

NATIONAL OCCUPATIONAL STANDARD FOR AQUACULTURE FARMER



APPROVING AUTHORITY

This National Occupational Standard has been prepared and published under the authority of the Zambia Qualifications Authority Board on 30th September, 2020.

ZAMBIA QUALIFICATIONS AUTHORITY

The Zambia Qualifications Authority Act No. 13 of 2011 was enacted by the Government of the Republic of Zambia to ***“provide for the development and implementation of a national qualifications framework; establish the Zambia Qualifications Authority; provide measures to ensure that standards and registered qualifications are internationally comparable; and provide for matters connected with, or incidental to the foregoing”***. Among other functions, ZAQA is responsible for *determining national standards for any occupation*, through various sector specific National Occupational Standards Development Teams (NOSDTs).

REVISION OF NATIONAL OCCUPATIONAL STANDARDS

National Occupational Standards shall be revised every after **5 years**, or whenever necessary, by the issue of either amendments or of revised editions. It is important that users of National Occupational Standards (NOS) should ascertain that they are in possession of the latest amendments or editions.

NOS DEVELOPMENT TEAM RESPONSIBLE

This National Occupational Standard was prepared by the Agriculture National Occupational Standards Development Team, upon which the following organisations were represented:

1. Aquaculture Development Association of Zambia (ADAZ);
2. Natural Resources Development College (NRDC);
3. Ministry of Agriculture (MoA);
4. Zambia Agriculture Research Institute (ZARI);
5. Zambian Forum for Agricultural Extension and Advisory Services (ZAFAAS);
6. University of Zambia (UNZA);
7. Zambian Aquaculture Cooperative Society (ZACOSO);
8. Zambia Qualifications Authority (ZAQA) – Secretariat.

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1. Mr. Baldwin Chibuta (Aquaculture Development Association of Zambia);
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5. Mr. Vincent M. Akamandisa (Zambian Forum for Agricultural Extension and Advisory Services);
6. Dr. Wilson Mwenya (University of Zambia);
7. Mr. Freznarnd Simfukwe (Zambian Aquaculture Cooperative Society).

The Authority wishes to also acknowledge the efforts of all stakeholders that took time to review and submit comments on this NOS and those that participated in the national validation process.

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FOREWORD

The Zambia Qualifications Authority (ZAQA) is a statutory body under the Ministry of Higher Education established by ZAQA Act No. 13 of 2011 to “***provide for the development and implementation of a national qualifications framework; provide measures to ensure that standards and registered qualifications are internationally comparable; and provide for matters connected with, or incidental to the foregoing***”.

Among other functions, ZAQA is responsible for “*determining national standards for any occupation*”, through various sector specific National Occupational Standards Development Teams (NOSDTs) of experts composed of representation from appropriate authorities, government departments, industry, academia, regulators, consumer associations and non-governmental organisations, etc.

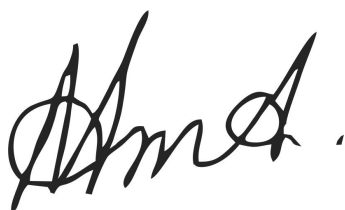
This National Occupational Standard (NOS) has been developed by the Agriculture National Occupational Standards Development Team in accordance with the procedures and guidelines of ZAQA. All users should ensure that they have the latest edition of this publication as National Occupational Standards are revised from time to time.

This NOS shall be used by, among others, industry, employers, quality assurance bodies, awarding and professional bodies and education and training institutions, as a benchmark to identify training needs, develop job profiles/descriptions, develop curricula and learning programmes, in various sectors where the occupation exists. In the Agriculture sector, demonstration of competence against this NOS may be required in order to run a business or practice a craft or profession.

Aquaculture is one of the fastest growing food production systems worldwide and is particularly important in bridging the gap between fish demand and supply in Zambia. Efforts by Government and other stakeholders have resulted in a notable increase in the number of small-scale aquaculture farmers in the country.

As aquaculture is a highly technical venture, there is need for Aquaculture Farmers to be equipped with the necessary skills and competences to help them manage the culturing of quality fish, in a profitable manner.

This National Occupational Standard highlights core knowledge, skills, competences and personal attributes that Aquaculture Farmers must possess to be successful in their work roles.



