

Model Curriculum

Animal Waste Manure Aggregator (Options: Biogas Plant Operator/Compost Plant Operator)

SECTOR: GREEN JOBS
SUB-SECTOR: WASTE MANAGEMENT
OCCUPATION: PRODUCTION
REF ID: SGJ/Q6302, V1.0
NSQF LEVEL: 4



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

SKILL COUNCIL FOR GREEN JOBS

for

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: **'Animal Waste Manure Aggregator
(Options: Biogas Plant Operator/Compost Plant Operator)'**
QP No. **'SGJ/Q6302 NSQF Level 4'**

Date of Issuance: July 5th 2018
Valid up to*: May 26th 2020

*Valid up to the next review date of the Qualification Pack or the
'Valid up to' date mentioned above (whichever is earlier)



Dr. Praveen Saxena

Authorised Signatory
(Skill Council for Green Jobs)



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Animal Waste Manure Aggregator (Options: Biogas Plant Operator/Compost Plant Operator)

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Animal Waste Manure Aggregator (Options: Biogas Plant Operator/Compost Plant Operator)”, in the “Green Jobs” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Animal Waste Manure Aggregator (Options: Biogas Plant Operator/Compost Plant Operator)		
Qualification Pack Name & Reference ID	SGJ/Q6302, V1.0		
Version No.	1.0	Version Update Date	12.04.2018
Pre-requisites to Training	5th Pass		
Training Outcomes	After completing this programme, participants will be able to: <ul style="list-style-type: none">• Set-up drop points for collecting waste manure• Collect waste manure from designated areas• Storage and dispatch of waste manure• Maintain basic health and workplace safety• Operate and maintain biogas plant• Operate and maintain of compost plant		

This course encompasses **4 out of 4 Compulsory** NOS (National Occupational Standards), **2 out of 2 Optional NOS**, of “Animal Waste Manure Aggregator (Options: Biogas Plant Operator/Compost Plant Operator)”, Qualification Pack issued by “Skill Council for Green Jobs”.

COMPULSORY NOS:

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	Introduction to animal waste supply chain Theory Duration (hh:mm) 04:00 Practical Duration (hh:mm) 00:00 Corresponding NOS Code Bridge Module	<ul style="list-style-type: none"> Explain need for collection of animal waste as a bio-resource to ensure cleanliness in villages and generate wealth and energy Illustrate various steps in animal waste supply chain for collection, aggregation, transportation and storage Explain role of Animal waste manure Aggregator in biomass supply chain and its progression to Biogas plant operator/ Compost plant operator 	illustrative pictures
2	Set-up drop points for collecting waste manure Theory Duration (hh:mm) 02:00 Practical Duration (hh:mm) 07:00 Corresponding NOS Code SGJ/N6308	<ul style="list-style-type: none"> Identify the criteria for setting up centres/points of waste generation Select right stakeholders (household, NGO, working group, etc.) for collection of animal waste manure from identified centres. Study different areas to identify best suited area for setting up nodal collection points Assess demand through interaction with biogas plant and composting unit owners Analyse standard and quality of Animal Waste manure as per the demand of the buyer Coordinate and negotiate with different suppliers of animal waste manure for appropriate price and timely payment 	
3	Collect waste manure from designated areas Theory Duration (hh:mm) 02:00 Practical Duration (hh:mm) 07:00 Corresponding NOS Code SGJ/N6309	<ul style="list-style-type: none"> Identify gaushalas, village households, dairy, etc. for collection of bulk quantity of animal waste manure Develop collection schedule from all specified locations to ensure timely transportation Evaluate appropriate transportation modes based on location of departure, cost, quality, time constraints, safety, routing model etc. Prepare a route map for safe and hygienic transportation for manure collection Select right equipment for collection and aggregation of waste manure 	illustrative pictures, tasla/shallow pan

