of brood stock

Step 2: Size of measurement

Step 3: Measuring of hormonal pituitary

Step 4: Injection

Step 5: Isolation / Separation

Step 6: Preparation of the caccabam incubator

Step 7: waiting for 8 – 12 hours

Step 8: Collection of the eggs

Step 9: Collection of the niilt

Step 10: Fertilisation of the egg

Step 11: Closing fertilization

Step 12: Spawning of the egg

Step 13: Waiting for 12 hours to know the % of fish that will fertilize

Step 14: Waiting for another 12 hours for the eggs to begin to hatch

The first thing I did was to drag out brood stock with the use of dragging net, after then I measured the size of the brood stock, the size of the brood stock will determine the amount of the ml of pituitary gland I used.

After measurement I put the fishes in a pond for them to regain their lost energy when they are been stressed, after some hours I injected the female fish and the male fish was not injected. Separation of the male fish from female fish not to cause damage to them, it takes female fish 24 hours before the eggs was ready for fertilization within time I prepared my caccabam incubator where I layed my eggs when it is ready.

I bisect the male fish and extracted the milt, mix the milt and normal saline then stripped the female fish by pressing the abdomen gently so that the eggs will easily come out, mix thoroughly the milt, the eggs and the normal saline.

Fertilization of eggs takes place; I closed my fertilization by adding water to removed the unfertilized eggs.

Spawning of the eggs take place.

I waited for 12 hours to know the percentage of fish that fertilized, I waited for another 12 hours for the eggs to begin to hatch.

After three days the eggs is now a larvae.

Factors Promoting Ill Health and Diseases In Cultured Fish

Poor Water Quality

Water is the medium for fish rearing. A farmer should therefore be careful on the source of water for the pond. Although water quality management in fish ponds is a wide area, a farmer should ensure that pond water is fertile.

Overstocking

Ignorance on the part of a fish farmer on the stocking densities / stocking rates of cultured fish in a pond environment could result in either under stocking or overstocking fish ponds. Dangers attached to this and numerous, overcrowding, insufficient dissolved oxygen pond water resulting in struggling for survival, cannibalism due to starving and more importantly possible epidemic, resulting in mass fish death.

Erratic (Irregular) Feeding

Like humans, fish need regular and consistent feeding in order to boost their immune system and make them less susceptible to disease. Under extensive fish culture system, fish are often left to the mercy of natural foods. In pond water with little or no feed supplementation. Excessive feeds in pond encourages water pollution

Nutrients Deficient Feeds

Balanced diet is important to fish in order to ensure the performance of their metabolic activities. Nutrients rich foods are security against susceptibility to ill health and diseases, fish food must be rich in protein content and energy requirements

Over Fertilization

In as much as it is necessary to ensure water quality improvement practices to boost pond activities in natural foods, a farmer should be careful enough not to cause algal boom (an indication of overfertilized pond water)

Incidence of Predators and Wild Fish

Predators are natural enemies of fish. Apart from causing fish death directly by preying on them, they also act as intermediate hosts for parasites that introduce disease to ponds, fish ponds should be kept free from predators and wild fish. This can be achieve by periodic draining of the ponds and treating them with quick line or rote none.

Bushy and Unhygienic Pond Environment

Bushy pond environment are hide outs for predators, which in turn are intermediate host to parasites. Unhygienic pond environment often reflect in environmental pollution. When pollution occurs in a fish pond environment, the entire fish stock can be made susceptible to diseases or instant death.

Rough Handling of Fish

Management practices involving handling or transportation of live fish (especially for stock) requires great care to prevent injuries in fish skins. Wounds on skin facilitate diseased condition. Even when fish are been test sampled, great care must be taken to minimize body injuries to the fish since one of the most common route to infection is through the skin, particularly when damaged .

PROCESSING OF FISH

Handling

Scaling fish

Cutting

Salting and sun drying

Smoking

Filleting fish

Preservation and Storage Of Fish

ICING: This is one of the best methods of reducing spoilage of fish especially during catching before reaching the landing site and during transportation. The quality of ice required to fish is one part ice to three part fish.

FREEZING: This is a process of reducing the temperature of fish using the deep freezer. It is done to such level that the activities of the spoilage agents are reduced to facilitate extended shelf life of fish

STORING SMOKED FISH OR DRY FISH: The store area is a suitable place for insect infestation and mites attack on dried fish. To avoid this, the store area should be kept very clean. Use suitable disinfectants to destroy hidden insects in the area before putting the fish, fish should be stored inside wooden boxes that are very well sealed.



