

Model Curriculum

Greenhouse Fitter

SECTOR: AGRICULTURE & ALLIED
SUB-SECTOR: AGRICULTURE CROP PRODUCTION
OCCUPATION: PRECISION FARMING
REF ID: AGR/Q1001, V1.0
NSQF LEVEL: 4



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

AGRICULTURE SKILL COUNCIL OF INDIA

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/Qualification Pack: **'Greenhouse Fitter'** QP No. **'AGR/Q1001 NSQF Level 4'**

Date of Issuance: October 15th, 2016

Valid up to: March 31st, 2019

* Valid up to the next review date of the Qualification Pack



Authorised Signatory
(Agriculture Skill Council of India)

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Greenhouse Fitter

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Greenhouse Fitter”, in the “Agriculture & Allied” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Greenhouse Fitter		
Qualification Pack Name & Reference ID. ID	AGR/Q1001, v1.0		
Version No.	1.0	Version Update Date	
Pre-requisites to Training	10 th Standard Appeared or Passed		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Identify/familiarize with different types of greenhouse: Understand the working of different types of greenhouses and their components • Understand Design & make layout plan for greenhouse erection: assist in designing & undertake land survey etc • Undertake installation of greenhouse structure: erection of greenhouse structure, covering with nets & sheets, installation of irrigation products etc • Ensure working of climate control mechanisms: temperature, humidity, light on daily basis as per the crop requirement • Undertake maintenance of greenhouse: periodic checking, tightening, greasing, cross-checking for any leakages etc • Practice health & safety at the work place: Well versed with health and safety measures in terms of personal as well as others' safety. 		

This course encompasses 4 out of 4 National Occupational Standards (NOS) of “Greenhouse Fitter” Qualification Pack issued by “Agriculture Skill Council of India”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	Introduction Theory Duration (hh:mm) 05:00 Practical Duration (hh:mm) 00:00 Corresponding NOS Code Bridge Module	<ul style="list-style-type: none"> Understand General Discipline in the class room (Do’s & Don’ts) Study the Scope & importance of Greenhouse in India Different crops that can be grown in greenhouse Understand the Role of a Greenhouse Fitter 	Laptop, white board, marker, projector
2	Design & Layout of Greenhouse Theory Duration (hh:mm) 15:00 Practical Duration (hh:mm) 25:00 Corresponding NOS Code AGR / N1001	<ul style="list-style-type: none"> Types of greenhouses Understand various greenhouse components and their functions Basics of system designs of greenhouse Familiarize with the working of different greenhouse components Design green house in consultancy with the company Undertake Land survey, levelling, and measuring angles Assess structural strength which depends upon foundation Select and purchase materials as per standards Understand Foundation specifications Structural drawing/ layout plan for installation of structures of Green House 	Laptop, white board, marker, projector, Audio-visual aids, Drawing Sheet, Chart Paper, Pencil, Eraser, Colour Marker, Fishing wire, Point Marking sticks, Marking Powder or whitewash powder, Hoe, Spade, Land Survey Machine, GPS Handheld survey device, Ruler, Compass, Clinometer, Vernier calliper, Green house structure, Plastic film, Shed net, Insect net, Cooling pad, Drip line with sprinkler set, Spray machine, Screw driver set, Pliers set, Measuring tape, Welding machine with accessories, Exhaust fan, Power cutter, Drill machine
3	Installation of greenhouse structures Theory Duration (hh:mm) 25:00 Practical Duration (hh:mm)	<ul style="list-style-type: none"> Erection of Green House structure Covering with Nets and Sheets Checking the first time leakages through gutters Light & Temp. Control Mechanism Humidity & Gas Control Mechanism Methods of Irrigation Components of irrigation systems Assembling the components of 	Laptop, white board, marker, projector, Audio-visual aids, Plastic film, Shed net, Insect net, Cooling pad, Drip line with sprinkler set, Spray machine, Screw driver set, Pliers set, Welding machine

