Model Curriculum

QP Name: Coir Grow-Media Technologist

QP Code: AGR/Q0508

Version: 2.0

NSQF Level: 4

Model Curriculum Version: 2.0

Agriculture Skill Council of India || Agriculture Skill Council of India (ASCI), 6th Floor, GNG Tower, Plot No. 10, Sector - 44

Table of Contents

Training Parameters

Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Plantation Crops Cultivation
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
Minimum Educational Qualification and Experience	Minimum Educational Qualification: 12th grade pass OR Completed 2nd year of 3-year diploma (after 10th) and pursuing regular diploma OR 10th grade pass plus 2-year NTC OR 10th grade pass plus 1-year NTC plus 1 year NAC OR 8th pass plus 2-year NTC plus 1-Year NAC plus CITS OR 10th grade pass and pursuing continuous schooling OR 10th Grade Pass with 2-year relevant experience OR Previous relevant Qualification of NSQF Level 3.0 with minimum education as 8th Grade pass with 3- year relevant experience OR Previous relevant Qualification of NSQF Level 3.5 with 1.5- year relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	25-08-2022
NSQC Approval Date	25-08-2022
QP Version	2.0
Model Curriculum Creation Date	25-08-2022
Model Curriculum Valid Up to Date	25-08-2025
Model Curriculum Version	2.0

Minimum Duration of the Course	390 Hours
Maximum Duration of the Course	390 Hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Discuss the job role of Coir Grow Media Technologist.
- Demonstrate the procedure for Coir fiber extraction
- Discuss various products of coconut
- Explain about various tools and equipment involved in coir fiber extraction
- Demonstrate various logistic management operations and functions
- Explain quality control parameters of coir and raw pith
- Demonstrate basic operations involved in coir pith manufacturing
- Demonstrate basic mechanical maintenance activities
- Demonstrate the basic electrical maintenance activities
- Demonstrate basic inventory management practices
- Demonstrate the preparatory activities for coir grow media production
- Demonstrate basic repair and maintenance activities
- Demonstrate activities involved in Coir Grow Media Technologist
- Demonstrate coir pith composting process
- Discuss principles and practices in soil and grow-media fertility and nutrient management
- Demonstrate advanced technologies involved in drying and packing of coir pith
- Explain basic Agronomic practices
- Demonstrate manufacturing process of various value added coir pith products
- Demonstrate customization of coir grow media
- Demonstrate best practices and techniques for Particle and particulates management
- Demonstrate various biological Treatments for Enhancing Rate of Composting of Coir Pith
- Discuss about documentation requirements
- Demonstrate documentation of quality parameters
- Demonstrate appropriate professional practices
- Demonstrate applicable communication methods
- Explain gender concepts and inclusion at workplace
- Discuss how to adhere to personal hygiene practices.
- Demonstrate appropriate emergency procedures
- Explain general Industrial Safety norms Render appropriate emergency procedure

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	**05:00**	**00:00**	**0:00**	**0:00**	**05:00**
Module 1: Introduction to the role of Coir Grow-Media Technologist	05:00	0:00	0:00	0:00	05:00
AGR/N0537: Prepare for and carry out coir fibre extraction **NOS Version- 1.0** **NSQF Level- 4**	**20:00**	**35:00**	**0:00**	**0:00**	**55:00**
Module 2: carryout coir fibre extraction	20:00	35:00	0:00	0:00	55:00
AGR/N0538: Carryout relevant operation and maintenance activity **NOS Version- 1.0** **NSQF Level- 4**	**20:00**	**40:00**	**0:00**	**0:00**	**60:00**
Module 3: Perform operation and maintenance activities	20:00	40:00	0:00	0:00	60:00
AGR/N0539: Prepare the machineries for Coir Grow-Media Production operation **NOS Version- 1.0** **NSQF Level- 4**	**15:00**	**15:00**	**0:00**	**0:00**	**30:00**
Module 4: Preparation of machineries for Coir Grow-Media Production	15:00	15:00	0:00	0:00	30:00
AGR/N0540: Carry out Coir Pith Extraction, Processing and composting **NOS Version- 1.0** **NSQF Level- 4**	**20:00**	**40:00**	**0:00**	**0:00**	**60:00**
Module 5: Perform Coir Pith Extraction, Processing and	20:00	40:00	0:00	0:00	60:00

composting					
AGR/N0541: Prepare Value Added Coir Pith and Coir-Grow Media for diversified commercial **NOS Version- 1.0** **NSQF Level-4**	**20:00**	**40:00**	**0:00**	**0:00**	**60:00**
Module 6: Carryout Value Added Coir Pith and Coir-Grow Media activities for diversified commercial	20:00	40:00	0:00	0:00	60:00
AGR/N0542: Carry out documentation and record-keeping **NOS Version- 1.0** **NSQF Level- 4**	**10:00**	**20:00**	**0:00**	**0:00**	**30:00**
Module 7: Perform documentation and record-keeping	10:00	20:00	0:00	0:00	30:00
AGR/N0544: Maintain health and general Industrial safety at the workplace **NOS Version- 1.0** **NSQF Level- 4**	**10:00**	**20:00**	**0:00**	**0:00**	**30:00**
Module 9: Maintain health and general Industrial safety at the workplace	10:00	20:00	0:00	0:00	30:00
DGT/VSQ/N0102 Employability Skills **NOS Version-1.0** **NSQF Level-4**	60:00	00:00	0:00	0:00	60:00
Module 9: Employability Skills	60:00	00:00	0:00	0:00	60:00
Total Duration	**180:00**	**210:00**	**0:00**	**0:00**	**390:00**