Cardboard boxes, jute bags, baskets, sacks and carton may be used for storage and transportation, even though they are not adequate. If old containers are to be used, they should be disinfected before use as they may carry high loads of micro organisms.

PONDS CULTURE SYSTEMS

Fish pond can be classified mainly using the following criteria:



Construction design

Earthen ponds : These are constructed by digging soil in a carefully selected site that is good enough to retain water for fish culture. Where the soil structure is weak to retain adequate water, dug out earthen ponds can be reinforced with concrete to make it suitable for fish to culture.

Concrete/Embankment ponds: This pond constructed on the ground, that is above the ground surface with concrete wall.

Barrage ponds: This types of pond is constructed by building a wall across a stream in a low valley. The wall ensures enough water reteation for fish growth.

Diversion ponds: Pond supplied by water diverted form a river/stream through a channel.

Rosary ponds: When ponds are built in a string and each drains into the other and are all managed as a single unit due to their water connection.

Parallel Ponds: These are ponds located in an area with each having its own hilet and outlet.

POND CONTRUCTION AND MAINTENANCE PRACTICE

Pond Impoundment: Impoundment refers to a process of entrapping water (from a good source) into a constructed structure with the aim of retaining/replenishing the required water level for a viable and profitable fish culture.

General Consideration on Impoundment

- Ensure that regular water sources is available to fill pond to require level.
- Impounded water need improvement to be enriched with nutrient for fish to eat.
- Ensure that water source is free from pollutants substances that are poisonous to the fish.
- Impounded water need improvement to be enriched with nutrients for fish to eat.

Stocking: Stocking is the introduction of fish (fingerlings or adult fish) into the new pond environment. Two source of stocking fish are available. Fish can be collected from wild (rivers, streams, lakes e.t.c) or from hatcheries/existing fish ponds. Stock from hatcheries are already adapted to culture condition and are preferable. The closer the source of getting the fish to the pond, the better. Test stocking (pre stocking should be practiced by introducing few fish into the new environment. Test stocking period ranges from two three hours. If the fish survive well, then the pond can be fully stocked.

Recommended stocking rate of fish (ratio of one species to another or male to female) and stocking density (Number of fish per M3 of pond water to avoid over-crowding, should be practiced. This will ease management problems and enhance the success of fish culture.

Importance of Water Quality Management in Fish Ponds

1. The quality of water in terms of its suitability for fish growth, and its fertility, to a large extent determines the rate of growth of the fish.
2. Pond water that is poor in quality will endanger the health of the fish and a fish farmer will have to spend extra time and money to remedy the situation.
3. Where a farmer practices farming integration, for example, rearing livestock like sheep, goat or pig in the same fish pond environment, a polluted pond water can endanger the livestock as well, especially if they drink from such pond.
4. When adequate water quality improvement practices are ensured natural production of fish food organisms will be in abundance for the fish to eat.
5. Eating fish harvested from polluted pond could endanger the health of a fish farmer and his family.
6. Poor quality water in a fish pond is the medium for development and spreading of fish disease.

How to Detect Pond Water of Poor Quality

- When water is clear, it indicates very low or absence of biological production. Such water is not fertile enough and fish will not grow well in it.
- When water is muddy (that is a lot of clay particle are present) fish can have their gills blocked by the soil particles and this can result in death. Muddy water are not good for fish culture.



- When water is deep green in colour, it indicates over-production of phytoplanktons and Zooplanktons.
- When a fish gives an offensive odour, it indicates pollution of pond water.
- In an already stocked fish pond, if a farmer notice the fish always struggling at the pond water surface to get oxygen then there is low dissolved oxygen (Do) content in the water

MANAGING POND WATER CHEMICAL PARAMETERS.

In fish pond chemical properties of water include the hydrogen ion concentration (PH), the dissolved oxygen content (Do) the conductivity of water, the carbon dioxide content (Co₂) and the amount of mineral elements like nitrogen and phosphorous and compounds like nitrite and nitrate.

Hydrogenion concentration (PH): The various source of water used in fish culture are not chemically pure and contains, in solution, different substances which give it an acidic, neutral or alkaline reaction. The intensity of these characteristics is measured by determining the exacts quantity of the hydrogen ion (H⁺) PH readings ranges from 1 highly acidic) to 14 (Highly alkaline), PH reading of 7 indicate neutral.

