Model Curriculum

Quality Seed Grower

SECTOR : AGRICULTURE & ALLIED
SUB-SECTOR : AGRICULTURE INDUSTRIES
OCCUPATION : SEED PRODUCTION AND PROCESSING
REF ID : AGR/Q7101, V1.0
NSQF LEVEL : 4

Skill India

ASCI
Agriculture Skill Council of India

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National Skill Development Corporation
Transforming the skill landscape

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: '**Quality Seed Grower**' QP No. '**AGR/ Q 7101 NSQF Level 4**'

Date of Issuance: March 15th, 2015

Valid up to: March 31st, 2016

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

Authorised Signatory
(Agriculture Skill Council of India)

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Quality Seed Grower

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Quality Seed Grower", in the "Agriculture & Allied" Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	**Quality Seed Grower**		
Qualification Pack Name & Reference ID. ID	AGR/Q7101, v1. 0		
Version No.	1. 0	**Version Update Date**	
Pre-requisites to Training	No entry barrier, 5th standard pass preferable		
Training Outcomes	After completing this programme, participants will be able to: **Produce Quality Seeds:** General introduction to Seed Industry, Optimum conditions required for the production of breeder seed, foundation seed, and certified seed. **Grow and manage crop:** Inputs requirement, Preparation of field, sowing, boarder crops, pollination process, quality management, crop management **Maintain the quality of the produce (as prescribed in standards):** Time of Harvesting, Moisture level of the produce, method of drying, packing. **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 6 out of 6 National Occupational Standards (NOS) of "Quality Seed Grower" Qualification Pack issued by "Agriculture Skill Council of India".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	**Introduction** **Theory Duration** (hh:mm) 02:00 **Practical Duration** (hh:mm) 00:00 **Corresponding NOS Code** Bridge Module	• Understand the General Discipline in the class room (Do's & Don'ts) • Understand the Role of a seed grower • Understand and study the Scopes and Opportunities in Seed Industry • Study the Need of Quality seeds in Agriculture sector • Learn and practice Basic skills of communication • Learn and Practice Basic reading capabilities to enable reading of signs, notices and/or cautions at site.	White Board, Marker, Laptop, projector
2	**Collect information and resources for seed production** **Theory Duration** (hh:mm) 20:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** AGR/N7101	• Understand the Package of practices relevant to important main crops • Understand and procure basic requirements/inputs of seed production: Collect information about previous year filed history, breeder, certified or foundation seeds, source of seed availability, isolation distance, field inspection, rouging, fertilizers, tools, minimum seed standards etc. • Record Keeping: Documentation of the inputs required, received, output produced, sold, profit and loss • Estimate & Calculate the quantity of resources/inputs required as per the field size or supplied indent • Understand and perform differentiation of A, B and R line in Hybrid Seed production and understand their use • Understand each problematic stage in HSP just like, synchronization problem, supplementary pollination, use of growth regulators etc. • Gain knowledge o Seed production techniques specifically related to hybrid varieties of various crops	White Board, Marker, Laptop, projector, Record Keeping Book, receipts, voucher
3	**Prepare field and sow seeds** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 20:00	• Study and perform different type of soil, their structure, texture and composition, soil amendments and soil nutrient profile, time of sowing, optimum soil moisture level, etc • Identify, Select and use the tools and equipments for the land preparation • Predict favourable climatic condition for crop specific seed production • Understand and perform different method of tillage preparation, seed sowing techniques, mulching technique and other conservation practices	Marker, Laptop, projector, Soil testing kit, plastic bags, labels, plough, seed drill, leveler, tractor

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Corresponding NOS Code AGR/N7102	• Study and perform general and crop specific field standards/seed standards, isolation distance, off type/voluntary plant/ rouge selection, careful about mechanical mixture –all these are necessary for maintaining genetic purity • Upgrade the idea about site selection, season, seed -rate, row spacing/row ratio, synchronization, and other sowing and planting activity • Soil Sampling: Take soil samples in the field for Soil Testing • Perform soil treatment, seed treatment methodologies, and tillage practices before the sowing	
4	**Grow and manage seed crop** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 25:00 **Corresponding NOS Code** AGR/N7103	• Understand and practice complete scientific package and seed production of particular crops • Perform different management practices like nutrient/weed & weeding/irrigation/growth regulators spraying /fertilizer dosage/ pollination practice/ other management in seed production • Understand the Use of bio fertilizer/organic manure in the cultivation of seed crop • Acquire knowledge on Application of fertilizer based on STCR recommendation. Teaching the calculation of quantity of fertilizer to be applied at various stages in relation to NPK and other secondary nutrients. • Understand the Need based application of pesticides /fungicides • Study and practice disease and pest infected field, rouging of undesirable plants, pest control and other special practice • Inspection of Field: Know the importance of Field inspection and get an idea about number of total field inspection, surprise inspection and crop stage where inspection must be required	White Board, Marker, Laptop, projector, Sprayer, fertilizers, crop protection chemicals, irrigation tools &equipments, disposable bottles
5	**Harvest and thresh the seed crop** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 25:00 **Corresponding NOS Code** AGR/N7103	• Do's and don'ts during crop harvesting • Harvesting of the crop: crop is ready for harvest(Crop maturity), what should be the moisture content during harvesting, which row should be harvested first etc • Understand about the physical admixture during harvesting and threshing • Harvesting methods and handling of harvested crops Impart knowledge on seed contamination with weed seeds ,infested seeds ,other extraneous material during harvesting so as to maintain physical purity of seeds	White Board, Marker, Laptop, projector, Thresher, Harvesting tools and Equipments, container

