Model Curriculum

QP Name: Seed Grower

QP Code: AGR/Q7106

Version: 1.0

NSQF Level: 2

Model Curriculum Version: 1.0

Table of Contents

Training Parameters

Sector	Agriculture
Sub-Sector	Agriculture Industries
Occupation	Seed Production and Processing
Country	India
NSQF Level	2
Aligned to NCO/ISCO/ISIC Code	NCO-2015/6130.0201
Minimum Educational Qualification and Experience	No formal education
Pre-Requisite License or Training	NA
Minimum Job Entry Age	NA
Last Reviewed On	29/09/2023
Next Review Date	29/09/2026
NSQC Approval Date	29/09/2023
QP Version	1.0
Model Curriculum Creation Date	30/09/2023
Model Curriculum Valid Up to Date	29/09/2026
Model Curriculum Version	1.0
Minimum Duration of the Course	210 Hours
Maximum Duration of the Course	210 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:

- Describe the process of preparing for growing seed crops.

- Demonstrate the process of sowing the seeds and maintaining the seed crops.

- Demonstrate the process of performing harvesting and post-harvest processing of the seed crop.

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
AGR/N7124: Prepare for growing crop seeds **NOS Version- 1.0** **NSQF Level- 2**	**15:00**	**15:00**	**0:00**	**0:00**	**30:00**
Module 1: Introduction to the role of a Quality Seed Grower	5:00	0:00	0:00	0:00	05:00
Module 2: Preparation for growing seed crops	10:00	15:00	0:00	0:00	25:00
AGR/N7125: Sow and maintain the seed crop **NOS Version- 1.0** **NSQF Level- 2**	**20:00**	**40:00**	**0:00**	**0:00**	**60:00**
Module 3: Process of sowing seeds and maintaining the seed crop	20:00	40:00	0:00	60:00	60:00
AGR/N7126: Perform harvesting and post-harvest processing of seed crop **NOS Version- 1.0** **NSQF Level- 2**	**30:00**	**60:00**	**0:00**	**0:00**	**90:00**
Module 4: Process of harvesting and post-harvest processing of seed crops	30:00	60:00	0:00	0:00	90:00
DGT/VSQ/N0101 Employability Skills	**30:00**	**00:00**	**0:00**	**0:00**	**30:00**

NOS Version-1.0 NSQF Level-2					
Module 5: Employability Skills	30:00	00:00	0:00	0:00	30:00
Total Duration	**95:00**	**115:00**	**0:00**	**0:00**	**210:00**

Module Details

Module 1: Introduction to the role of a Seed Grower
Bridge Module, Mapped to AGR/N7124 v1.0

Terminal Outcomes:

- Discuss the job role of a Seed Grower.

Duration: 05:00	Duration: 0:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Describe the size and scope of the agriculture industry and its sub-sectors. - Discuss the role and responsibilities of a Seed Grower. - Identify various employment opportunities for a Seed Grower.	
Classroom Aids	
Training kit - Trainer guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Preparation for growing seed crops

Mapped to AGR/N7124 v1.0

Terminal Outcomes:

- Describe the process of selecting and preparing the field for growing seeds.
- Demonstrate the process of testing seeds.
- Describe the process of planning seed sowing.

Duration: 10:00	Duration: 15:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Explain the criteria for selecting a field for seed production. - Explain the importance and process of getting a soil sample tested. - Describe the process of applying necessary treatment such as farmyard manure, compost and vermicompost to the field. - Explain the difference between foundation, breeder and certified seeds. - Explain the criteria for selecting and procuring seeds for production. - Explain the requirements for storing the procured seeds appropriately. - Describe the importance of ensuring that seed storage is free of pests and disease. - List various tools, equipment and Personal Protective Equipment (PPE) required for sowing the seeds and maintaining the seedlings**.** - Explain how to plan seed sowing.	- Demonstrate the process of extracting soil samples from the field for testing. - Show how to apply the necessary treatment such as farmyard manure, compost, and vermicompost to enhance soil fertility. - Demonstrate the process of ploughing and preparing the field for sowing. - Show how to conduct a seed test to ensure check the germination percentage and vigour of seeds. - Show how to apply the necessary treatment in the storage area to protect the seeds from pests and disease. - Prepare a sample record of the treatment applied in the storage. - Demonstrate the use of relevant tools, equipment and PPE.
Classroom Aids	
Training kit (Trainer guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Soil Testing Kit, Plastic Bags, Labels, Plough, Seed Drill, Leveler, Tractor etc.	