Mirriam M. A Chiyaba (Mrs)
Director and Chief Executive Officer

ACRONYMS AND ABBREVIATIONS

| | |
|-------|--|
| AF | Aquaculture Farmer |
| CS | Core Skill |
| NOS | National Occupational Standard |
| NOSDT | National Occupational Standards Development Team |
| OK | Organisational Knowledge |
| PC | Performance Criteria |
| PS | Professional Skill |
| RPL | Recognition of Prior Learning |
| TK | Technical Knowledge |
| ZAQA | Zambia Qualifications Authority |
| ZQF | Zambia Qualifications Framework |

GLOSSARY OF TERMS

For the purposes of this NOS, the following terms and definitions shall apply:

Core Skills/Generic Skills: are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the NOS, these include communication related skills that are applicable to most job roles.

Function: is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of NOS.

Job Role: defines a unique set of functions that together form a unique employment opportunity in an organisation.

Knowledge and Understanding: are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.

National Occupational Standards (NOS): are statements of the standards of performance individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding. They are precise descriptions of what an individual is expected to be able to do in his/her work role.

National Occupational Standards (NOS) Code: is a unique reference code that identifies a NOS.

National Occupational Standards Development Team (NOSDT): means an established group of national stakeholders/experts responsible for the development of National Occupational Standards within a specific economic sector or occupation.

Occupation: is a set of job roles, which perform similar/related set of functions in an industry.

Organisational Context: includes the way the organisation is structured and how it operates, including the extent of operative knowledge that managers have in their relevant areas of responsibility.

Performance Criteria: are statements that together specify the standard of performance required when carrying out a task.

Scope: is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on the quality of performance required.

Sector: is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.

Sub-Sector: is derived from a further breakdown based on the characteristics and interests of its components.

Technical Knowledge: is the specific knowledge needed to accomplish specific designated responsibilities.

Unit Title: gives a clear overall statement about what the incumbent should be able to do.

1. OVERVIEW

This is an introductory section providing a brief summary and specific information or commentary about the content of the NOS and the targeted sector and occupation to help the user judge whether it is relevant to them.

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| NOS Code | NOS. AF.01 |
| Occupation | Aquaculture |
| Job Title | Aquaculture Farmer |
| Job Description | An Aquaculture Farmer is responsible for growing aquatic organisms in culture system and managing the stock from fish seed to marketable size |
| Job Purpose | This job role is responsible for identifying the organisms for culture in aquaculture system and their appropriate management practices for the production of organisms which are safe for human consumption |
| ZQF Level | 4 |
| Sector | Agriculture |
| Sub sector | Fisheries and Aquaculture |
| Other Economic Sector(s) in which the Occupation is Practiced | N/A |
| Other Similar Jobs Performed in the Occupation | Aquaculture Technician, Fisheries Assistant, Fisheries Extension Officer, Aquaculture Assistant, Fish Seed Grower, etc. |
| Minimum Educational Job Entry Qualification(s) | Senior Secondary Education (Grade 12) Certificate or equivalent |
| Practicing License Requirements (if any) | N/A |
| Training/RPL (Optional) | On the job training/Prior work in fish farming operations |
| Minimum Job Entry Age | 18 |
| Prior Experience (Optional) | 6 months to 1 year work experience in a related field |
| Performance Criteria | As described in the Units under Section 4 |

2. SCOPE

This National Occupational Standard specifies the fundamental knowledge and understanding, skills and competences that Aquaculture Farmers must possess to be successful in their job roles. It is applicable to Aquaculture Farmers working in the Fisheries and Aquaculture subsector, governmental, private or non-governmental organisations, etc.

3. PERSONAL ATTRIBUTES (VALUES, ETHICS AND ATTITUDES)

An Aquaculture Farmer must possess physical fitness and strength, must have the ability to plan, organise, and prioritise the activities involved in the grow-out production process of aquatic organisms. The individual must be able to swim and possess decent communication skills, attend to work for long hours if required, must be honest and have integrity.

4. UNITS AND ELEMENTS

This National Occupational Standard is divided into 4 Units representing the tasks that a job holder should undertake in his/her day to day work. Each Unit is further broken down into elements depicting the number of activities to be carried out for the successful execution of a particular task.

UNIT 1 [This Unit is about preparing for culture of organisms in aquaculture system].