Module Details

Module 1: Introduction to the role of Coir Grow Media Technologist

Bridge Module

Terminal Outcomes:

- Discuss the job role of Coir Grow Media Technologist.

Duration: 05:00	Duration: 0:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the size and scope of Coir Grow Media Technologist in agriculture industry and its sub-sectors • Discuss the role and responsibilities of a Coir Grow Media Technologist • Identify various scope and opportunities for a Coir Grow Media Technologist	
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Carryout coir fibre extraction

Mapped to AGR/N0537 V1.0

Terminal Outcomes:

- Demonstrate the procedure for Coir fibre extraction
- Discuss various products of coconut
- Explain about various tools and equipment involved in coir fibre extraction
- Demonstrate various logistic management operations and functions
- Explain quality control parameters of coir and raw pith

Duration: 20:00	**Duration: 35:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List out various machinery involved in coir fibre extraction and discuss about them • Explain agronomic practices and principle of coconut farming • Explain about various types of coir fibres • Discuss about coconut farming in India such as basic statistics, production and marketing • Describe practices in aggregation and processing of coconut husks • Explain about coconut and coconut husk properties, specifications and quality • Discuss about different coconut products • Explain about combing method and turbo processing in coir fibre separation • Describe chemical composition of coconut husk and its ingredients such as coir fibre and coir pith • Explain the process of retting • Differentiate various coir pith extraction processes • Explain about production and marketing of coconut and coconut husk • Explain types of loaders, use of hoes, tractors, tow trucks, tippers and their applications, tractor loaders,	• Demonstrate preparation of various machinery involved in coir fibre extraction such as busters, decorticators, husk bunkers, continuous auto-feeders, conveyors, defibring machines with drum combers, different types of filters for fibre and raw pith separation • Demonstrate preparation of raw materials • Demonstrate coir fibre extraction using different extraction processes • Demonstrate the use of different filters in separation of coir pith • Inspect the quality of coconut husk • Demonstrate the separation of dry and fresh husk fibre • Demonstrate the separation of coir fibres based on the length using combing method, turbo processing and use of filters • Demonstrate the procedure of turbo cleaning of coir fibre for quality improvement • Demonstrate the procedure of retting •

Back Hoe Loaders and Fork lifts and their uses • Explain the process of calculating load requirements for coconut husk, different grades of fibre, loose pith, blocks, containers • Explain use of pellets • Explain various costing methods for transportation • Explain best practices in documentation for domestic logistics • Enlist essential areas for an Integrated Logistics system • Explain various features of a Transportation Management System like rating, booking and tracking • Explain basics of Warehouse Management System, Transportation Management System, Real-time Location System, Inventory Management System, etc. • Explain the process of coir fibre extraction • Explain the quality parameters for coir fibre and the process of quality improvements of coir fibre • Explain various methods in categorization of coir fibre • Explain about operation and maintenance of different coir fibre machinery • Explain the process of Biochemical treatment of coir fibre for quality improvement	
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Coconuts, coir fibre, coconut husk, various machinery such as busters, decorticators, husk bunkers, continuous auto-feeders, conveyors, defibring machines with drum combers, filters, raw pith	

Module 3: Perform operation and maintenance activities

Mapped to ARG/N0538 v1.0

Terminal Outcomes:

- Demonstrate basic operations involved in coir pith manufacturing
- Demonstrate basic mechanical maintenance activities
- Demonstrate the basic electrical maintenance activities
- Demonstrate basic inventory management practices

Duration: 20:00	**Duration: 40:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain basic Arithmetic concepts like calculations, ratio, proportions, area and volume calculations for different shapes, trigonometry, BODMAS, basic algebra, practical work place applications • Explain basic Physics concepts like Force, mass, volume, acceleration, density, temperature, boiling, evaporation, units of measurement, role of moisture, moisture measurement, physical properties of plant materials • Explain basic Chemistry concepts like Acids, bases and salts, commonly used acids, commonly used bases, strength of acids and bases, pH scale and measurement, common salt, sodium hydroxide, washing soda, baking soda, hydrogen peroxide, acetic acid, soaps and detergents, electrical conductivity, types of mixtures and solutions, ions and ion exchange, physical and chemical changes, chemical properties of plant materials. • State best practices in coir pith manufacturing • Explain basics of production planning and planning techniques • Explain basics of inventory management and inventory management techniques	• Demonstrate the best practices in coir pith manufacturing • Demonstrate production planning and selection of appropriate planning techniques • Show how to manage inventory and follow best practices and techniques of inventory management • Demonstrate implementation of lean manufacturing practices • Demonstrate relevant procedures for installation and commissioning of machinery • create necessary engineering drawings and layouts • Demonstrate lubrication – oil grades, greases and general industrial lubricants as per requirements • Demonstrate dismantling of machinery and equipment parts, cleaning and inspection of various components as per the instruction given in the manuals • Demonstrate sanding and buffing of machine components • Demonstrate hand painting and spray painting of machine components • Demonstrate general maintenance of hand tools and power tools – Hand drills, angle grinders, polishers