Module 3: Process of sowing seeds and maintaining the seed crop
Mapped to AGR/N7125 v1.0

Terminal Outcomes:

- Demonstrate the process of sowing the seeds.
- Describe the process of identifying and removing weeds.
- Demonstrate various practices to control pests and disease in the seed crop.

Duration: 20:00	Duration: 40:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Describe the process of sowing seeds and watering them. - Explain the importance of maintaining the recommended temperature and soil moisture to help the seeds germinate. - List the recommended fertilizers to be used on varieties of the seed crop. - Explain how to identify and remove the crop plants with undesirable characteristics to maintain the genetic purity of seeds as per the roughing method. - Explain how to identify varieties of weeds growing among seed crops. - List various signs of pest and disease infestation in seed crops. - Explain the importance of draining out excess water from the field to prevent the growth of pathogens.	- Demonstrate the process of sowing the seeds, maintaining the recommended planting depth and density for different seed varieties. - Demonstrate the isolation distance method to maintain the purity of the seed accessions at the pollination stage. - Show how to mount the soil near the root region of the seed crop plants to enhance their water and nutrient absorption capacity and help the plants to stand upright - Show how to apply a cover of mosquito net, paper bag or nylon stockings on the floral portion of the crop plants as per the bagging technique. - Demonstrate the process of identifying and removing varieties of weeds growing among the seed crop, both manually and mechanically. - Demonstrate the process of applying weedicides, pesticides, insecticides to control weeds, pests and disease. - Prepare a sample record of the fertilizers, weedicides, pesticides and insecticides used on seed crops.
Classroom Aids	
Training kit (Trainer guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Sprayer, Fertilizers, Crop Protection Chemicals, Irrigation Tools & Equipment, Disposable Bottles	

Module 4: Process of harvesting and post-harvest processing of seed crops
Mapped to AGR/N7126 v1.0

Terminal Outcomes:

- Demonstrate the process of harvesting varieties of the seed crop.
- Demonstrate the process of performing post-harvest activities.
- Demonstrate various practices for effective resource optimisation.
- Demonstrate various practices for effective waste disposal.

Duration: 30:00	Duration: 60:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- List the indicators of physiological maturity of a variety of seeds. - Explain the importance of selecting the dry season to harvest the seed crop to maximise the germination capacity of seeds. - Explain the criteria for selecting the manual or mechanical methods for harvesting varieties of the seed crop. - Explain the importance of protecting the seeds from contamination during harvesting and avoiding mixture with other types of seed. - Explain how to protect seeds from contamination and exposure to moisture during processing. - List varieties of packing material suitable for packing the processes seeds. - Explain the optimum temperature and humidity for storing the packed seeds. - Explain the importance of storing the same varieties of seeds together. - Explain the applicable requirements for the safe transportation of seeds. - Explain the benefits of resource optimisation. - Describe the methods of recycling and disposing different types of waste.	- Show how to assess if the seed crop plants have attained complete physiological maturity for being harvested. - Demonstrate the process of harvesting the seed crop ensuring minimum loss and damage to the seeds. - Demonstrate the process of threshing the harvested seed crop manually or mechanically to separate the seeds from the seed crop plants. - Demonstrate the process of wet and dry cleaning of seeds. - Demonstrate the process of winnowing the seeds to remove stem bits, petals, husks and other flower parts and debris mixed with them. - Show how to sieve seeds using sieves of different gauge sizes. - Show how to dry seeds mechanically using air blowers and check the moisture content in the seeds to ensure the required level of moisture. - Demonstrate the process of packing seeds in batches according to the variety. - Demonstrate various practices for effective and safe storage of packed seeds. - Demonstrate various practices to optimise the usage of various resources such as water and

	electricity.
	• Prepare a sample record of seeds harvested and processed.
	• Demonstrate the process of recycling and disposing of different types of waste in compliance with the applicable laws and regulations.