Sr. No.	Module	Key Learning Outcomes	Equipment Required
4	<p>Storage and dispatch of waste manure</p> <p>Theory Duration (hh:mm) 02:00</p> <p>Practical Duration (hh:mm) 08:00</p> <p>Corresponding NOS Code SGJ/N6310</p>	<ul style="list-style-type: none"> Identify criteria for maintaining quality during collection to avoid health hazard Evaluate market price and identify best ways of attracting a remunerative price for waste manure Coordinate and negotiate with different waste manure buyer involved in waste manure purchase and use based on location of departure, cost, quality, time constraints, safety, routing model etc. Choose appropriate transportation modes based on location of departure, cost, quality, time constraints, safety, routing model etc. 	temperature sensor, Gloves
5	<p>Maintain basic health and workplace safety</p> <p>Theory Duration (hh:mm) 02:00</p> <p>Practical Duration (hh:mm) 05:00</p> <p>Corresponding NOS Code SGJ/N6205</p>	<ul style="list-style-type: none"> Maintain proper hygiene and protection from dust and other infections Demonstrate transportation safety like use of indicators, avoid bulging of material, etc. Administer first aid and use of different ways and means to handle emergency situations like fire, natural disasters, riots, etc. Select methods to dispose off farm waste in accordance with environmental safety Demonstrate use of Personal Protective Equipment (PPE) and its availability at work place 	industrial mask, safety tools kit, sanitizer, first aid box
6	<p>Communication & Soft Skills</p> <p>Theory Duration (hh:mm) 04:00</p> <p>Practical Duration (hh:mm) 02:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> Explain voice clarity, accent and speaking skills Develop etiquette and manners Identify barriers to communication like Intrinsic motivation, perception, language, listening etc. Explain about organization culture 	
	<p>COMPULSORY NOS:</p> <p>Total Duration: 45:00</p> <p>Theory Duration: 16:00</p> <p>Practical Duration: 29:00</p>	<p>Unique Equipment Required: Moisture Analyzer, temperature sensor, Weighing Machine, Gloves (non-prickable), industrial mask, safety tools kit, sanitizer, first aid box, tasla/shallow pan</p>	

OPTIONS (Optional to choose any or all or none)

OPTION 1: Biogas Plant Operator

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Operation and maintenance of biogas plant</p> <p>Theory Duration (hh:mm) 9:00</p> <p>Practical Duration (hh:mm) 36:00</p> <p>Corresponding NOS Code SGJ/N6311</p>	<ul style="list-style-type: none"> • Illustrate structure and functioning of biogas plant • Explain how to handle, store and issue raw material for production of biogas plant in a due and safe manner • Describe various methods for monitoring the quality requirement of raw material as per standards • Demonstrate how to monitor biogas plant equipment and its parameters • Show proper handling and loading of raw material. • Define criteria for scale and quality of biogas production • Identify fault and develop periodic maintenance schedule, undertake repair as per standard and update maintenance log register • Demonstrate operation of switches, equipment controls such as control pumps, valves, etc. • Describe how to stabilize production process based on manuals, work order and results of the analysis of the production process at the plant 	Demo model of biogas plant
	<p>OPTION 1:</p> <p>Total Duration: 45:00</p> <p>Theory Duration 9:00</p> <p>Practical Duration 36:00</p>	<p>Unique Equipment Required: Demo model of biogas plant, Gloves (non-prickable), industrial mask, safety tools kit, sanitizer</p>	