• Explain concept of lean manufacturing and their applications • Describe best practices in the maintenance and upkeep of commonly used electrical components in coir industry - 3 phase power, power consumption calculations, motors, power factor, starters, industrial switch gears and relays • Explain general maintenance hand tools and power tools - Hand drills, angle grinders, polishers • Explain use of pneumatic tools • Explain the use of arc Welding • Explain different maintenance strategies - Run to Failure, Preventive, Predictive, Condition Based • Explain process to implement a preventive maintenance programme. • Explain procedures for installation and commissioning of machinery • Explain engineering drawings and layouts • Explain the importance and process of lubrication - oil grades - transmission oil, greases, and general industrial lubricants	• Demonstrate the use of Pneumatic tools while carrying out basic repairs and maintenance • Demonstrate Arc Welding as per requirements • Demonstrate maintenance strategies appropriately and timely like – Run to Failure, Preventive, Predictive, Condition Based • Demonstrate implementation of preventive maintenance programme as per requirement in time • Demonstrate troubleshooting as and when required on a regular basis • Demonstrate measures to handle power supply issues at workplace carefully and safely in time • Demonstrate operating diesel generators as per requirements • Inspect the 3 phase power supply components and fuses for their functionality and connection • Demonstrate operation and maintenance of switches and relays • Demonstrate the usage of hand tools in electrical maintenance and multi meter, clamp meter and other equipment as per requirement • Demonstrate the procedure for soldering as per requirement
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Raw pith, engineering drawings of layout, industrial grade lubricants, paint sprayer and paint, hand tools and power tools – Hand drills, angle grinders, polishers, Arc welder, fuses and power supply components, multi meter, clamp meter, soldering equipment	

Module 4: Preparation of machineries for Coir Grow-Media Production

Mapped to AGR/N0539 v1.0

Terminal Outcomes:

- Demonstrate the preparatory activities for coir grow media production
- Demonstrate basic repair and maintenance activities

Duration: 15:00	Duration: 15:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the principles and operation of Coir Pith Block Machine • Explain the use of filters for pith sorting and grading • Explain the use of stone conveyors, conveyors, Hydraulic and pneumatic presses • Explain the science of hydraulic and pneumatic systems, necessary calculations • Explain instrumentation in hydraulic and pneumatic systems • Explain operations, functions and maintenance of Fibre cutting machines, Coir Grow Slab Machine, Coir Pot extruders, Stone removers, Husk chips machine etc.	• Inspect the machinery for wear and tear, broken parts, loose nut, bolts etc. • Show how to organise manufacturer-approved spare parts, tools and equipment to carry out repair and maintenance • Demonstrate adherence to instructions given in the operator's manual to carry out repair and maintenance • Inspect the machinery required for carrying out operations while Coir Grow Media Production for functionality • Plan for regular cleaning, lubrication and replacement of parts of the machinery as per the maintenance schedule • Examine the oil levels of the engine, transmission and hydraulics and arrange for refilling if the levels fall below recommended levels • Plan for regular maintenance of coir grow-media machinery, Coir Pith Block Machine Fibre cutting machines, Coir Grow Slab Machine, Coir Pot extruders, Stone removers, Husk chips machine etc. as per schedule • Demonstrate the procedure for maintaining the record of repair and maintenance of machinery • Demonstrate the usage of filters for pith sorting and grading, stone

	conveyors, conveyors, Hydraulic and pneumatic presses
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Spare parts, raw pith, cleaners and industrial grade lubricants, Coir Pith Block Machine Fibre cutting machines, Coir Grow Slab Machine, Coir Pot extruders, Stone removers, Husk chips machine, filters, stone conveyors, conveyors, Hydraulic and pneumatic presses	

Module 5: Perform Coir Pith Extraction, Processing and composting

Mapped to AGR/N0540 v1.0

- Demonstrate activities involved in Coir Grow Media Technologist
- Demonstrate coir pith composting process
- Discuss principles and practices in soil and grow-media fertility and nutrient management
- Demonstrate advanced technologies involved in drying and packing of coir pith
- Explain basic Agronomic practices

