

Model Curriculum

Solanaceous Crop Cultivator

SECTOR: AGRICULTURE & ALLIED
SUB-SECTOR: AGRICULTURE CROP PRODUCTION
OCCUPATION: HORTICULTURE– VEGETABLE CROP
CULTIVATION
REF ID: AGR/Q0402, 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: **'Solanaeous Crop Cultivator'** QP No. **'AGR/Qo4o2 NSQF Level 4'**

Date of Issuance: October 20th, 2016

Valid up to: March 31st, 2019

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

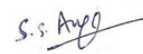

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Authorised Signatory
(Agriculture Skill Council of India)

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Solanaceous Crop Cultivator

CURRICULUM / SYLLABUS

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

Program Name	Solanaceous Crop Cultivator		
Qualification Pack Name & Reference ID.	AGR/Q0402, v1.0		
Version No.	1.0	Version Update Date	
Pre-requisites to Training	No entry barrier, 5 th standard pass preferable		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Select & Procure the solanaceous crop seed (tomato, egg plants, capsicum etc) variety from authentic source: Analyse the geographical conditions, resources available, select the crop variety-high yielding variety, pest and disease tolerant variety, hybrid varieties • Grow and manage solanaceous crop: Inputs requirement, Seed treatment, Nursery management, Preparation of field, sowing, soil testing, application of fertilizer & nutrients, pest & disease management, irrigation management, harvesting of crop • Maintain the quality of the produce: Time of Harvesting, moisture level of the produce, post-harvest practices, storage & transportation • Undertake Basic Farm Management: Crop planning, maintaining crop calendar, financial management, analyze market demand & supply • Become well versed with Environment Health & Safety: Well versed with health and safety measures in terms of personal safety and others as well. 		

This course encompasses 10 out of 10 National Occupational Standards (NOS) of “Solanaceous Crop Cultivator 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 the General Discipline in the class room (Do's & Don'ts) Understand and study the Scopes and Opportunities of Horticulture Crops in particular vegetable crops cultivation Get acquainted with different types of vegetable crops Understand the Role of a Solanaceous Crop Cultivator Study different Solanaceous crops & their varieties 	White Board, Marker, Laptop, projector
2	Seed Selection & Seedling Production Theory Duration (hh:mm) 10:00 Practical Duration (hh:mm) 13:00 Corresponding NOS Code AGR / N0408	<ul style="list-style-type: none"> Understand the Seed requirement for Solanaceous Crop Cultivation Identify Suppliers/ vendors Procure the Seed Undertake soil nursery or tray method for growing seedlings 	White Board, Marker, Laptop, projector, nursery bed, potting material, tray, watering equipment
3	Soil Preparation & Transplanting in solanaceous crops Theory Duration (hh:mm) 07:00 Practical Duration (hh:mm) 12:00 Corresponding NOS Code AGR / N0409	<ul style="list-style-type: none"> Study the suitable soil condition for the particular Solanaceous crop Understand the importance of soil testing and application of recommended doses of fertilizer & manure Undertake intercropping, if feasible Prepare the land for planting the Solanaceous crops Prepare the seed bed Understand the right time for planting Understand and maintain the right soil moisture while planting Transplant/Plant the Solanaceous Crop 	Marker, Laptop, projector, land leveler, digger, spade, mulching materials, manure & fertilizer, watering equipment
4	Soil nutrient management in vegetable crops Theory Duration	<ul style="list-style-type: none"> Understand the Nutrient requirement for the cultivation of Solanaceous Crops Understand and perform the soil 	White Board, Marker, Laptop, projector, Sprayer, fertilizers, bio fertilizers