OPTION 2: Compost Plant Operator

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	Operation and maintenance of compost plant Theory Duration (hh:mm) 9:00 Practical Duration (hh:mm) 36:00 Corresponding NOS Code SGJ/N6312	<ul style="list-style-type: none"> • Illustrate structure and functioning of compost plant • Explain various methods of raw material preparation for composting as per standards • Maintain compost windrow with proper temperature and moisture • Maintain records of weighbridge operations • Identify faults, develop periodic maintenance schedule, undertake repair as per standard and update maintenance log register • Explain how to maintain site fencing, site drainage and spillage proof at site • Identify method for weed control and unhealthy odour at the site 	Demo model of compost plant
	OPTION 2: Total Duration: 45:00 Theory Duration 9:00 Practical Duration 36:00	Unique Equipment Required: Demo model of composting unit, Moisture Analyzer, temperature sensor, Weighing Machine, Gloves (non-prickable), industrial mask, safety tools kit, sanitizer	
	GRAND Total Duration Minimum Duration for the QP= 45 hrs Theory:16 hrs Practical:29 hrs Maximum Duration for the QP= 135 hrs Theory:34 hrs Practical:101 hrs	Unique Equipment Required for the QP: Projector, first aid kit Moisture Analyzer, temperature sensor, Weighing Machine, Gloves (non-prickable), industrial mask, safety tools kit, sanitizer, Demo model of composting unit, Demo model of biogas plant, tasla/shallow pan	

(This syllabus/ curriculum has been approved by [Skill Council for Green Jobs](#))

Trainer Prerequisites for Job role: “Animal Waste Manure Aggregator(Options: Biogas Plant Operator/Compost Plant Operator)” mapped to Qualification Pack: “SGJ/Q6302, V1.0”

Sr. No.	Area	Details
1	Description	Animal Waste Manure Aggregator is responsible for collection and aggregation of waste manure from different sources and supply it as input material for preparation of organic compost/vermi-compost, bio-gas etc. He/She can further specialize in biogas/compost plant operation and maintenance
2	Personal Attributes	Animal Waste Manure Aggregator concentrate on the job at hand and complete it meticulously in a safe manner. He / She must possess energy and strength for physical work. He / She must also demonstrate strong work ethics and an ability to communicate courteously with workers and Customers
3	Minimum Educational Qualifications	10th Pass
4a	Domain Certification	Certified for Job Role: “Animal Waste Manure Aggregator (Options: Biogas Plant Operator/Compost Plant Operator)” mapped to QP: “SGJ/Q6302, Version 1.0”. Minimum accepted score as per SCGJ guidelines is 80%
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q0102” or equivalent. Minimum accepted score as per SSC guidelines is 80%
5	Experience	Minimum 2 years of relevant experience

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Animal Waste Manure Aggregator (Options: Biogas Plant Operator/Compost Plant Operator)
Qualification Pack	SGJ/Q6302, V1.0
Sector Skill Council	Green Jobs

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3	Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS
4	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
5	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
6	To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment
7	In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

Compulsory NOS		Marks Allocation			
Total Marks: 120					
Assessment outcomes	Assessment Criteria for outcomes	Total Mark	Out Of	Theory	Skills Practical
SGJ/N6308: Set-up drop points for collecting waste manure	PC1. setup collection points in different villages for collecting waste manure	25	6	2	4
	PC2. coordinate with different collection points for manure aggregation		6	2	4
	PC3. ensure acquisition of waste manure at best possible cost w.r.t. quantity		7	3	4
	PC4. ensure payments to suppliers (farmers) for waste manure		6	3	3
		TOTAL	25	10	15
SGJ/N6309: Collect waste manure from designated areas	PC1. obtain list of various areas/locations from which waste manure is likely to be generated viz., gaushalas, village households having multiple wastes etc.	35	5	2	3
	PC2. develop a definite schedule for collecting manure from all locations specified in the list		5	2	3
	PC3. develop a route map to be followed for manure collection		5	2	3
	PC4. gather equipment necessary for safe and hygienic handling and transport of manure		4	1	3
	PC5. collect the waste manure from different locations using appropriate collection option viz., automated vehicle, manual cart etc.		6	2	4
	PC6. identify proper means of communication with producers		5	2	3
	PC7. undertake transfer of waste manure to collection bins in secure and hygienic manner		5	2	3
		TOTAL	35	13	22