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| Unit No. | 01 |
| Unit Title | Perform pre-culture activities |
| Description | This Unit is about preparing for culture of organisms in aquaculture system |
| Scope | <p>This Unit covers the following:</p> <ul style="list-style-type: none"> • Prepare culture units for culture of selected fish species • Collect and stock fingerling of selected aquatic organism for culture activities • Identify and carryout various activities involved in aquaculture system from site selection to post harvesting |
| Performance Criteria (PC) w.r.t. the Scope | |
| Element | Performance Criteria (PC) |
| Prepare ponds for culture of selected organisms | <p>To be competent, the individual must be able to:</p> <p>PC1. identify varieties of selected aquatic organisms suitable for culture in specific water bodies</p> <p>PC2. prepare pond for culture of different species of aquatic organisms using appropriate methods for</p> <ul style="list-style-type: none"> • removal of unwanted organisms • filling of water to requisite depth • eradication of predatory and weed fishes, • introducing preparatory dose of lime, organic and inorganic fertilizers • fencing to prevent theft of fish from culture units |
| Collect and stock seeds of selected organism for culture activities | <p>To be competent, the individual must be able to:</p> <p>PC3. find out the source of quality seed for the desired organisms</p> <p>PC4. perform fingerling transport with minimum stress</p> <p>PC5. identify the diversified species suitable for culture for aquaculture system</p> <p>PC6. ensure fingerling stocking after recommended acclimatisation</p> <p>PC7. monitor the culture methods for variety of organisms</p> |
| Identify and carryout various activities involved in fresh Water aquaculture system | <p>To be competent, the individual must be able to:</p> <p>PC8. select suitable site for culture of specific aquatic organisms</p> <p>PC9. identify culture activities of each variety of aquatic organisms in culture system</p> <p>PC10. perform the culture activities in the desired manner</p> |
| Knowledge and Understanding (K) | |
| A. Organisational Context (Knowledge of the company/ organisation and its processes) | <p>The individual on the job must demonstrate knowledge and understanding of:</p> <p>OK1. organisation's methods of culture of the selected aquatic organisms</p> <p>OK2. procedures followed by the organisation for preparation of ponds</p> |

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| B. Technical Knowledge | <p>The individual on the job must demonstrate knowledge and understanding of:</p> <p>TK1. culture protocol of the selected aquatic organism TK2. habitat, food and feeding habit and expected growth of the selected organisms in culture system with regard to culture period TK3. operation of equipment which are in use for culture activities</p> |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Reading Skills |
| | <p>The individual on the job must be able to:</p> <p>CS1. read notes/suggestions given by the supervisors and aquaculture experts/trainers CS2. read recorded data</p> |
| | Writing Skills |
| | <p>The individual on the job must be able to:</p> <p>CS3. record details of activities of individual variety of aquatic organisms in the culture system CS4. record data pertaining to inputs and harvest details</p> |
| | Oral Communication (Listening and Speaking skills) |
| B. Professional Skills | <p>The individual on the job must be able to:</p> <p>CS5. communicate effectively with the customers and co-workers</p> |
| | Decision Making Skills |
| | <p>The individual on the job must be able to:</p> <p>PS1. take on the spot decision to address any abnormal situation</p> |
| | Plan and Organise |
| | <p>The individual on the job must be able to:</p> <p>PS2. plan for procurement of fingerling of organisms on time. PS3. plan to arrange materials like feed, organic and inorganic fertilisers, etc. in advance</p> |
| | Customer Centricity |
| | <p>The individual on the job must be able to:</p> <p>PS4. manage relationships with supervisor, workers and other fish farmers PS5. attend and make necessary use of exposure visits</p> |
| | Problem Solving Skills |
| | <p>The individual on the job must be able to:</p> <p>PS6. study the problem and provide a best solution PS7. immediately identify problems and solve them</p> |
| | Analytical Thinking |
| <p>The individual on the job must be able to:</p> <p>PS8. monitor the fish farm conditions and condition of aquatic organisms and suggest improvements, if any</p> | |
| Critical Thinking | |
| <p>The individual on the job must be able to:</p> <p>PS9. use common sense and make judgments on day to day basis PS10. use reasoning skills to identify and resolve basic problems</p> | |

UNIT 2 [This Unit is about undertaking culture activities of variety of organisms in aquaculture system].