Range for fish culture

PH RANGE	INTERPRETATION	REMARKS
1.0 -4.9	Extremely acidic	Toxic To Fish
2.0 - 6.6	Moderately Acidic	Low Productivity
6.7 – 9.9	suitable H + ion	Desirable for fish(high productivity)
9.1 – 11.0	Moderately Alkaline	Low Productivity
11.1 – 14.0	Extremely alkaline	Toxic To Fish

Two methods are mostly used to determine the ph of pond water. The more accurate and faster is the use of ph meter (electrometric method. The second method is the use of a ph paper (universal indicator).

Correcting ph in pond water

The ph of pond water may vary according to a number of chemical and biological factors in water with low alkalinity liming will raise the Ph to desires level.

Dissolved oxygen (DO) content in ponds

The distribution of Fish and other animals in water is strictly tied to the concentration of DO. The DO content of pond water depend to a large extend on water temperature, quantity of organic matter present and the population of submerged plants lead to dissolved oxygen depletion and this can be dangerous to fish

Water quality improvement practice

- **Liming practices:** In natural ponds (earthen) application of lines is important in correcting low ph, improve productivity and important ponds of parasites and diseases
- **Fertilization:** A fish farmer can increase pond productivity by applying organic manure with chemical fertilizers.

Feeding of pond fish

A) **natural fish foods:** living organisms are natural fish foods and they are produced in the water where the fish live. Phytoplankton, zooplankton, and larger aquatic organisms like insects, crustacean, molluscs and aquatic plants are all examples of natural foods.

B) **supplementary feeds** are not available in sufficient quantities to provide adequate nutrition for fish growth. Supplementary feeds should include finely divided artificial food like egg, yolk, blood meal, fish meal, shrimps, flour, bean flour, oil cakes, bone meals, cereal brans etc

Control of diseases and predators

Common fish diseases

Fish diseases are caused mostly by fish parasites

Maintaining hygienic pond environment is the best preventive method of checking diseases outbreak

Diseases can occur in fish pond due to

1. Overcrowding i.e high density stocking
2. Poor water quality resulting in fish kills
3. Erratic feeding practices, starved fish are highly susceptible to diseases attack
4. Intrusion of predators into the pond such as snakes, frogs, aquatic birds, dragon flies etc.
5. Over fertilization of pond water leading to high density algal bloom reduce the amount of dissolved oxygen (DO)

Cropping (harvesting) pond fish

In fish pond culture system, three types of cropping are practiced in routine management

1. Test cropping
2. Partial Harvest
3. Total pond harvest

Test cropping: fish pond should be test cropped routinely to monitor fish growth and health. After examination, test cropped should be returned to the pond

Partial harvesting: when different age groups of the same fish species or different species combination are reared together in pond, the fish are bond to mature to able sizes at different times. Partial harvest should be done with appropriate mesh size

Total harvest: ponds that have been used to rear fish for over 5 years can be totally drained and whole fish harvested total pond harvest from management point of view can be carried

Common Diseases of Cultured Fish

Diseases Caused By Microbes

Microbes are germs that cannot be seen with the naked eye, but attack fish when condition that promote their occurrences exist.

Diseases caused by microbes are bacterial, viral & fungal diseases.

Bacterial; Bacterial are found practically everywhere in water and air, on plants and in the bodies of men and animals.

Factors Promoting Bacterial Infection

1. Overstocking
2. Wounds on fish flesh
3. Presence of dead organic matter in pond
4. Low dissolved oxygen content in water

TREATMENT OF SOME BACTERIAL DISEASES OF FISH

S/N	DISEASES	SYMPTOMS	TREATMENTS
	Cotton wool or mouth fungus causative agent: myxobacteria	Occurrence of fungus like cotton wool growth on the mouth of fish Swollen lips with macerations Fish loss appetite and moves sluggishly	Apply 5 – 10mg/l of chloramphenicol Dip fish in copper sulphate solution
	Tail and fin rot. Causative agent bacterioses	Putrefaction of the tails or gills	Apply chloramphenicol 50mg/l for up to 24 hours Chloramphenicol to fish feed

Viral Disease

Viruses are infectious agents of varying small dimensions that multiply only within the living cell of a host and which are more tiny than bacterial and as such are not visible to the naked eyes

TREATMENT OF SOME VIRAL DISEASES

S/N	DISEASES	SYMPTOMS	TREATMENTS
	Dropsy causative agents <i>aeromonas punctata</i>	Excessive abdominal swelling Inflamed blood vessel showing reddish colour	Apply chloramphenicol 13mg/l for longer period or 50mg/l for 24 hours only
	Swim bladder inflammation causative agent <i>aeromonas spp</i>	Loss of appetite Poor response to flight stimuli Disturbed balance in swimming Swollen and cloudy swim bladder	Apply chloramphenicol 15 – 20mg/l for 24 hours

Fungal Diseases

Fungi are low form of plant life capable of producing diseases. Fungal infections are generally secondary and indicative of other problems. They are hardly found on healthy fish.