Sr. No.	Module	Key Learning Outcomes	Equipment Required
6	**Post harvest management of seeds** **Theory Duration** (hh:mm) 13:00 **Practical Duration** (hh:mm) 20:00 **Corresponding NOS Code** AGR/N7105	• Post harvest management: farm storage/seed drying/conditioning/ pre-cleaning and cleaning/ seed treatment/packing and bagging • Impart knowledge about the control of moisture of seeds during various stages of post harvest namely drying, storing, packaging etc. • Proper seed storage (when ,how, where),different factor influence the storage, type of storage (long/medium/short) • Study and gain knowledge about guidelines of seed warehouse and different conventional and advanced seed storage structure • Perform Seed packaging: aware about different type of packaging materials/container, aware about seed moisture-temperature-relative humidity relationship • Perform Seed Treatments: different seed protectants (Fungicides-insecticides-botanicals-biocides-rhizobium etc.) • Practice Seed enhancement technique (seed pelleting/seed colouring/film coating) • Understand Storage Pest & Diseases and practice its management	White Board, Marker, Laptop, projector, Container, Storage infrastructure,-cool chamber, crate, polythene, bags, fungicides, insecticides, sprayer
7	**Maintain Health & Safety at the work place** **Theory Duration** (hh:mm) 10:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** AGR/N9903	• 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 90:00** **Practical Duration 110:00**	**Unique Equipment Required:** White Board, Marker, Laptop, projector, Record Keeping Book, receipts, voucher, Soil testing kit, plastic bags, labels, plough, seed drill, leveler, tractor, Sprayer, fertilizers, crop protection chemicals, irrigation tools &equipments, disposable bottles, Thresher, container, Storage infrastructure -cool chamber, crate, bags, fungicides, insecticides, Nose masks, first aid kit	

Grand Total Course Duration: **200 Hours, 0 Minutes**

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

Trainer Prerequisites for Job role: "Quality Seed Grower" mapped to Qualification Pack: "AGR/Q7101, v1. 0"

Sr. No.	Area	Details
1	**Description**	The individual at work cultivates breeder seeds to produce foundation seeds and foundation seeds to produce multiplication seeds of crops by undertaking recommended practices and methods.
2	**Personal Attributes**	The job requires the individual to have: good eyesight and observation ability, attention to details, ability to work independently as well as under expert's supervision, quality orientation, and health safety, willingness to wear protective gears and the stamina for long hours of work in different environmental conditions.
3	**Minimum Educational Qualifications**	Diploma, Bachelor Degree in Agriculture Science
4a	**Domain Certification**	Certified for Job Role: "Quality Seed Grower" mapped to QP: "AGR/Q7101, 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**	Post graduate with an experience of 1 Year, Graduate with experience of 3 + Years, Diploma with relevant experience of 5+ Years.

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Quality Seed Grower
Qualification Pack	AGR/Q7101, 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 canter based on this criteria
5	To pass the Qualification Pack, every trainee should score a minimum of 60% in aggregate and 40% in each NOS
6	The marks are allocated PC wise; however, every NOS will carry a weight age in the total marks allocated to the specific QP

Assessable Outcome	Assessment Criteria	Total Marks	Out of	Marks Allocation	
				Theory	Skills Practical
1. AGR / N7101 Collect information and resources for seed production	PC1. receive the instructions and work requirements from company's field supervisor	45	3	1	2
	PC2. understand standard practices and methods for quality seed growing		4	2	2
	PC3. understand the methods of using tools, equipments and personal protective gears for seed growing		2	1	1
	PC4. understand the standard precautions to be taken for quality seed growing		2	1	1
	PC5. understand the quality parameters on which seed crop will be evaluated and payment will be made to the seed grower		4	2	2
	PC6. sign a contract with the seed processor to produce seeds of predetermined quality and standard		3	1	2
	PC7. indent for breeder / foundation seeds, fertilizers, tools, equipments, personal protective gears, containers for collecting soil samples for testing and work instructions		4	2	2
	PC8. receive all the resources from the field supervisor		1	0	1
	PC9. document the materials received as per company's work instructions		4	2	2
	PC10. segregate the received material as per the work instructions		2	1	1
	PC11. unpack the material as per the requirement		2	1	1
	PC12. follow the standard precautions for handling the material like seed, fertilizers etc.		2	1	1
	PC13. store them as per instructions		3	1	2
	PC14. get complete understanding of producing the quality seeds as per predetermined quality and standard		3	1	2
	PC15. identify missing resources or their shortages for producing the seed yield as per the contract		3	1	2
	PC16. ensure proper handling and storage of received resources		3	2	1
	Total		**45**	**20**	**25**

