# Model Curriculum

## Seed Processing Worker

SECTOR: AGRICULTURE & ALLIED
SUB-SECTOR: AGRICULTURE INDUSTRIES
OCCUPATION: SEED PRODUCTION AND PROCESSING
REF ID: AGR/Q7102, V1.0
NSQF LEVEL: 3

Skill India

ASCI
Agriculture Skill Council of India

N·S·D·C 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: '**Seed Processing Worker**' QP No. '**AGR/ Q7102 NSQF Level 3**'

Date of Issuance: March 15th, 2015

Valid up to: March 31st, 2019

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

S.S. Ayog

Authorised Signatory
(Agriculture Skill Council of India)

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# Seed Processing Worker

CURRICULUM / SYLLABUS

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

| | | | |
|---|---|---|---|
| **Program Name** | **Seed Processing Worker** | | |
| **Qualification Pack Name & Reference ID. ID** | AGR/Q7102, v1.0 | | |
| **Version No.** | 1.0 | **Version Update Date** | |
| **Pre-requisites to Training** | No entry barrier | | |
| **Training Outcomes** | **After completing this programme, participants will be able to:**<br>• **Clean the seeds:** Identification of undesirable materials, cleaning of seeds, isolation of cleaned and uncleaned seed lots<br>• **Take sample for testing:** identify the heap/lot, random sampling, method of sampling, identify, select and use the instruments for sampling<br>• **Pack and store seeds:** Drying, Optimum moisture maintenance, seed treatment, packing and storing | | |

This course encompasses 5 out of 5 National Occupational Standards (NOS) of "Seed Processing Worker" Qualification Pack issued by "Agriculture Skill Council of India".

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---|---|---|---|
| 1 | **Introduction**<br><br>**Theory Duration**<br>(hh:mm)<br>5:00<br><br>**Practical Duration**<br>(hh:mm)<br>0:00<br><br>**Corresponding NOS Code** | • Understand General Discipline in the class room (Do's & Don'ts)<br>• Understand Role of a Seed Processing Worker<br>• Identification of lots<br>• Study and understand Grading Process and Standards<br>• Learn Basic skills of communication<br>• Learn Basic reading capabilities to enable reading of signs, notices and/or cautions at site. | Laptop, white board, marker, projector |
| 2 | **Clean and dry seeds**<br><br>**Theory Duration**<br>(hh:mm)<br>10:00<br><br>**Practical Duration**<br>(hh:mm)<br>15:00<br><br>**Corresponding NOS Code**<br>AGR / N7106 | • Understand the Basic principle of different drying,conditioning, pre cleaning and cleaning machine<br>• Practice physical seed purity testing procedure and understand seed purity components (pure seed, inert material and other crop seeds)<br>• Understand the working procedure and other details of Air screen cleaner and fine seed cleaning machine<br>• Study the different type of screen<br>• Study the seed drying principles and different method of seed drying process<br>• Understand the Relationship between seed moisture with different drying method<br>• Understand the Grading process and seed quality standards | Laptop, white board, marker, projector, seed cleaning machine, screener, dryer, Air screen cleaner |