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| Unit No. | 02 |
| Unit Title | Perform post-stocking culture activities |
| Description | This Unit is about undertaking culture activities of variety of aquatic organisms in aquaculture system |
| Scope | <p>This Unit covers the following:</p> <ul style="list-style-type: none"> • Maintain optimal physiochemical and biological parameters of water • Apply requisite quantity of organic and inorganic fertilisers and aquatic herbicides for maintaining sustainable productivity of water • Provide desired feed to organisms in culture systems • Monitor health of organisms at regular intervals |
| Performance Criteria (PC) w.r.t. the Scope | |
| Element | Performance Criteria (PC) |
| Maintain physicochemical and biological parameters of water | <p>To be competent, the individual must be able to:</p> <p>PC1. identify suitable water level required in culture units for different varieties of aquatic organisms</p> <p>PC2. perform periodic water and fish sampling and netting operation to ensure proper management of the fish stock</p> <p>PC3. apply appropriate dosages of lime and organic and inorganic fertilisers to maintain suitable water quality in the culture system</p> <p>PC4. identify plankton and benthic fauna in water</p> <p>PC5. apply appropriate methods for aeration of water</p> <p>PC6. apply suitable methods to control aquatic weeds and algae present in the culture system</p> |
| Apply requisite quantity of fertilisers, herbicides and chemicals for maintaining sustainable productivity of water | <p>To be competent, the individual must be able to:</p> <p>PC7. identify the type of organic and inorganic fertilisers and aquatic herbicides required for culture system and determine their appropriate dose</p> <p>PC8. anticipate the type of diseases likely to affect the aquatic organisms and take preventive measures</p> <p>PC9. apply correct dose of medicines and know the mode of application for curing the organisms</p> |
| Provide desired feed to organisms in culture systems | <p>To be competent, the individual must be able to:</p> <p>PC10. sample the cultured aquatic organisms at periodic interval to estimate the biomass</p> <p>PC11. identify the feed type and calculate daily feed ration</p> <p>PC12. Carryout feeding using appropriate method and planned schedule</p> <p>PC13. determine the minimum amount of feed and its application</p> <p>PC14. monitor the feed consumption and modify the daily ration accordingly</p> <p>PC15. treat the culture unit area where feed is delivered to maintain the cleanliness, periodically</p> <p>PC16. modify the feed ration according to the environmental condition and season</p> |

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| Monitor health of organisms at regular intervals | <p>To be competent, the individual must be able to:</p> <p>PC17. determine health parameters to judge the condition of organisms in culture system</p> <p>PC18. determine the correct dose of medicines/disinfectants required to cure diseases</p> <p>PC19. separate the diseased fish from the healthy fish and put them in a quarantine tank, in case of disease outbreak</p> <p>PC20. diagnose the problem/disease with the help of an expert/disease diagnosis laboratory</p> <p>PC21. treat as per prescription at recommended dose of the therapeutics</p> <p>PC22. monitor the condition of fish in the quarantine tank for signs of improvement</p> |
| Knowledge and Understanding (K) | |
| A. Organisational Context (Knowledge of the company/ organisation and its processes) | <p>The individual on the job must demonstrate knowledge and understanding of:</p> <p>OK1. organisation's good management practices for culture of aquatic organisms</p> |
| B. Technical Knowledge | <p>The individual on the job must demonstrate knowledge and understanding of:</p> <p>TK1. handling of farm implements for managing farm activities</p> <p>TK2. suitable soil and water quality parameters required for growth of the cultured organism</p> <p>TK3. food and feeding habit of the organism and estimation of daily feed requirement</p> <p>TK4. need for appropriate diet composition of each variety of aquatic organisms in culture system</p> <p>TK5. identification of sick organisms in culture system</p> <p>TK6. preventive measures and requirement of medicines and disinfectants to be used for diseased aquatic organisms</p> <p>TK7. suitable measures to protect the fish stock from natural calamities like flood, protect dyke from erosion or breaking</p> <p>TK8. how to inspect organisms for possible presence of parasites, any phenotypic disorder, lesion, spot etc. which are signs of ailments or disease outbreak</p> |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Reading Skills |
| | <p>The individual on the job must be able to:</p> <p>CS1. read notes/instructions given by the farm manager</p> <p>CS2. read recorded data</p> |
| | Writing Skills |
| | <p>The individual on the job must be able to:</p> <p>CS3. record details of activities of individual variety of organisms in culture system</p> <p>CS4. record data pertaining to inputs and harvest details</p> |