Duration: 20:00	**Duration: 40:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain basic Agronomic Principles and package of practices of agriculture and horticulture crop production • Discuss about plant Nutrients - Micro and Macro Nutrients and their importance in the growth of plants • Explain the general weed management and its importance • Explain various types of Soils and their relevance for different crops • Discuss principles and practices in soil and grow-media fertility and nutrient management • Explain the process of ion exchange and its role in grow-media preparation • Describe composition structure and properties of coir pith depending on maturity of coconut, method of extraction and disposal, period between extraction and use and environmental factors • Discuss about Economic value of coir pith and their uses in commercial horticultural plants • Explain different techniques for coir pith composting - conventional methods, hillock, and modified hillock method, layering and sandwiching techniques • Discuss advantages and disadvantages of different techniques for coir pith composting	• Demonstrate the procedure of separating coir pith from coir fibre and its collection and aggregation adhering to recommended principles safely • Demonstrate coir pith washing and drying using suitable techniques and adhering to best practices • estimate labour and energy consumption while carrying out Coir Pith Extraction and processing • Demonstrate activities as per quality control processes and procedures • Demonstrate use of appropriate machinery and tools such as Pith spreaders, Rotovators, and other advanced systems for yard drying and packing of coir pith • Demonstrate coir pith buffering process appropriately as per recommended duration to have required ion exchange for coir pith • Demonstrate pith grading by using appropriate filters • Demonstrate the use of suitable Conveyors to move products, create buffers and deliver products in sequence for a production line • Demonstrate testing the properties and control metrics of coir pith like pH, air filled porosity, expansion, electrical conductivity etc. • Estimate the availability of sufficient raw materials like raw Coir pith,

• Describe the manufacturing process of Coir Pith Organic Manure (C-POM) • Discuss advantages and properties of C-POM • Describe the nutrient Status and technical specification of C-POM • Explain prospects of C-POM in the domestic market • Explain the dosage (per annum) for application of C-POM on different crops • Explain difference in coir pith from different types of extraction processes • Explain techniques and best practices in washing and drying coir pith, resource estimates, labour and energy consumption, quality control processes and procedures • Explain the process of testing of properties and control metrics of coir pith - pH, air-filled porosity, expansion, electrical conductivity • Discuss about collection and aggregation practices in coir pith • Explain the importance of polyhouse drying of coir pith • Explain the usage of different types of rotovators, washing tanks and concrete drying yards • Discuss about the application of different materials for drying yard surfaces • Enlist various machinery and tools for yard drying and packing of coir pith • Explain coir pith buffering process • Explain practices and procedures in blending nutrient mixes • Discuss about environmental impact due to of Coir pith hillocks • Explain the use and importance of coir pith for organic farming in agri-horticulture, and as a soil conditioner, surface mulch/rooting	Spawn bags, spent mushroom substrates, bio gas slurry, soil etc. are available for carrying out composting process • Inspect the coir pith for required properties and quantities for composting • Inspect the composting site for suitability i.e., free form direct sun light and heavy rain • Demonstrate relevant technology for bioconversion of coir pith into Coir Pith Organic Manure (C-POM) • Demonstrate the procedure of composting process using microorganisms capable of degrading lignin and polyphenols and bringing down C: N ratio which will make Coir pith suitable for use in agri-horticulture • Demonstrate the utilize appropriate spent Mushroom Sub- strate (SMS) of edible mushrooms after cultivation as a co-composting material in the coir pith compost • Demonstrate the analysis of physio-chemical properties such as organic carbon (%), pH, EC, potassium (%),calcium (%), manganese (ppm), and copper (ppm) before and after inoculation of SMS • Inspect the coir pith for nutrient availability and their characteristics which make it ideal for use as a mulch and soil amendment and component of soilless container media for commercial horticultural plants. • Demonstrate the process of sandwiching of composing input materials appropriately to required height for efficient and effective composting • Show how to maintain sufficient moisture required by sprinkling water and allow the heap to decompose as per recommended days for accelerated composting of

medium and desiccant • Explain the significance of coir pith supplemented with natural nitrogen sources as a substitute of urea • Discuss about moisture retention capacity of coir pith • Explain various safe disposal methods and waste segregation into categories • Explain about acceptable Electrical Conductivity (EC), pH and Cation Exchange Capacity (CEC) • Discuss about export Potential of Coir Pith	Coir Pith • Inspect the coir pith for availability of acceptable Electrical Conductivity (EC), pH, and Cation Exchange Capacity (CEC). • Inspect the Coco peat obtained post composting for usage in propagation methods, hardening of tissue and embryo cultured plants, hydroponic system of plant cultivation, cultivation of glass house plants, soil conditioning, lawn making etc. • Demonstrate composting of Coir Pith for substituting urea with natural supplements using recommended methods • Demonstrate measures to avoid problem of accumulating coir pith in the coir fibre extraction units
Classroom Aids	
Training Kit (Trainer Guide, Presentations), various weeds, Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Raw coir pith, tools such as Pith spreaders, Rotovators, and other advanced systems for yard drying and packing of coir pith, pith grading filters, Coir Pith Organic Manure (C-POM), Coco peat,	