Assessable Outcome	Assessment Criteria	Total Marks	Out of	Marks Allocation	
				Theory	Skills Practical
2. AGR / N7102 Prepare field and sow seeds	PC1. take multiple soil samples of the field from different parts as per instructions	50	4	1	3
	PC2. pack and label the soil samples and send them for lab testing to the company		4	1	3
	PC3. document as per the company's instructions		4	1	3
	PC4. carefully clean and plough the land as per instructions of the company		4	1	3
	PC5. receive the soil testing report from the company along with their recommendations for preparing the soil		1	1	0
	PC6. use right kind and quantity of fertilizer(s) to improve the soil fertility as recommended by the company		6	3	3
	PC7. prepare the field as per company's instructions		4	2	2
	PC8. get the field inspected by the field supervisor		2	2	0
	PC9. receive instructions from the field supervisor regarding timing of sowing seeds based on the local climatic conditions		2	2	0
	PC10. sow the seed crop with the method suggested by the field supervisor depending on soil, topography and climatic conditions		2	1	1
	PC11. sow seeds in rows keeping appropriate distance as per the work instructions		2	1	1
	PC12. prepare and plough the field so that the best possible seed bed is prepared		2	1	1
	PC13. ensure preparation of field about 2 weeks before sowing so that weed seed in the soil could germinate to form small weed plants which could be removed from the field		2	2	0
	PC14. harrow and cultivate the field to destroy young weed plants		3	3	0
	PC15. eliminate weed plants which would otherwise grow in with the seed crop		2	1	1
	PC16. sowing of seed crop with optimum rate(quantity) in a given piece of land, so that it gives high yield		2	1	1
	PC17. ensure proper documentation as per the company's SOP		4	1	3
	Total		**50**	**25**	**25**

Assessable Outcome	Assessment Criteria	Total Marks	Out of	Marks Allocation	
				Theory	Skills Practical
3. AGR / N7103 Grow and manage seed crop	PC1. get the seed crop inspected by the field supervisor	75	2	1	1
	PC2. receive instructions from the field supervisor regarding use of organic and inorganic fertilizers including farm yard manure		2	1	1
	PC3. apply organic and inorganic fertilizer in correct dosages on seed crop as advised by the field supervisor		4	2	2
	PC4. identify the types of weeds in the crop		4	2	2
	PC5. identify field patches infested with troublesome weeds which interfere with crops		2	1	1
	PC6. perform manual removal of weeds regularly while they are small		2	1	1
	PC7. apply bio-herbicides, weedicides and chemicals as advised by the field supervisor in prescribed quantity to control and remove weeds		4	2	2
	PC8. maintain records as per instructions		4	2	2
	PC9. inspect and diagnose early signs and symptoms of seed crop damage		4	2	2
	PC10. identify the extent of crop damage due to pests, insects and disease if any		3	1	2
	PC11. notify any damage to the crops to field supervisor		2	1	1
	PC12. apply chemical(s) on seed crop suggested by the field supervisor to make it disease free		4	2	2
	PC13. maintain records as per the work instructions		4	2	2
	PC14. inspect seed crop regularly and identify the time of irrigation		3	1	2
	PC15. check availability of irrigation channels in the field		2	1	1
	PC16. incorporate appropriate micro-irrigation techniques (such as drip irrigation) using appropriate equipments		2	1	1
	PC17. apply smaller amounts of water more often to maintain the optimum soil moisture in the field		2	1	1
	PC18. ensure proper water drainage		2	1	1
	PC19. maintain records as per the work instructions		4	2	2