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	40:00 Corresponding NOS Code AGR/N1002	irrigation system <ul style="list-style-type: none"> Basics of crop cultivation- Land Preparation, Nursery Raising, Package of Practices of crops, Harvest & Post-harvest Management 	with accessories, Exhaust fan, Power cutter, Drawing sheet, Pen, pencil, rubber, Drill machine, Spanner, Ratchet, Screw Driver, Wire rope puller (> 2 ton capacity) Wire rope cutter, Hoe, Spade, Supporting ladder (> 3 meters), Drilling Machine with bits, Self-Drilling Screw driver with bits, Measuring tape, Measuring ruler, Sprit level tool, Greenhouse columns, C Profiles, Bolts and nuts, Wire ropes, Greenhouse Plastic films, Greenhouse Shade nets / thermal Nets, Square hollow section pipes, Foundation pipes, Foundation iron rods (< 1 foot), Roller wheels, Greenhouse door kit, Trellising system with wire, Profiles with Spring, Greenhouse Gutter, Pipe Connectors, Nylon rope, Chain pulley, Scissors, Clamps Sealing material like Silicon, Hammer
4	Maintenance of greenhouse Theory Duration (hh:mm) 10:00 Practical Duration (hh:mm) 20:00 Corresponding NOS Code AGR/N1003	<ul style="list-style-type: none"> Maintain erected structures Maintain operational elements of Green House for periodic checking, tightening, greasing, etc. 	Laptop, white board, marker, projector, Audio-visual aids, Ratchet, Wire puller, Spanner, Nuts and Bolts Screws, Lubricants like Grease, Supporting ladder, Nylon ropes, Wire cutter, Plastic wiper, Hammer, Screw Driver, Sealing material like silicon, Cut material of Greenhouse plastics for patch work, Cut

Sr. No.	Module	Key Learning Outcomes	Equipment Required
			material of Shading net / thermal net for patch work
5	Maintain Health & Safety at the work place Theory Duration (hh:mm) 10:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code AGR/N9903	<ul style="list-style-type: none"> Maintain a clean & efficient workplace Render appropriate emergency procedures On Time Reporting to appropriate person. Practice General safety and first aid 	Laptop, white board, marker, projector, , Personal protective equipment Like: Helmet / head gear, Cotton / woolen safety gloves, Safety boots, Safety Harness; First Aid Kit: Bandages, Adhesive bandages, Betadine Solution / ointment, Pain relief spray / ointment, Antiseptic liquid; Phone directory, Search lights, fire extinguisher
6	Soft Skills/ Computer Literacy/ Financial Literacy/ Entrepreneurship Skills Theory Duration (hh:mm) 30:00 Practical Duration (hh:mm) 30:00 Corresponding NOS Code	<ul style="list-style-type: none"> Basic Communication Skills Basic Computer Skills Various types of documents and their uses- Birth certificate, 10th Certificate, Ration Card, Voter Id Card, Aadhar Card, PAN card, Driving License, Bank Pass Book Various types of loan/credit available (relevant to the trainees' requirement) and the process to avail the same 	Computer, Audio-visual aids, Projector
	Total Duration: Theory Duration (hh:mm) 95:00 Practical Duration (hh:mm) 125:00	Unique Equipment Required: Laptop, white board, marker, projector, Audio-visual aids, Fishing wire, Point Marking sticks, Marking Powder or whitewash powder, Hoe, Spade, Land Survey Machine, GPS Handheld survey device, Ruler, Compass, Clinometer, Vernier calliper, Green house structure, Plastic film, Shed net, Insect net, Cooling pad, Drip line with sprinkler set, Spray machine, Screw driver set, Pliers set, Measuring tape, Welding machine with accessories, Exhaust fan, Power cutter, Drill machine, Plastic film, Shed net, Insect net, Cooling pad, Drip line with sprinkler set, Drill machine, Spanner, Ratchet, Screw Driver, Wire rope puller (> 2 ton capacity), Wire rope cutter, Hoe, Spade, Supporting ladder (> 3 meters), Drilling Machine with bits, Self-Drilling Screw driver with bits, Measuring tape, Measuring ruler, Sprit level tool, Greenhouse columns, C Profiles, Bolts and nuts, Wire ropes, Greenhouse Plastic films, Greenhouse Shade nets / thermal Nets, Square hollow section pipes, Foundation pipes, Foundation iron rods (< 1 foot), Roller wheels, Greenhouse door kit, Trellising system with	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		wire, Profiles with Spring, Greenhouse Gutter, Pipe Connectors, Nylon rope, Chain pulley, Scissors, Clamps, Sealing material like Silicon, Hammer, Ratchet, Wire puller	

Grand Total Course Duration: **220 Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by [Agriculture Skill Council of India](#))

Trainer Prerequisites for Job role: “Greenhouse Fitter” mapped to Qualification Pack: “AGR/Q1001, v1.0”