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| B. Professional Skills | Oral Communication (Listening and Speaking skills) |
| | The individual on the job must be able to: CS5. communicate effectively with the customers and co-workers |
| | Decision Making Skills |
| | The individual on the job must be able to: PS1. take on the spot decision to overcome any abnormal situation |
| | Plan and Organise |
| | The individual on the job must be able to: PS2. plan for procurement of fingerlings or other aquatic organisms on time PS3. plan to arrange materials like feed, organic and inorganic fertilisers, etc. in advance |
| | Customer Centricity |
| | The individual on the job must be able to: PS4. manage relationships with workers and other co-farmers PS5. attend and make necessary use of exposure visits |
| | Problem Solving Skills |
| | The individual on the job must be able to: PS6. study the problem and provide a best solution PS7. immediately identify problems and solve them |
| Analytical Thinking | |
| The individual on the job must be able to: PS8. monitor the farm conditions and condition of aquatic animals and suggest improvements, if any | |
| Critical Thinking | |
| The individual on the job must be able to: PS9. use common sense and make judgments on day to day basis PS10. use reasoning skills to identify and report basic problems | |

UNIT 3 [This Unit is about carrying out harvesting and marketing of organisms at appropriate rate].

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| Unit No. | 03 |
| Unit Title | Perform harvesting and marketing activities for Organisms |
| Description | This Unit is about carrying out harvesting and marketing of aquatic organisms at appropriate time and rate |
| Scope | This Unit covers the following: <ul style="list-style-type: none"> • Maintain schedule of harvesting • Carry out marketing related activities • Complete documentation of sale proceeds and other necessary details |
| Performance Criteria (PC) w.r.t. the Scope | |
| Element | Performance Criteria (PC) |
| Maintain schedule of harvesting | To be competent, the individual must be able to: PC1. decide on the harvesting time and ensure timely harvesting of aquatic organisms PC2. use harvesting net with appropriate mesh size PC3. ensure harvest of only the marketable size organisms in case of partial harvesting PC4. estimate the approximate quantity to be harvested |
| Carry out marketing related activities | To be competent, the individual must be able to: PC5. identify markets where harvested organisms can fetch reasonable price PC6. identify demand of organisms in the market to overcome situation compelling distress sale of organisms PC7. pack and transport harvested organisms in good condition |
| Complete documentation of sale proceeds and other necessary details | To be competent, the individual must be able to: PC8. maintain a record of harvest and sale proceeds PC9. record cost of inputs and other miscellaneous expenditures |
| Knowledge and Understanding (K) | |
| A. Organisational Context (Knowledge of the company/ organisation and its processes) | The individual on the job must demonstrate knowledge and understanding of: OK1. organisation's procedures followed for harvesting OK2. organisation's standard operating procedures for transportation |
| B. Technical Knowledge | The individual on the job must demonstrate knowledge and understanding of: TK1. types of nets to be used and effective methods of harvesting TK2. methods of sale procedures TK3. process of procurement of inputs and gears etc. as per requirement and storage of these inputs |

| Skills (S) | |
|--|---|
| A. Core Skills/ Generic Skills | Reading Skills |
| | The individual on the job must be able to: CS1. read notes/instructions given by the farm manager CS2. read recorded data |
| | Writing Skills |
| | The individual on the job must be able to: CS3. record details of activities of individual variety of organisms in culture system CS4. record data pertaining to inputs and harvest details |
| | Oral Communication (Listening and Speaking skills) |
| | The individual on the job must be able to: CS5. have good contact with the line department officials CS6. communicate effectively with the customers and co-workers |
| B. Professional Skills | Decision Making Skills |
| | The individual on the job must be able to: PS1. take on the spot decision to overcome any abnormal situation |
| | Plan and Organise |
| | The individual on the job must be able to: PS2. plan for procurement of fingerling or other aquatic organisms on time PS3. plan to arrange materials like feed, organic and inorganic fertilisers etc. in advance |
| | Customer Centricity |
| | The individual on the job must be able to: PS4. manage relationships with workers and other co-farmers PS5. attend and make necessary use of exposure visits |
| | Problem Solving Skills |
| | The individual on the job must be able to: PS6. study the problem and provide a best solution PS7. immediately identify problems and solve them |
| | Analytical Thinking |
| | The individual on the job must be able to: PS8. monitor the fish farm conditions and condition of aquatic animals and suggest improvements, if any |
| Critical Thinking | |
| The individual on the job must be able to: PS9. use common sense and make judgments on day to day basis PS10. use reasoning skills to identify and report basic problems | |

UNIT 4 [This Unit is about following safety, hygiene and sanitation practices for culture operations].