Module 6: Carryout Value Added Coir Pith and Coir-Grow Media activities for commercial use

Mapped to NOS AGR/N0541 v1.0

Terminal Outcomes:

- Demonstrate manufacturing process of various value added coir pith products
- Demonstrate customization of coir grow media
- Demonstrate best practices and techniques for Particle and particulates management
- Demonstrate various biological Treatments for Enhancing Rate of Composting of Coir Pith

Duration: 20:00	Duration: 40:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the manufacturing process for the value-added coir pith products like Coir Husk Chips, Coir Grow Poles, Coir Grow Slabs, Coir Grow Bags, Coir Seedling Coins, Coir Mulch Sheets, Coir Pots, Coir Grow Poles, grow media for green walls and coco lawn • explain the term coir Geotextiles and its importance in horticultural applications • Explain the importance and use of coir pith for hydroponics, tissue culture hardening - concepts and best practices • Discuss about enriched coir grow media - synthetic and organic • Explain the process for preparation of potting mixes for home gardening using coir pith • Discuss about need based nutrient management and infusions in coir grow media • Discuss about various biological Treatments for Enhancing Rate of Composting of Coir Pith • Discuss the scope for further value addition of coir pith and new ideas • Explain basic concept of hydroponics • Explain the use of polyhouses for horticulture and floriculture - concepts and practice	• Demonstrate the manufacture process of various value-added coir pith products viz. Coir Husk Chips, Coir Grow Poles, Coir Grow Slabs, Coir Grow Bags, Coir Seedling Coins, Coir Mulch Sheets, Coir Pots, Coir Grow Poles, Coir Pith Blocks and Discs, grow media for green walls and coco lawn, Amendment • Demonstrate preparation value-added products as per required formulation by client for hydroponics, tissue culture hardening etc. • Demonstrate preparation of potting mixes for home gardening • Demonstrate preparation of diversified commercial utility products of coir pith for utilization depending on its physical / chemical properties for application in field of Mulching effect to preserve the moisture and soil conditioning, Organic manure (Compost), Activated carbon, Bio-gas production, Mushroom cultivation, Wetting agent, Potting mixture for seedling growth, Erosion control, Adhesion compounds in pesticides, fertilizers, Dispersing agent etc. • Demonstrate customization of the Coir-Grow Media as per client requirements • Estimate the environmental impact

• Explain modern nutrient management and fertigation techniques • Explain advanced technologies for humidity and light control • Explain modern horticultural systems - technologies and practices - software and integrated farm management systems • Discuss about the factors and parameters of selection of coir pith for manufacturing of coco peat • Explain about qualities of coir pith has which recommend its use as a peat substitute • Explain coir pith block and disc specifications • Explain the importance of coir pith as a substitute for peat moss • Explain the advantages of Coir pith over Sphagnum peat • Explain about mulching for weed management and moisture retention • Explain the impact of waste water discharge from coir grow media units and treatment methods • Explain about particle and particulates management and techniques	of Coir Pith Processing and best available remedies • Demonstrate the process of waste water discharge treatment from coir grow media units by appropriate methods • Demonstrate best practices and techniques for Particle and particulates management • Demonstrate segregation of waste into different categories and disposal of non-recyclable waste appropriately • Demonstrate the proper and safe waste disposal so that fire hazards, environmental problems and ground water contamination due to the release of tannins and phenolic compounds is minimized
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator's Guide, Participant's Handbook, pest and disease images	
Tools, Equipment and Other Requirements	
value-added coir pith products like Coir Husk Chips, Coir Grow Poles, Coir Grow Slabs, Coir Grow Bags, Coir Seedling Coins, Coir Mulch Sheets, Coir Pots, Coir Grow Poles, grow media for green walls and coco lawn, potting mixes,	

Module 7: Perform documentation and record-keeping

Mapped to NOS AGR/N0542 v1.0

Terminal Outcomes:

- Discuss about documentation requirements
- Demonstrate documentation of quality parameters

Duration: 10:00	**Duration: 20:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain various Quality parameter of coir grow media production • Discuss about production journals, time sheets, inventory • Explain about industrial Safety and Health records and its importance • Explain basic accounting principles • Explain about creation of work-related file manually or electronically • Explain the importance of storing the data electronically • Explain about work-related documentation by seeking requisite information from a source or person • Explain how to Write necessary official work-related notes	• Demonstrate the process of maintaining various records related to production, machine maintenance, and operations • Demonstrate the attendance maintenance – Preparing roster as per requirements of Directorate of Industrial Safety and Health • Demonstrate documentation of the Quality parameter of coir grow media production • Show how to keep in safe custody the accounting documents/ records/ resources provided by organization • Demonstrate preparation of work related file manually or electronically as per the organization requirements • Demonstrate filing of supporting documents to maintain records • Demonstrate drafting official letter and communication • Demonstrate the review process of records to ensure they are up to date • Show how to co-ordinate with the relevant personnel for the audit of the records
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Record books, documents	