| 3 | **Treat seeds with Chemicals**<br><br>**Theory Duration**<br>(hh:mm)<br>10:00<br><br>**Practical Duration**<br>(hh:mm)<br>20:00<br><br>**Corresponding NOS Code**<br>AGR/N7107 | • Study the different type of seed treatment methods<br>• Understand the Importance and advantage of seed treatment and practice seed treatment<br>• Study the Phages of seed enhancement technique<br>• Update about different seed treatment methods<br>• Understand and practice the composition of chemical for seed treatment<br>• Preparation and application of chemicals<br>• Practice Method of treated seed testing<br>• Understand and practice third generation seed treatment process | Laptop, white board, marker, projector, gloves, chemicals- pesticide, fungicide, etc |
| 4 | **Pack and label seeds** | • Understand different type of seed packaging materials, containers | Laptop, white board, marker, |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---|---|---|---|
| | **Theory Duration**<br>(hh:mm)<br>10:00<br><br>**Practical Duration**<br>(hh:mm)<br>20:00<br><br>**Corresponding NOS Code**<br>AGR/N7108 | • Practice Bulk seed Packing and packaging technique<br>• Study and Understand seed moisture ,temperature and RH on packed seed<br>• Gain knowledge about moisture vapour permeable, moisture resistant and moisture vapour-proof containers for seed packaging<br>• Learn the labeling procedure and labels information | projector, packaging material, labels |
| 5 | **Store Seeds**<br><br>**Theory Duration**<br>(hh:mm)<br>10:00<br><br>**Practical Duration**<br>(hh:mm)<br>10:00<br><br>**Corresponding NOS Code**<br>AGR/N7109 | • Do's and don'ts during seed storage<br>• Understand the Principle of seed storage physiology<br>• Study and understand Storage behavior of orthodox and Recalcitrate type of seed<br>• Study the Harrington thumb rules for seed storage<br>• Get to know about Relationship between seedmoisture, Temp. and RH during storage<br>• Classification of long , medium and short lived seeds and their storage patterns (Time, Duration and storage condition)<br>• Get to know about different biotic and abiotic factor influenced the storage of seeds<br>• Pest and disease management in store house/godown | Laptop, white board, marker, projector, store house, vehicle |
| 6 | **Maintain safe work environment**<br><br>**Theory Duration**<br>(hh:mm)<br>10:00<br><br>**Practical Duration**<br>(hh:mm)<br>10:00<br><br>**Corresponding NOS Code**<br>AGR/N9906 | • Understand the basic safety checks and other common reported hazards before all farm operation<br>• Use theequipment ,processing machine and materials safely and correctly<br>• Handle emergency situation in workplace and during any farm operation<br>• Practice general safety procedures follow during processing unit | Laptop, white board, marker, projector, shoes, gloves, first aid kit |
| | **Total Duration:**<br><br>**Theory Duration**<br>(hh:mm)<br>**55:00**<br><br>**Practical Duration** | **Unique Equipment Required:**<br>Laptop, white board, marker, projector, cleaning machines, dryer, screener, packaging materials, labels, store house, vehicles, shoes, gloves, first aid kit | |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---|---|---|---|
| | (hh:mm)<br>**75:00** | | |