Classroom Aids

Training kit (Trainer Guide, Presentations)

Tools, Equipment and Other Requirements

Thresher, Harvesting Tools and Equipment, Container, Storage infrastructure, Cool Chamber, Crate, Polythene, Bags, Fungicides, Insecticides, Sprayer

Module 5: Employability Skills (30 hours)
Mapped to NOS DGT/VSQ/N0101 v1.0

Duration: 30:00
Key Learning Outcomes

Introduction to Employability Skills Duration: 1 Hour
After completing this programme, participants will be able to:
1. Discuss the importance of Employability Skills in meeting the job requirements

Constitutional values - Citizenship Duration: 1 Hour
2. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen.
3. Show how to practice different environmentally sustainable practices

Becoming a Professional in the 21st Century Duration: 1 Hours
4. Discuss 21st century skills.
5. Display positive attitude, self -motivation, problem solving, time management skills and continuous learning mindset in different situations.

Basic English Skills Duration: 2 Hours
6. Use appropriate basic English sentences/phrases while speaking

Communication Skills Duration: 4 Hour
7. Demonstrate how to communicate in a well -mannered way with others.
8. Demonstrate working with others in a team

Diversity & Inclusion Duration: 1 Hour
9. Show how to conduct oneself appropriately with all genders and PwD
10. Discuss the significance of reporting sexual harassment issues in time

Financial and Legal Literacy Duration: 4 Hours
11. Discuss the significance of using financial products and services safely and securely.
12. Explain the importance of managing expenses, income, and savings.
13. Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws

Essential Digital Skills Duration: 3 Hours
14. Show how to operate digital devices and use the associated applications and features, safely and securely
15. Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely

Entrepreneurship Duration: 7 Hours
16. Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges

Customer Service Duration: 4 Hours
17. Differentiate between types of customers
18. Explain the significance of identifying customer needs and addressing them

19. Discuss the significance of maintaining hygiene and dressing appropriately

Getting ready for apprenticeship & Jobs Duration: 2 Hours
20. Create a biodata
21. Use various sources to search and apply for jobs
22. Discuss the significance of dressing up neatly and maintaining hygiene for an interview
23. Discuss how to search and register for apprenticeship opportunities

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	*Specialization*	*Years*	*Specialization*	
Diploma	Agriculture/ Seed Technology	5	Seed Production and Processing	0		
Graduate		3	Seed Production and Processing	0		For the school Program minimum qualification of the Trainer should be Graduate. Their Teaching experience will be considered industry experience
Graduate	Agriculture/ Horticulture/ Botany/ Biotechnology/ Seed Technology	2	Seed Production and Processing	0		
Post Graduate	Agriculture/ Seed technology/ Genetics and Plant breeding/ Plant Biotechnology	0		0		

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role "**Seed Grower**", mapped to QP: "AGR/Q7106, v1.0", 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						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduation	Agriculture/ Agronomy/ Horticulture and related streams	5	Quality Seed production and related experience	0		Practical skills and knowledge required in Quality Seed Production practices
Post-graduation	Agriculture/ Agronomy/ Seed Science & Technology/ Horticulture and related streams	2	Quality Seed production and related experience	0		Practical skills and knowledge required in Quality Seed Production practices
PhD	Agriculture/ Agronomy/ Seed Science & Technology/ Horticulture and related streams	1	Quality Seed production and related experience	0		Practical skills and knowledge required in Quality Seed Production practices

Assessor Certification	
Domain Certification	Platform Certification
"**Seed Grower**", "AGR/Q7106, v1.0", 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. <u>Multiple Choice Questions</u>: To assess basic knowledge (Objective/Subjective)
2. <u>Viva:</u> To assess awareness on processes (Oral and/or written questioning)
3. <u>Practical:</u> 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 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 empanelled 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 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 more 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 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 offers a bouquet of tools for multi-dimensional evaluation of candidates covering language, cognitive skills, behavioural 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 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 standardization of the marking scheme.

Type of Evidence and Evidence Gathering Protocol:

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

- Geo Tagging 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 tool 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 assessor and proctor is 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 to 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 candidate shall be stored and available for review (retained for 5 years/ till the conclusion of the project or scheme)

References

Glossary

Term	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests
Key Learning	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).
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	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
NOS	National Occupational Standard (s)
NSQF	National Skills Qualifications Framework
OJT	On-the-job Training
QP	Qualifications Pack
PwD	People with Disability
PPE	Personal Protective Equipment