Module 8: Maintain health and general Industrial safety at the workplace

Mapped to NOS AGR/N0544 v1.0

Terminal Outcomes:

- Discuss how to adhere to personal hygiene practices.
- Demonstrate appropriate emergency procedures
- Explain general Industrial Safety norms Render appropriate emergency procedure

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain Safe work practices and housekeeping for achieving safe working environment • Discuss own job role and responsibilities and sources of information pertaining to work • Explain good housekeeping practices • Explain the Importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business • Discuss about Personal hygiene and fitness requirement and also the importance of sanitization of the workplace • Explain the risks to health and safety including contagious diseases and the measures to be taken to control those risks in the area of work • Explain Workplace procedures and requirements for the prevention and treatment of workplace injuries/ illnesses • Explain the importance and use of safety equipment's at workplace e.g different types of fire extinguishers • Explain about How to recognise and report unsafe situations • Discuss about emergency procedures to be followed in the case of illness, accidents • Explain about Who to approach for support in order to obtain work related information, clarifications	• Demonstrate the correct way of Wash hands, legs and face with soap/alcohol based sanitizer at reasonable intervals and also washing the worn clothes with soap and sun-dry before use next time • Demonstrate the use of mask or three layers of cloth-piece to cover the face • Demonstrate workplace sanitization norms including distancing from sick people and avoid touching your eyes, nose and mouth • Demonstrate measures to minimize the risk of infection and enhance overall health by following basic personal hygiene habits • Demonstrate implementation of safe and good housekeeping practices adhering to applicable occupational health • Demonstrate efforts and procedures to achieve safe working environment • Demonstrate basic safety checks before operation of all tools, implements, and machinery and report identified hazards to the supervisor • Demonstrate use of appropriate Personal Protective Equipment (PPE) while performing work in accordance with the workplace policy • Demonstrate measures to assess risks prior to performing manual handling jobs, and work according to currently recommended safe

and support • Explain dos and donts as per the instructions mentioned on the labels of chemicals/ pesticides/ fumigants etc. to avoid hazards • Explain the importance of personal protection equipment (PPE) and use them for the appropriate work • Explain Basic emergency first aid procedure • Explain Basics of environmental pollution and various methods for minimizing environmental damage during work • Explain Environmental pollution legislation, avoiding waste and disposing waste • Discuss Concept of 5s and their application in the work place • Explain Precautionary measures to avoid associated risk at workplace • Explain measures for Handling, storing or disposing off dangerous goods and substances • Explain Evacuation procedures, mock drills • Explain Criticality and significance of fire safety in coir industry • Explain Fire safety methods for production shop floor, mills, and open spaces coir pith hillocks, coir fibre stocks, and drying yards etc.	practices • Demonstrate the procedure to sanitize equipment, tools and machinery before and after use • Demonstrate the use of equipment and materials safely and correctly and return the same to designated storage • Demonstrate safe waste disposal methods • Demonstrate reporting procedures for any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger • Demonstrate application of 5S in the work place • Demonstrate procedures for dealing with accidents, fires and emergencies, including communicating location and directions to the location of emergency, as per the workplace requirements • Demonstrate use of emergency equipment in accordance with manufacturer's specifications and workplace requirements • Demonstrate use of appropriate first aid techniques to treat patient's injuries • Identify safety alarms and use them as per requirements
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator’s Guide, Participant’s Handbook.	
Tools, Equipment and Other Requirements	
Personal Protective Equipment, Cleaning Equipment and Materials, Sanitizer, Soap, Mask, First Aid, safety alarms	

Module 9: Employability Skills (60 hours)

Mapped to NOS DGT/VSQ/N0102 v1.0

Duration: 60:00

Key Learning Outcomes

Introduction to Employability Skills Duration: 1.5 Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship Duration: 1.5 Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century Duration: 2.5 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion Duration: 2.5 Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy Duration:5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship Duration: 7 Hours

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service Duration: 5 Hours

30. Describe the significance of analysing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs Duration: 8 Hours

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Diploma	Agriculture/Horticulture and related stream	3	In relevant field			
Graduate	Graduate in any stream except Agriculture/ Botany/ Horticulture and related streams	3	In relevant field			For the school Program minimum qualification of the Trainer should be Graduate (preferably Agriculture/ Horticulture/ Botany) with minimum 3 years Teaching experience (will be considered industry experience
B.Sc.	Agriculture/ Botany/ Horticulture and related streams	1	In relevant field			
B.Tech/ B.E	Agricultural Engineering	1	In relevant field			
M.Sc.	Agriculture / Horticulture / Agronomy/ Soil Science/ Botany and related streams					