Sr. No.	Area	Details
1	Description	Trainer is responsible for educating the trainees – Different components of greenhouse & their working, Design & layout of greenhouse, installation of greenhouse, Maintenance of greenhouse, Safety & hygiene at the workplace
2	Personal Attributes	Trainer should be Subject Matter Expert. He/ she should have good communication, leadership, observation and practical oriented skills.
3	Minimum Educational Qualifications	Bachelor’s Degree, Preferably in Agriculture/Horticulture
4a	Domain Certification	Certified for Job Role: “Greenhouse Fitter” mapped to QP: “AGR/Q1001, v1.0”. Minimum accepted score is 80%.
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/Q1402”. Minimum accepted % as per respective SSC guidelines is 70%.
5	Experience	<ul style="list-style-type: none"> • M.Sc (Horticulture) with 1 Year experience • B.Sc.(Horticulture) with 3 Years experience • Any Graduate with 5+ years experience in relevant field • Any +2 having 7/8 Years of experience in Greenhouse Installation

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Greenhouse Fitter
Qualification Pack	AGR/Q1001, v1.0
Sector Skill Council	Agriculture

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	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre(as per assessment criteria below)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5	To pass the Qualification Pack, every trainee should score a minimum of 70% in aggregate
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

Assessable Outcome	Assessment Criteria	Total Marks (300)	Out Of	Marks Allocation	
				Theory	Skills Practical
1.AGR/N1001 Design and Layout of Green House	PC1.Aid in the design of the Green House in consultation with the seniors / managers of the company	90	10	5	5
	PC2. Do Land survey, Levelling, measuring the angles		10	5	5
	PC3. Assess structural strength which depends upon foundation.		15	7	8
	PC4. Select and purchase materials as per standards		10	5	5
	PC5. Survey the land, leveling and measure angles as part of laying out the green house structures		10	5	5
	PC6. Based on nature / type of soil, decide on the foundation specifications		15	8	7
	PC7. Make structural drawing / lay out plan for installation of various structures of the green house		20	10	10
			90	45	45
2.AGR/N1002 Installation of Green House Structures	PC1.Erect various type of profiles provided in the layout of the Green House Circular, Cprofile, thickness, height, length and width and class	135	20	10	10
	PC2. Fit various parts of the structure(s)		15	7	8
	PC3. Join various gutters at locations where leak-proof joint is important		15	8	7
	PC4. Joint vents at various recommended / specified angles		15	7	8
	PC5. Install Insect nets (on the sides of the green house) with the use of steel or plastic profiles without damage and without wrinkles		10	5	5
	PC6. Install shade nets while checking the spreading and collecting		15	6	9
	PC7. Covering up the structure with the film without damage and without wrinkles.		10	5	5
	PC8. Make judgements about climatic conditions like wind speed, temperature etc. while erection and covering with sheets.		20	10	10
	PC9. Check the gutters while pouring water initially and cross checking with rainy season.		15	6	9
			135	64	71

3.AGR/N1003M aintenance of Green House	PC1. Maintain erected structures	60	30	15	15
	PC2.Maintain of operational elements of the green house for periodic checking, tightening, greasing etc.		30	20	10
			60	35	25
4.AGR/N9903 Maintain Health & Safety at the workplace	PC1.Undertake basic safety checks before operation of all machinery and vehicles and hazards are reported to the appropriate supervisor	15	1	0	2
	PC2.Work for which protective clothing or equipment is required is identified and the appropriate protective clothing or equipment is used in performing these duties in accordance with workplace policy.		1	1	0
	PC3.Read and understand the hazards of use and contamination mentioned on the labels of pesticides/fumigants etc		1	1	0
	PC4. Assess risks prior to performing manual handling jobs, and work according to currently recommended safe practice.		1	0	1
	PC5.Use equipment and materials safely and correctly and return the same to designated storage when not in use		1	0	1
	PC6.Dispose of waste safely and correctly in a designated area		1	0	1
	PC7.Recognise risks to bystanders and take action to reduce risk associated with jobs in the workplace		1	1	0
	PC8.Perform your work in a manner which minimizes environmental damage all procedures and work instructions for controlling risk are followed closely.		1	0	1
	PC9.Report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger.		1	0	1
	PC10.Follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to emergency.		1	1	0
	PC11.Follow emergency procedures to company standard / workplace requirements		1	1	0

	PC12. Use emergency equipment in accordance with manufacturers' specifications and workplace requirements		1	0	1
	PC13. Provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques		1	0	1
	PC14. Recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate		1	0	1
	PC15. Report details of first aid administered in accordance with workplace procedures.		1	1	0
			15	6	9
	Total	300	300	150	150
	Percentage Weightage:			50%	50%
	Minimum Pass% to qualify (aggregate):			60%	