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| Unit No. | 04 |
| Unit Title | Ensure safety, hygiene and sanitation practices for culture operations |
| Description | This Unit is about maintaining safety, hygiene and sanitation practices for culture operations |
| Scope | <p>This Unit covers the following:</p> <ul style="list-style-type: none"> • Ensure safety measures and upkeep of water bodies used in fish culture • Maintain personal hygiene and safety • Maintain health and hygiene of fish at various levels of growth |
| Performance Criteria (PC) w.r.t. the Scope | |
| Element | Performance Criteria (PC) |
| Ensure safety measures and upkeep of water bodies used in fish culture | <p>To be competent, the individual must be able to:</p> <p>PC1. ensure suitable measures for protection of cultured aquatic organisms from natural calamities such as flood, protect dyke from erosion or break</p> <p>PC2. ensure protection and prevent escape of the cultured aquatic organisms (install screen on outlets) into natural water bodies, i.e. <i>Oreochromis niloticus</i></p> <p>PC3. identify common predators and preying organisms in water bodies and apply preventive measure</p> <p>PC4. apply suitable methods such as fencing to keep away predators in water bodies to protect fish culture</p> <p>PC5. restrict entry of unauthorised persons into the premises</p> <p>PC6. be fully aware of the dosage, toxicity level and method of application of hormones/medicines used for fish culture</p> <p>PC7. ensure all chemicals are adequately labelled and stored safely</p> <p>PC8. identify a quarantine area and implement protocols of quarantine and all biosecurity measures</p> |
| Maintain personal hygiene and safety | <p>To be competent, the individual must be able to:</p> <p>PC9. be aware of the possibilities of bacterial (water borne, air borne, formite borne) and other contamination from human handling</p> <p>PC10. apply effective systems and routines to ensure healthy and hygienic conditions during all stages of fish culture including transportation and marketing</p> <p>PC11. ensure that the fish culture premises are constantly monitored/inspected for breaches in the protection provided by health and hygiene measures</p> <p>PC12. undertake basic safety checks before operation of any equipments</p> <p>PC13. wear protective clothing and gear as and when required and ensure adherence to safety guidelines</p> <p>PC14. report potential hazards to the supervisor immediately</p> <p>PC15. follow standard procedures to deal with accidents and emergency situations</p> |

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| | PC16. use first aid kit as and when required and provide appropriate treatment in case of any injuries |
| Maintain health and hygiene of fish at various level of growth | To be competent the individual must be able to: PC17. ensure maintenance of suitable water quality parameters at all times with frequent tests PC18. ensure specified feed is provided to aquatic organisms at regular intervals and excess feeding is avoided PC19. carry out regular inspection of aquatic organisms for possible presence of parasites, pathogenic infections, any phenotypic disorder, spot, etc. which are usually the signs of ailments or disease outbreak PC20. ensure all nets, utensils and vessels used are disinfect and clean PC21. implement effective security measures for prevention of theft/sabotage |
| Knowledge and Understanding (K) | |
| A. Organisational Context (Knowledge of the company/ organisation and its processes) | The individual on the job must demonstrate knowledge and understanding of: OK1. organisation's standards and procedures followed safety, hygiene and sanitation OK2. personal hygiene and fitness requirements OK3. job responsibilities/duties for following safety, hygiene and sanitation OK4. safe methods to use materials and equipment OK5. housekeeping methods and importance OK6. safe disposal methods for waste OK7. methods for minimising environmental damage OK8. importance of following health, hygiene and safety standards and the impact of not following the standards |
| B. Technical Knowledge | The individual on the job must demonstrate knowledge and understanding of: TK1. prevention of infections TK2. personal hygiene requirement TK3. method of maintaining safety checklists TK4. routine physiochemical testing of water |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Reading Skills |
| | The individual on the job must be able to: CS1. read internal information documents sent by internal teams/supervisor CS2. read equipment manuals and process documents to understand the equipment operation and process requirement |
| | Writing Skills |
| | The individual on the job must be able to: CS3. record information on water treatment and fertilisation of ponds and other important aspects |
| | Oral Communication (Listening and Speaking skills) |
| The individual on the job must be able to: CS4. effectively communicate with the technicians and labourers regarding all important aspects | |