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role " **Coir Grow-Media Technologist**", mapped to QP: "AGR/Q0508, v2.0", Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Trainer (Vet and Skills)", mapped to the Qualification Pack: "MEP/Q2601, v2.0". The minimum accepted score as per MEPSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites - Coir Grow Media Technologist						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduation	Horticulture/ Forestry /Agriculture and other related streams	5	Coir grow media preparation and other related fields	0		Practical skills and knowledge required in Preparing coir media, operation of machinery used in coir industries
Post-graduation	Horticulture/ Plantation/ Forestry/ Agriculture and other related streams	2	Coir grow media preparation and other related fields	0		Practical skills and knowledge required in Preparing coir media, operation of machinery used in coir industries
PhD	Horticulture/ Plantation/ Forestry /Agriculture and other related streams	1	Coir grow media preparation and other related fields	0		Practical skills and knowledge required in Preparing coir media, operation of machinery used in coir industries

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role "**Coir Grow-Media Technologist**", mapped to QP: "AGR/Q0508, v2.0", Minimum accepted score is 80%	Certified for the Job Role: "Assessor (Vet and Skills)", mapped to the Qualification Pack: "MEP/Q2701, v2.0", with a minimum score of 80%.

Assessment Strategy

Assessment System Overview

In Agriculture Sector it is of ultimate importance that individuals dealing with crop production or livestock have the requisite knowledge and competencies to undertake the task. Based on the Assessment Criteria, SSC in association with empaneled AAs, define the test structure for the given job roles to cover the required skills and competencies. Assessment strategy consists of the following:

1. Multiple Choice Questions: To assess basic knowledge (Objective/Subjective)
2. Viva: To assess awareness on processes (Oral and/or written questioning)
3. Practical: To evaluate skills and identify competencies. (Observation)

Assessments for knowledge and awareness on processes may be conducted through 'real-time' internet-based evaluation or by conducting the same 'offline' through TABs. Skills and competencies are to be assessed by conducting 'practical' on the ground through qualified and ToA certified assessors.

An individual must have adequate knowledge and skills to perform a specific task, weightage for different aspects of the assessment is given as follows:

- Multiple Choice Questions: 20%-30%, depending on the specific QP
- Viva: 20%
- Practical: 50% - 60% (Involves demonstrations of applications and presentations of procedures/tasks and other components)
- Assessment will be carried out by certified assessors through empaneled assessment partners. Based on the results of the assessment; ASCI will certify the learners/candidates

Testing Environment

Assessments are conducted on laptops, Mobiles and android tablets via both offline and online mode depending on the internet connectivity at the assessment location.

In remote locations/villages, assessments get delivered through tablets without the requirement of the Internet.

- Multilingual assessments (ASCI is conducting the assessments in 13 + languages pan India)
- Rubric driven assessments in Practical/Viva sections and responses recorded accordingly
- All responses, data, records and feedback are stored digitally on the cloud
- Advanced auto-proctoring features – photographs, time-stamp, geographic-tagging, toggle- screen/copy-paste disabled, etc.
- Android-based monitoring system
- End to end process from allocation of a batch to final result upload, there is no manual intervention

- Assessment will normally be fixed for a day after the end date of the training / within 7 days of completion of training.
- Assessment will be conducted at the training venue
- The room where assessment is conducted will be set with proper seating arrangements with enough space to curb copying or other unethical activities
- Question bank of theory and practice will be prepared by ASCI /assessment agency and approved ASCI. Only from approved Question Bank assessment agency will prepare the question paper. Theory testing will include multiple-choice questions, pictorial questions, etc. which will test the trainee on his theoretical knowledge of the subject.
- The theory, practical and viva assessments will be carried out on the same day. In case of a greater number of candidates, the number of assessors and venue facilitation be increased and facilitated

Assessment			
Assessment Type	**Formative or Summative**	**Strategies**	**Examples**
Theory	Summative	MCQ/Written exam	Knowledge of facts related to the job role and functions. Understanding of principles and concepts related to the job role and functions
Practical	Summative	Structured tasks/Demonstration	Practical application /Demonstration /Application tasks
Viva	Summative	Questioning and Probing	Mock interviews on the usability of job roles/advantages /importance of adherence to procedures. Viva will be used to gauge trainee's confidence and correct knowledge in handling the job situation

The question paper is pre-loaded in the computer /Tablet and it will be in the language as requested by the training partner.

Assessment Quality Assurance framework

Assessment Framework and Design:

Based on the Assessment Criteria, SSC in association with AAs will define the test structure for the given roles to cover the required skills and competencies. ASCI offer a bouquet of tools for multi-dimensional evaluation of candidates covering language, cognitive skills, behavioral traits and domain knowledge.

Theoretical Knowledge - Item constructs and types are determined by a theoretical understanding of the testing objectives and published research about the item types and constructs that have shown statistical validity towards measuring the construct. Test item types that have been reported to be coachable are not included. Based on these, items are developed by domain experts. They are provided with comprehensive guidelines of the testing objectives of each question and other quality measures.

Type – Questions based on Knowledge Required, Case-based practical scenario questions and automated simulation-based questions.