Assessable Outcome	Assessment Criteria	Total Marks	Out of	Marks Allocation	
				Theory	Skills Practical
	PC20. ensure daily regular walking back and forth through a field to timely identify problems related to seed crop		3	1	2
	PC21. ensure appropriate and uniform application of fertilizers in prescribed doses		3	2	1
	PC22. ensure pulling out weeds without damaging the crop plants		3	1	2
	PC23. maintain uniform moisture in the soil		3	1	2
	PC24. ensure proper water drainage		3	1	2
	PC25. ensure proper documentation as per the company's SOP		4	2	2
	Total		**75**	**35**	**40**
4. AGR / N7104 Harvest and thresh the seed crop	PC1. ascertain that crop has matured for harvest	45	3	1	2
	PC2. get the seed crop inspected by the field supervisor		2	1	1
	PC3. receive instructions from the field supervisor for reaping the seed crop		2	2	0
	PC4. reap the crop as per company's set practices and methods		4	2	2
	PC5. maintain record as per instructions		3	1	2
	PC6. select appropriate method for threshing the seed crop as per instructions		2	1	1
	PC7. keep the seeds of one type of variety / crop completely separated from the other variety / crop		3	1	2
	PC8. ensure proper collection of seeds as per instructions		3	1	2
	PC9. maintain record as per instructions		3	0	3
	PC10. keep the threshed seeds separate from other seeds		2	2	0
	PC11. keep seeds in a way to prevent their contamination with undesirable materials		3	1	2
	PC12. put threshed seeds into bags provided by the company and label them as per instructions for easy identification		2	1	1
	PC13. ensure maturity of seeds before harvesting seed crop		1	1	0
	PC14. ensure harvesting the seed crop without damaging it		1	1	0
	PC15. ensure threshing seed crop effectively without incurring seed loss		1	1	0

Assessable Outcome	Assessment Criteria	Total Marks	Out of	Marks Allocation	
				Theory	Skills Practical
	PC16. ensure storage of different seed lots separately		1	1	0
	PC17. ensure that stack bags of one lot are not on top of a different lot		1	1	0
	PC18. ensure stacking of bags to any efficient storage height without causing weight or pressure damage to seed at the bottom		1	1	0
	PC19. ensure proper upright position of seed bags		1	1	0
	PC20. ensure that bags are not dropped-off during handling		1	1	0
	PC21. ensure that the storage place is spotlessly clean all the time		1	1	0
	PC22. ensure proper documentation as per the company's SOP		4	2	2
	Total		**45**	**25**	**20**
5. AGR / N7105 Post harvest management of seeds	PC1. identify appropriate time for sun-drying of seeds considering weather conditions and possibility of seed shattering	60	2	2	0
	PC2. select appropriate place for sun-drying the seeds		3	3	0
	PC3. open bags, spread seeds and sun-dry them by following procedures practices and methods suggested in instructions		5	2	3
	PC4. remove dust, debris, trash etc from dry seeds using graded sieves as per the instructions		7	3	4
	PC5. separate lightweight material and empty glumes by gentle winnowing		7	3	4
	PC6. spread the seeds on clean and well-lit surface to remove damaged seeds, seeds of different species etc. if an		9	3	6
	PC7. put dry and cleaned seeds in bags and label them as per instructions		9	3	6
	PC8. send seeds to company for further processing as per the instructions		2	0	2
	PC9. maintain the record as per the instructions		5	0	5
	PC10. ensure drying of seeds immediately after threshing them		2	2	0
	PC11. ensure seeds are dried up to the optimum level of moisture content in them		2	2	0

Assessable Outcome	Assessment Criteria	Total Marks	Out of	Marks Allocation	
				Theory	Skills Practical
	PC12. avoid breaking or damaging the seeds during post harvest management of seeds		3	3	0
	PC13. ensure proper cleaning of seeds before bagging them		2	2	0
	PC14. ensure proper documentation as per the company's SOP		2	2	0
	Total		**60**	**30**	**30**
6. AGR / N9903 Maintain 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	25	3	1	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.		3	1	2
	PC3. read and understand the hazards of use and contamination mentioned on the labels of pesticides/fumigants etc		3	1	2
	PC4. assess risks prior to performing manual handling jobs, and work according to currently recommended safe practice.		1	1	0
	PC5. use equipment and materials safely and correctly and return the same to designated storage when not in use		3	1	2
	PC6. dispose of waste safely and correctly in a designated area		1	1	0
	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	1	0
	PC9. report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger.		1	1	0
	PC10. follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to emergency.		1	1	0

Assessable Outcome	Assessment Criteria	Total Marks	Out of	Marks Allocation	
				Theory	Skills Practical
	PC11. follow emergency procedures to company standard / workplace requirements		1	1	0
	PC12. use emergency equipment in accordance with manufacturers' specifications and workplace requirements		3	1	2
	PC13. provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques		1	1	0
	PC14. recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate		1	1	0
	PC15. report details of first aid administered in accordance with workplace procedures.		1	1	0
			25	**15**	**10**
	TOTAL	**300**	**300**	**150**	**150**
	Percentage Weightage:			**50%**	**50%**
	Minimum Pass% to qualify (aggregate):			**60%**	

Agriculture Skill Council of India
K-59, South City-1, Gurgaon, Haryana-122018