CONDITIONS THAT PROMOTE FUNGAL DISEASE ARE:

1. Stress condition of fish population in pond due to overcrowding
2. Poor handling of fish at stocking
3. Starvation in pond causing fish to feed on rotten mouldy feed
4. Malnutrition.

TREATMENT OF SOME FUNGAL DISEASES OF FISH

S/N	DISEASES	SYMPTOMS	TREATMENTS
	Saprolegniasis causative agent: saprolegnia parastica	Cotton wool like infection on skin and gills Circular lesions on skins	Drain and time the pond Dip fish in malachite green solution for 30 seconds.
	Gill rot or branchiomycosis Causative agent: branchiomyces spp	Gill necrosis Fusion of gill lamellae General weakness of fish within sluggish movement	Strict pond hygiene Immediate removal of dead fish Avoid overfeeding

DISEASE CAUSED BY PARASITES

Most fish populations in the wild are infected with parasites but in the great minority of cases, no significant harm appears to be caused to the host fish. Parasites in wild fish are only frequently noticed when they are so obvious so as to lead to rejection of the fish by fisherman or customers. Parasites are organism which live in or on other animals known as host. Internal parasite (endo-parasites) they inhabit the digestive tract or other organs in the body while external parasites (ecto parasites) attached themselves to the gills, skin and fins of the fish.

FACTORS THAT PROMOTE PARASITIC INFECTIONS.

1. Access of most fish predators to pond environments.
2. Decomposed fish carcasses in water
3. Bushy pond environment that harbours predators
4. Favourable environmental conditions enabling mass reproduction of the parasites

TREATMENT OF SOME PARASITE DISEASES OF CULTURED FISH

S/N	DISEASE	CAUSATIVE AGENT	SYMPTOMS	TREATMENT
	Eye fluke	Ligula intestinalis	Swollen stomach Fish becomes restless, loss weight	Apply 2.7kg of butyl oxide per tone of feed Drain pond and disinfect with carcium

				oxide
	Fish lice	Argulus sp	Fish is restless Red spot at point of infection on skin	Drain and disinfect with time 1 – 2 weeks Apply formalin
	Milk scale disease	Myxobolus notamigoni	White cyasts with milky appearance on raises scale that can easily rapture	Dip infected fish in salt solution of 7000mg/l for at least 5 days.

MANAGEMENT RELATED DISEASES

These are disease whose occurrence are promoted by an act of mismanagement on the part of the fish farmers. Such acts result in nutritional problems, poor water quality and low dissolved oxygen availability

The table below shows nutritional and environmental problems diseases condition in cultured fish and their treatment

S/N	PROBLEM	CAUSE	SYMPTOMS	TREATMENT
	Starvation (absolute nutritional deficiency)	Management neglect	Large head with thin body. Pale gills and weary parasite burden.	Feed fish regularly at recommended rates. Ensure ration of balance diet with high proportion of protein & vitamins
	Alkaline water	High PH (above 9)	Mortality of fish	Apply lime in sufficient quantity according to PH levels
	Acidic water	Low PH (below 5)	Fish skin covered with whitish fins gills turn brownish	Apply 500kg caco 3 per hectance of pond

	Lower dissolved oxygen	Over fertilization causing algal bloom	Fish regularly come out to gasp for atmospheric air. Mass mortality of fish	Drain pond and change water Aerate the pond
	Water above irritants	Presence of cement particles, dust or silt and ammonia in pond water	Conspicuous gill damage. Restlessness and rubbing of fleshing against pond walls	Eliminate pondweeds. Prevent pollutants from getting to pond water

Out at the end of a production cycle or in cases of emergency like diseases outbreak

Conclusion

The training scheme gave me much acquaintance with the organization and it also give me understanding with exposure to the practical aspect of the work that has been taught in school

I appreciate the effort of those that organize this great program, the organization where I did the program, the government as well as the institution of making the program successful.

Recommendations

My recommendation to this department is that they should make it compulsory that all students in this department attend this program because it is very important to the practical work of our field of study

Finally, the department should help the students to find appropriate place for both SIWES student and IT student