SGJ/N6310: Storage and dispatch of waste manure	PC1. undertake storage of collected manure in an appropriate place	20	5	2	3
	PC2. assess the market and identify the appropriate buyers		5	2	3
	PC3. undertake selling of waste manure at acceptable price		6	2	4
	PC4. facilitate dispatch of manure to identified buyers		4	1	3
		TOTAL	20	7	13
SGJ/N6205: Maintain basic health and workplace safety	PC1. keep workplace clean, organized and safe for work	40	5	2	3
	PC2. follow and comply with workplace and job specific safety procedures		5	2	3
	PC3. ensure no accidents and damages take place at the workplace		4	1	3
	PC4. Ensure proper hygiene and protection from dust and other infection		4	1	3
	PC5. communicate workplace hazards and associated emergencies to workers		4	2	2
	PC6. organize and attend fire drills and workplace safety workshops		4	1	3
	PC7. administer basic first aid and be aware of evacuation and emergency procedures		5	2	3
	PC8. ensure that PPE's requirement are identified and made available at workplace at all time		4	1	3
	PC9. demonstrate safe and accepted practices for personal protection		5	2	3
				TOTAL	40

OPTIONS					
Option1: Biogas Plant Operator					
Total Marks: 60		Marks Allocation			
Assessment outcomes	Assessment Criteria for outcomes	Total Mark	Out Of	Theory	Skills Practical
SGJ/N6311: Operation and maintenance of biogas plant	PC1 undertake proper monitoring of plant equipment and its parameters	60	5	2	3
	PC2 analyse data and identify malfunction, fault and irregularities		5	2	3
	PC3 determine the need of raw material supplies and monitors the conformity of raw materials to the quality requirement		4	2	2
	PC4 identify the scale and quality indicator of production		4	1	3
	PC5 operate switches, adjust equipment controls such as control pumps, valves etc.to ensure efficient operation of equipment		5	2	3
	PC6 demonstrate stability of production process		5	2	3
	PC7 ensure adjustment of production process at the plant based on manuals, work order and results of the analysis of the production process at the plant		5	2	3
	PC8 undertake proper handling, storing & issuing of raw materials and final products of biogas plant in a due and safe manner		4	1	3
	PC9 undertake proper handling of loading and other equipments for handling raw materials or their processing residues		4	1	3
	PC10 undertake periodic maintenance & minor repair if needed of plant equipments as per standard		5	2	3
	PC11 identify the way and mean for eliminating any fault detected		5	2	3
	PC12 organize the maintenance and repairs of equipment according to the repair schedule involving maintenance company if needed		5	1	4
	PC13 undertake proper updation of maintenance log register		4	2	2
	TOTAL	60	22	38	

OPTIONS					
Option2: Compost Plant Operator					
Total Marks: 60		Marks Allocation			
Assessment outcomes	Assessment Criteria for outcomes	Total Mark	Out Of	Theory	Skills Practical
SGJ/N6312: Operation and maintenance of compost plant	PC1 demonstrate collection & handling of raw materials for composting in plant	60	5	2	3
	PC2 ensure proper weighbridge operations – process incoming and outgoing vehicles and maintain the records		4	2	2
	PC3 identify various method of placing the raw materials at designated place		4	1	3
	PC4 prepare materials for composting as per standards		4	1	3
	PC5 maintain compost windrow temperature and moisture		4	1	3
	PC6 check & ensure proper functioning of plant equipment daily		4	2	2
	PC7 operate and maintain all the equipments relating to compost processing		5	2	3
	PC8 demonstrate proper handling & transportation of processed compost to packaging unit		5	2	3
	PC9 conduct routine site inspection and record the data properly		4	2	2
	PC10 ensure that the Supervisor is kept informed of all matters associated with the operation of the facility		4	2	2
	PC11 demonstrate commitment to support and embrace a continuous improvement on the environment and culture within the organization		5	2	3
	PC12 undertake actions to manage and contain all litter within the facility, maintain site fencing and site drainage		4	2	2
	PC13 ensure weed control – manage site weed control with environmental friendly methods		4	2	2
	PC14 control unhealthy odor and foul smell at the site		4	2	2
	TOTAL	60	25	35	