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	(hh:mm) 08:00 Practical Duration (hh:mm) 12:00 Corresponding NOS Code AGR / N0401	sampling for soil test <ul style="list-style-type: none"> Understand the Micro and Macro Nutrients in soil Understand the required fertilizer dosage for the nutrient enrichment in soil Understand the method of nitrogen fixation in soil Understand the various soil microorganisms beneficial for the nutrient enrichment in soil Use the bio fertilizer/organic manure in the cultivation of Solanaceous Crops Estimate the quantity & apply fertilizer at various stages in relation to NPK and other secondary nutrients. Maintain the record of application of fertilizers and intervals 	
5	Weed control & management in vegetable crops Theory Duration (hh:mm) 05:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code AGR /N0402	<ul style="list-style-type: none"> Understand the common weeds in Solanaceous crop cultivation Understand the hazards of weed in Solanaceous crop cultivation Adopt different weed control methods- mechanical & chemical Understand the use of chemical herbicides and bio- herbicides Apply the herbicides Understand and perform the Manual/mechanized weeding Perform soil solarisation & pasteurization Perform mulching 	White Board, Marker, Laptop, projector, chemicals, sprayer, weeding machine, sickle
6	Integrated Pest & Disease management in vegetable crops Theory Duration (hh:mm) 05:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code AGR /N0403	<ul style="list-style-type: none"> Understand the major pests and disease in Solanaceous Crops Understand the character & life cycle of different insect pests Understand the life stages of plants at which it is vulnerable to pests & diseases, symptoms of and precautionary measures to be adopted Follow the Package of Practice for the Solanaceous Crops Understand the suitable chemical for the insects, pest and diseases attack Identify, select and place the different insect traps in the field Understand the importance of Integrated Pest and Disease Management 	White Board, Marker, Laptop, projector, traps, chemicals, sprayer, mask, gloves

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Practice Integrated Pest and Disease Management- Mechanical, Biological & chemical methods Understand National and International standards on pesticide residues 	
7	Irrigation management in vegetable crops Theory Duration (hh:mm) 05:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code AGR / N0404	<ul style="list-style-type: none"> Understand the Water requirement for the cultivation of Solanaceous crop Plan & adopt suitable Irrigation method- irrigation channels, micro-irrigation etc Understand the importance of fertigation and perform as and when required Understand the soil texture, porosity etc Understand the effects of water clogging & poor drainage in the field Understand the required optimum moisture level in the field for Solanaceous crop cultivation Prepare Irrigation Schedule Perform the Irrigation Management 	White Board, Marker, Laptop, projector, irrigation equipments, hose, bucket, micro-irrigation system
8	Harvest & Post-harvest Management in solanaceous crops Theory Duration (hh:mm) 10:00 Practical Duration (hh:mm) 15:00 Corresponding NOS Code AGR / N0410	<ul style="list-style-type: none"> Do's and don'ts during crop harvesting Harvest the crop at appropriate stage & time Understand and practice the proper method of harvesting and handling of harvested crop Perform the sorting and grading of the harvested crop Understand the normal shelf life of the Solanaceous crop Understand the importance of Post harvest Management Ensure proper packaging & storage of produce Identify market & buyers for the produce Make arrangements for the Transportation 	White Board, Marker, Laptop, projector, harvester, storage bags, bag sealing machine/ tools, weighing machine, pre cooling chamber
9	Basic Farm Management Theory Duration (hh:mm) 05:00 Practical Duration	<ul style="list-style-type: none"> Estimate the cost of production of Solanaceous crop Estimate the required investment Practice Farm management- Soil testing, selection of crop variety, Crop Calendar, Crop rotation, intercrops, schedule for fertilizer, pesticide/chemical application, 	White Board, Marker, Laptop, projector, record keeping book

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	(hh:mm) 08:00 Corresponding NOS Code AGR /N9901	irrigation schedule, harvesting schedule etc <ul style="list-style-type: none"> Identify the nearby markets and keep update on the market prices Keep record on the investment and expenditures Calculate B:C ratio 	
10	Assimilating Market Information Theory Duration (hh:mm) 05:00 Practical Duration (hh:mm) 05:00 Corresponding NOS Code AGR /N9902	<ul style="list-style-type: none"> Understand the suitable market platform for Solanaceous crops Collect the Market information from the reliable sources Understand the right time, place for the market of the produce Analyze the market information Get acquainted with Agro advisory services facility available through SMS mobile, Radio, TV, etc. 	White Board, Marker, Laptop, projector
11	Maintain health & safety at the workplace Theory Duration (hh:mm) 05:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code AGR /N9903	<ul style="list-style-type: none"> Perform General safety Rules Gain Knowledge of various health hazards relevant to workplace and basic first aid training Understand the basic safety checks and other common reported hazards before all farm operation Understand, identify and study the use of equipment, processing machine and materials safely and correctly Understand and handle the emergency situation in workplace and during any farm operation 	White Board, Marker, Laptop, projector, Nose masks, first aid kit
	Total Duration: Theory Duration (hh:mm) 70:00 Practical Duration (hh:mm) 110:00	Unique Equipment Required: White Board, Marker, Laptop, projector, Record Keeping Book, chemicals, land leveller, digger, spade, weeder, sickle, mulching materials, insect traps, sprayer, mask, gloves, irrigation equipments, pre cooling chamber	