Practical Skills - The practical assessments are developed taking into consideration two aspects: what practical tasks is the candidate expected to perform on the job and what aspects of the job cannot be judged through theoretical assessments. The candidates shall be asked to perform either an entire task or a set of subtasks depending on the nature of the job role

Type – Standardized rubrics for evaluation against a set of tasks in a demo/practical task

Viva Voce - Those practical tasks which cannot be performed due to time or resource constraints are evaluated through the viva mode. Practical tasks are backed up with Viva for thorough assessment and complete evaluation

Type – Procedural questions, dos and don'ts, subjective questions to check the understanding of practical tasks.

The assessor has to go through an orientation program organized by the Assessment Agency. The training would give an overview to the assessors on the overall framework of QP evaluation. The assessor shall be given a NOS and PC level overview of each QP as applicable. The overall structure of assessment and objectivity of the marking scheme will be explained to them. The giving of marks will be driven by an objective framework that will maintain the standardization of the marking scheme.

Type of Evidence and Evidence Gathering Protocol:

During the assessment the evidence collected by AAs and ASCI are:

- GeoTagging to track ongoing assessment
- AA's coordinator emails the list of documents and evidence (photos and videos) to the assessor one day before the assessment. The list is mentioned below:
    - Signed Attendance sheet
    - Assessor feedback sheet

- Candidate feedback sheet
- Assessment checklist for assessor
- Candidate Aadhar/ID card verification
- Pictures of the classroom, labs to check the availability of adequate equipment's and tools to conduct the training and assessment
- Pictures and videos of Assessment, training feedback and infrastructure.

- Apart from the Assessor, a Technical assistant is popularly known as Proctor also ensures the proper documentation and they verify each other's tasks.
- To validate their work on the day of the assessment, regular calls and video calls are done.
- On-boarding and training of the assessor and proctor are done on a timely basis to ensure that the quality of the assessment should be maintained.
- Training covers the understanding of QP, NSQF level, NOS and assessment structure

Methods of Validation

- Morning Check (Pre-Assessment): Backend team of AA calls and confirms assessor/technical SPOC event status. Assessor/Technical SPOC are instructed to reach the centre on time by 9:30 AM / as decided with TC and delay should be highlighted to the Training Partner in advance.
- Video Calls: Random video calls are made to the technical SPOC/assessor so as to keep a check on assessment quality and ensure assessment is carried out in a fair and transparent manner
- Aadhar verification of candidates
- Evening Check (Post Assessment): Calls are made to the ground team to ensure the event is over by what time and the documentation is done properly or not.
- TP Calling: To keep a check on malpractices, an independent audit team calls the TP on a recorded line to take confirmation if there was any malpractice activity observed in the assessment on part of the AA/SSC team. If calls are not connected, an email is sent to TP SPOC for taking their confirmation
- Video and Picture Evidence: Backend team collects video and pictures for assessment on a real-time basis and highlights any issue such as students sitting idle/ trainer helping the candidates during the assessment.
- Surprise Visit: Time to time SSC/AA Audit team can visit the assessment location and conduct a surprise audit for the assessment carried out by the ground team.
- Geo Tagging: On the day of the assessment, each technical SPOC is required to login into our internal app which is Geotagged. Any deviation with the centre address needs to be highlighted to the assessment team on a real-time basis.

Method for assessment documentation, archiving, and Access:

- ASCI have a fully automated result generation process in association with multiple AAs
- Theory, Practical and Viva marks form the basis of the results and encrypted files generated to avoid data manipulation. All responses were captured and stored in the

System with Time-Stamps at the end of AAs and SSC. NOS-wise and PC-wise scores can be generated.

- Maker Checker concept: One person prepares the results and another audit result which is internally approved by AA at first and then gets vetted at the end of SSC
- All softcopies of documents are received from the on-ground tech team over email. The same is downloaded by our internal backend team and saved in Repository. The repository consists of scheme-wise folders. These scheme-wise folders have two job role-specific folders. These specific folders have Year wise and Month wise folders where all documents are saved in Batch specific folders. All Hard copies are filed and stored in the storeroom.

Result Review & Recheck Mechanism –

- Time-stamped assessment logs
- Answer/Endorsement sheets for each candidate
- Attendance Sheet
- Feedback Forms: Assessor feedback form, Candidate feedback form, TP feedback form
- The results for each of the candidates shall be stored and available for review (retained for 5 years/ till the conclusion of the project or scheme)

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	The key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on-site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on-site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	The terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
AGR	Agriculture
CEC	Cation-Exchange Capacity
C-OPM	Coir Pith Organic Manure
EC	Electrical conductivity
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
NOS	National Occupational Standard (s)
NSQF	National Skills Qualifications Framework
OJT	On-the-job Training
QP	Qualifications Pack
PVC	Polyvinyl Chloride
PwD	People with Disability
PPE	Personal Protective Equipment
PGR	Plant Growth Retardant Or Plant Growth Regulator
PPE	Personal Protective Equipment
PPM	Parts Per Million
MFEM	Mobile Fibre Extraction Machine