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| B. Professional Skills | Decision Making Skills |
| | The individual on the job must be able to: PS1. handle tasks on a day to basis PS2. handle the minor issues in case the supervisor is not available, report major issues to management |
| | Plan and Organise |
| | The individual on the job must be able to: PS3. plan and use suitable techniques for the work assigned PS4. plan and prioritise the work based on the instructions received PS5. plan to utilise time and equipment effectively |
| | Customer Centricity |
| | The individual on the job must be able to: PS6. maintain good relationships with manager and farm staff |
| | Problem Solving Skills |
| | The individual on the job must be able to: PS7. study the problem and report to concerned authority PS8. immediately follow the instruction to solve the problem |
| | Analytical Thinking |
| | The individual on the job must be able to: PS9. monitor condition of aquatic organisms and suggest improvements, if any |
| Critical Thinking | |
| The individual on the job must be able to: PS10. use common sense and make judgments on day to day basis PS11. use reasoning skills to identify and resolve basic problems | |

5. EQUIPMENT, TOOLS AND CONSUMABLE MATERIALS

These include, but not limited to the following: water source, fish fry/fingerings/stunted juvenile, ponds, water vessels (e.g. ships and boats), submersible cages and nets, aerators and diffusers, fish feed, chemicals and medicines, fish storage and transportation equipment and facilities, note pads/books and pens, protective equipment, company's standard operating procedures, reporting templates, calculator, etc.

6. DILEMMAS/CHALLENGES AND COMPLEXITIES FOR A JOB HOLDER

Dilemmas associated with the job of Aquaculture Farmer include lifting relatively heavy materials, handling dangerous chemicals and medicines, long working hours, pressure from customers, supervisors and colleagues, language barriers, working in extreme weather such as rainy and cold conditions, outbreak of fish attacking diseases, stunted fish, fish eating predators, etc.

6.1 Alternative Choices (Solutions) to Dilemmas and Complexities

Solutions to dilemmas include exercising regularly to maintain physical fitness, learning local languages, undertaking training in customer service, wearing protective clothing, sticking to company's standard operating procedures at all times, consulting extensively within and outside one's department/team, etc.

7. WORKING CONDITIONS/ENVIRONMENT

Working conditions include working/moving on lakes, rivers, streams or swampy areas, working in rural and slippery areas, cold, hot and rainy conditions, stand/walk for long hours, dealing with donors/funders, getting in contact with water (getting and staying wet) for long periods of time, etc.

8. PARTIES INVOLVED/INTERACTING WITH THE JOB HOLDER OR TRAINEE

8.1 Internal/Within the Organisation

Trainers, supervisors, colleagues, etc.

8.2 External/Outside the Organisation

Customers, trainers, government regulators/funders, suppliers of equipment/tools/consumables, Aquaculture Farmers from other organisations, donor agencies/non-governmental organisations, etc.

9. PHYSICAL DEMANDS ON THE BODY

- Be able to walk and stand for long periods of time;
- Bend, stretch, twist, or reach out;
- Be able to lift relatively heavy materials, tools and equipment;
- Coordinate movement of several parts of the body, such as arms and legs, while the body is moving;
- Be able to withstand feelings of wetness, itching, or coldness on the body for long periods of time;
- Etc.

ANNEX A

Criteria for Assessments based on this NOS

A.1 Guidelines for Assessment

A.1.1 Criteria for assessment for curricula and learning programmes based on this NOS will be created by curricula and programmes developers. Each Performance Criteria (PC) will be assigned marks proportional to its importance in the NOS. Curricula and programmes developers will also lay down proportion of marks for theory and practical skills for each performance criteria, giving more weight to practical skills.

There shall be allocated the 'Total Mark', which will be the sum of all marks in each Unit, distributed across the number of PCs in that particular Unit. The 'Out Of' mark will be the mark allocated to each PC, which will be shared between theory and practical skills assessments.

A.1.2 Awarding/assessment bodies or institutions and other users of the NOS will create unique question papers for the theory part and evaluations for skill practical part for their respective candidates.

ANNEX B NOS Version Control

This Annex gives details necessary for the tracking of the NOS versions based on the number of revisions.

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|-------------------|---------------------------|----------------------------|-----------------|
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