Grand Total Course Duration: **180 Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by **Agriculture Skill Council of India**)

Trainer Prerequisites for Job role :“Solanaeous Crop Cultivator” mapped to Qualification Pack: “AGR/Q0402, v1.0”

Sr. No.	Area	Details
1	Description	Trainer is responsible for providing the education and skills development training on Solanaeous Crop cultivation (tomato, egg plants, capsicum etc) from selection of crop variety to harvesting (includes procuring seed material, cultivation and intercultural operations, harvesting, marketing, etc)
2	Personal Attributes	Trainer should be Subject Matter Specialist. He/ She should have good communication and observation skill, leadership skill, practical oriented skill
3	Minimum Educational Qualifications	Diploma, Bachelor Degree in Agriculture/Horticulture Science Preferably
4a	Domain Certification	Certified for Job Role: “Solanaeous Crop Cultivator” mapped to QP: “AGR/Q0402, v1.0”. Minimum accepted score is 80%.
4b	Platform Certification	Certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/Q1402”. Minimum accepted score is 70%
5	Experience	<ul style="list-style-type: none"> • MSc (Horti/Agri) with relevant experience of 1 Year, • BSc (Horti/Agri) with relevant experience of 2 Years • Graduate with relevant experience of 3 + Years, • Diploma with relevant experience of 5+ Years

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Solanaceous Crop Cultivator
Qualification Pack	AGR/Q0402, 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 (600)	Out Of	Marks Allocation	
				Theory	Skills Practical
1.AGR/N0408 Seed selection & seedling production	PC1. identify various and appropriate variety (including hybrid) of solanaceous crops	60	10	5	5
	PC2. identify various vendors / suppliers (including government nurseries /department) of the seed that are certified		10	5	5
	PC3. procure seeds in appropriate quantity		5	2	3
	PC4. identify market rates for solanaceous crop seeds (such as tomato, capsicum,)		5	3	2
	PC5. identify soil nursery or tray method for growing seedlings		10	5	5
	PC6. plant the seed at correct depth and appropriate spacing		8	4	4
	PC7. water the seedling at appropriate time with appropriate method		8	4	4
	PC8. interact with agricultural experts for their guidance		4	2	2
			60	30	30
2.AGR/N0409 Soil preparation and transplanting in solanaceous crops	PC1. undertake soil testing at authorized centers	60	8	4	4
	PC2. prepare the land to get appropriate tilth		10	5	5
	PC3. prepare the land with ridges and furrows		6	3	3
	PC4. apply farm yard manure and fertilizers		15	9	6
	PC5. pre irrigate the land prior to transplanting		6	3	3
	PC6. transplant seedling at appropriate time		5	2	3
	PC7. transplant seedling at appropriate stage		5	2	3
	PC8. transplant seedling with appropriate spacing		5	2	3
			60	30	30
3.AGR/N0401 Soil nutrient management in vegetable crops	PC1.understand the basic macro & micro nutrients with their functions	90	20	10	10
	PC2.undertake testing of soil to determine its nutrient and fertilizer needs from authorized laboratory		15	8	7
	PC3.collect soil testing report		2	2	0
	PC4.select appropriate organic fertilizer including farm yard manure for its application		20	8	12
	PC5. apply organic and inorganic fertilizer in correct dosage and apt time		15	8	7

	PC6.apply vermin compost and interaction with its expert		18	9	9
			90	45	45
4.AGR/N0402 Weed control and management in vegetable crops	PC1.identify the types of weed in the crop	60	10	5	5
	PC2.maintain records of the weed and share it with experts		5	2	3
	PC3.explain clearly about the symptoms and get inputs from vegetable crop expert on weed management		6	3	3
	PC4.control weeds during ploughing		6	3	3
	PC5. undertake weeding process at appropriate time to avoid crop damage		5	2	3
	PC6. use bio herbicides for weed control wherever feasible		10	5	5
	PC7. use new & innovative methods of soil solarization& pasteurization		8	4	4
	PC8. use mechanized weed control equipment wherever available and applicable		10	5	5
			60	29	31
5.AGR/N0403 Integrated pest and disease management in vegetable crops	PC1. identify types of pests (cutworm, nematode, leaf miner fly, potato tuber moth, aphid) in vegetable crops	90	5	2	3
	PC2. identify stages of crop and pest incidence		5	3	2
	PC3. diagnose symptoms and extent of damage		6	3	3
	PC4. understand natural enemies of the pest such as lady bird, ground beetles, hoverfly and adopt them for pest control		6	3	3
	PC5. understand major vegetable crop diseases such as leaf spot, purple blotch, bacterial wilt, common scab, late blight and identify the specific disease in the crop		5	3	2
	PC6. identify crop stage and disease incidence calendar		5	3	2
	PC7. identify early symptoms of various types of diseases		6	3	3
	PC8. understand the different mode of transmissions of disease such implements, vectors, water, rain, win		5	3	2
	PC9. use of resistant varieties		5	3	2
	PC10. perform proper ploughing and pre irrigation for breaking down of residue (if any)		4	2	2
	PC11. undertake pruning of plant if affected by diseases (if need arises)		4	2	2
	PC12. perform crop rotation with suitable and recommended crops		5	2	3
	PC13. use various types of traps (mechanical and manual)		10	5	5
	PC14. use various types of biological,		9	4	5

	mechanical and chemical control knowing their advantages and disadvantages				
	PC15. use various sprays as recommended by State Agricultural University / Department / experts		10	5	5
			90	46	44
6.AGR/N0404 Irrigation management in vegetable crops	PC1. identify characteristics of good irrigation systems	60	10	5	5
	PC2. identify advantages & disadvantages of irrigation channels and watering through hose, buckets etc		10	5	5
	PC3. interact with micro irrigation expert and get feedback on the usage of specific applicable irrigation methods to be adopted		5	2	3
	PC4. ensure appropriate water supply at various life stages of the crop as per each stage requirement		5	3	2
	PC5. ensure spread of water in the entire field		5	2	3
	PC6. ensure proper water drainage		10	5	5
	PC7. adopt micro irrigation techniques (example: drip irrigation using appropriate equipments, sprinklers) based on the requirement of specific crops		10	5	5
	PC8. identify disease due to increase in moisture/water content and take measures to control them		5	3	2
			60	30	30
7.AGR/N0410 Harvest and post harvest management in solanaceous crop	PC1. harvest the crop at appropriate stage	90	10	5	3
	PC2. harvest the crop at right time		10	5	3
	PC3. harvest the crop based on use and distance from the market		8	4	4
	PC4. identify the appropriate harvesting method		10	5	0
	PC5. undertake grading of the crops		15	7	10
	PC6. undertake packing of the crops		15	6	10
	PC7. maintain ideal storage condition		15	9	7
	PC8. undertake marketing of the crop		7	4	0
			90	45	45
8.AGR/N9901 Basic Farm Management	PC1. choose the crop based on agro-climatic condition of the region	30	2	1	1
	PC2. take sample of the soil for testing		1	0	1
	PC3. perform intercropping with suitable and recommended crops (as per the main crop cultivated)		2	1	1
	PC4. perform crop rotation with suitable crops		2	1	1
	PC5. interact with agriculture / extension expert for crop planning		1	1	0

	PC6. choose crop based on the economic advantage		2	1	1
	PC7. maintain crop production activity record		1	1	0
	PC8. maintain crop calendars		1	1	0
	PC9. maintain calendars of weed		1	1	0
	PC10. maintain insect and pest calendar		2	1	1
	PC11. ascertain total cost of production (land, production practices, labour, equipment , fuel, administrative cost etc.)		2	1	1
	PC12. maintain records of investment and expenditure		2	1	1
	PC13. maintain necessary books of accounts		2	1	1
	PC14. identify government schemes and their eligibility for availing themselves of the same		2	1	1
	PC15. identify the nearest market		2	1	1
	PC16. identify local traders, mandis in the villages and nearby and compare the rates		2	1	1
	PC17. identify market rates of the produce season wise		2	1	1
	PC18. arrange cost-effective transportation of produce to the market		1	0	1
			30	16	14
9.AGR/N9902 Assimilating Market Information	PC1. understand the different sources of information at village-level through other farmers, neighbours, relatives, agricultural extension workers, agriculture specialists, concerned government and private departments like gram panchayat, co-operative societies and SHGs etc.	30	1	1	0
	PC2. identify different sources of information at market level through commission agents, mandisamitis and input dealers		1	1	0
	PC3. identify different sources of information through media sources like radio, newspapers, television, magazine internet, SMS in mobile phones etc.		1	0	1
	PC4. identify the appropriate sources of specific market information and proper ways to collect the required information		1	0	1
	PC5. identify the reliable source of information		1	0	1
	PC6. ascertain methods of collecting information through personal visit, telephone, internet and published reports, magazines and articles, workshops, attending seminars and training by agriculture extension service providers		2	1	1
	PC7. ascertain periodicity and cost of		2	1	1

	assessing market information				
	PC8. ascertain availability and non-availability of specific market information		1	0	1
	PC9. perform documentation for analyzing market information		1	0	1
	PC10. evaluate the authenticity of information received		2	1	1
	PC11. analyze the information for taking decision		2	1	1
	PC12. utilize market information for taking cost effective production decisions		2	1	1
	PC13. understand quality-wise and variety-wise prices of different products such as seeds, pest, fertilizer, etc		2	1	1
	PC14. use market information and decide on crop and area to be sown which could result in better productivity for the season		2	1	1
	PC15. utilize market information for taking effective pre-harvesting decisions like seed preparation, land preparation, nutrition management, weed management, pest and diseases management and irrigation management		2	1	1
	PC16. utilize market information for appropriate post-harvesting decision like drying, grading, bagging, transportation, processing and storage		2	1	1
	PC17. decide on marketing parameters like where to sell, when to sell, to whom to sell and what quantity to sell etc. which leads to profit		2	1	1
	PC18. understand benefits derived from market information		1	0	1
	PC19. make projections/future price movements through information sources		1	1	0
	PC20. understand price fluctuations in markets and take appropriate decision		1	1	0
			30	14	16
10.AGR/N9903 Health & Safety at the work place	PC1. undertake basic safety checks before operation of all machinery and vehicles and hazards are reported to the appropriate supervisor	30	2	1	1
	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.		2	1	1
	PC3. read and understand the hazards of use and contamination mentioned on the labels of pesticides/fumigants etc		2	1	1
	PC4. Assess risks prior to performing manual handling jobs, and work according to currently recommended safe practice.		2	1	1

PC5. use equipment and materials safely and correctly and return the same to designated storage when not in use		2	1	1
PC6. dispose of waste safely and correctly in a designated area		2	1	1
PC7. recognize risks to bystanders and take action to reduce risk associated with jobs in the workplace		3	2	1
PC8. Perform your work in a manner which minimizes environmental damage all procedures and work instructions for controlling risk are followed closely.		2	1	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.		2	1	1
PC11. follow emergency procedures to company standard / workplace requirements		2	1	1
PC12. use emergency equipment in accordance with manufacturers' specifications and workplace requirements		2	1	1
PC13. provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques		2	1	1
PC14. recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate		2	1	1
PC15. Report details of first aid administered in accordance with workplace procedures.		2	1	1
		30	15	15
TOTAL	600	600	300	300
Percentage Weightage:			50%	50%
Minimum Pass% to qualify (aggregate):			60%	