Grand Total Course Duration: **130Hours, 0 Minutes**

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

## Trainer Prerequisites for Job role: "Seed Processing Worker" mapped to Qualification Pack: "AGR/Q7102, v1.0"

| Sr. No. | Area | Details |
|---|---|---|
| 1 | **Description** | Trainer will educate the trainees on seed cleaning activities, standards, packaging, storing practices etc |
| 2 | **Personal Attributes** | Trainer should have good eyesight and observation ability, leadership skills, communication skill, practical oriented skills. He/ she should be subject Matter Expert |
| 3 | **Minimum Educational Qualifications** | Diploma |
| 4a | **Domain Certification** | Certified for Job Role: "Seed Processing Worker" mapped to QP: "AGR/Q7102, v1.0". Minimum accepted score is 80%. |
| 4b | **Platform Certification** | Certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q0102". Minimum accepted score is 80% |
| 5 | **Experience** | • M Sc (Agriculture / Horticulture / Botany)<br>• B. Sc. (Agriculture / Horticulture / Botany) with 1 year of relevant work experience and 2 years of total work experience<br>• Graduate with 3 years of relevant work experience<br>• Diploma with 3 years of relevant work experience<br>• 10+2 with 5 years of relevant work experience |

## Annexure: Assessment Criteria

| Assessment Criteria | |
|---|---|
| Job Role | Seed Processing Worker |
| Qualification Pack | AGR/Q7102, 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 | 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). |
| 4 | Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion. |
| 5 | To pass the Qualification Pack , every trainee should score a minimum of 50% of aggregate marks to successfully clear the assessment. |
| 6 | In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack. |

| Assessable Outcome | Assessment Criteria | Total Marks | Out Of | Marks Allocation | |
|---|---|---|---|---|---|
| | | | | Theory | Skills Practical |
| 1.AGR/N7106 Clean and dry seeds | PC1.receive seeds from various seed growers as per the SOP | 75 | 2 | 2 | 0 |
| | PC2. empty the contents of each received bag into a labeled bin immediately after receiving them | | 1 | 0 | 1 |
| | PC3. assess seeds by visually inspecting them | | 2 | 2 | 0 |
| | PC4. check for immature, shriveled, broken, diseased, moisture-damaged, infested, insect-damaged seed of the seed crop, seed of weeds and wild plants etc. | | 2 | 1 | 1 |
| | PC5. return the seeds back to seed grower if they look visibly unacceptable as per company's SOP | | 1 | 1 | 0 |
| | PC6. take samples from seeds received for testing if they look visibly acceptable | | 2 | 1 | 1 |
| | PC7. label and send seeds samples to lab technician as per company SOP | | 2 | 1 | 1 |
| | PC8. keep the seeds for pre-cleaning if undesirable material like dust, small stones, | | | | |
| | dirt balls, trash, leaves, pieces of stems, awns from the seed heads, pieces of maize cobs, pieces of seed pods, dead insects etc are found in them | | 2 | 0 | 2 |
| | PC9. keep those seed bins, which are clean and does not require pre-cleaning, separately | | 1 | 0 | 1 |
| | PC10. send clean seeds for fine cleaning | | 1 | 0 | 1 |
| | PC11. remove dust, debris, trash etc. from un-cleaned seeds using graded sieves as per SOP | | 3 | 1 | 2 |
| | PC12. separate lightweight material and empty glumes by gentle winnowing | | 2 | 1 | 1 |
| | PC13. remove undesirable materials using the seed blower as per SOP | | 2 | 1 | 1 |

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|---|---|---|---|---|---|
| | PC14. spread the seeds on a flat well-lit surface of contrasting colour such as an illuminated table to remove damaged seeds, seeds of different species etc. if any | | 2 | 1 | 1 |
| | PC15. send the seeds for fine cleaning | | 1 | 1 | 0 |
| | PC16. clean the seeds further by using 'Fine Cleaning Machine' as per the SOP | | 3 | 1 | 2 |
| | PC17. clean the seeds further by using 'Air Screen Cleaner' as per the SOP | | 3 | 1 | 2 |
| | PC18. receive test report from the lab technician | | 1 | 1 | 0 |
| | PC19. if moisture level is within limits as mentioned in the SOP, then send the seeds for further processing | | 1 | 1 | 0 |
| | PC20.if moisture level in seeds is higher than acceptable level, then send the seeds to seed drying area / room | | 1 | 1 | 0 |
| | PC21. place the moist seeds in seed drying area / room as per the SOP | | 2 | 1 | 1 |
| | PC22. undertake drying of seeds like traditional or sun drying and mechanical or artificial drying depending upon available resources, type of seed, seed quantity and work instructions in the SOP | | 2 | 0 | 2 |
| | PC23. take random samples of seeds for testing the moisture level after drying them for time specific to different variety of crops as mentioned in the SOP | | 2 | 0 | 2 |
| | PC24. stop drying the seeds and send them for further processing once the moisture level comes down to optimum as mentioned in the SOP | | 2 | 2 | 0 |
| | PC25. ensure selection of healthy and viable seeds for processing | | 1 | 1 | 0 |
| | PC26. ensure proper pre-cleaning of seeds by removing appendages and particles such as trash, stone clods and dust | | 1 | 1 | 0 |
| | PC27. clean the seed in a way that causes least damage to the seeds and does not waste good seeds | | 1 | 0 | 1 |
| | PC28. use appropriate seed cleaning equipments like seed blower, graded shieves, scalpers, debearders and huller-scarifier etc | | 1 | 0 | 1 |

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| | PC29. use appropriate seed drying equipments like Dehumidifier, seed-drying cabinets, dried silica gel etc. and methods for drying the seeds to assure quality | | 1 | 0 | 1 |
| | PC30. ensure that all seed must dry uniformly | | 1 | 1 | 0 |
| | PC31. prevent mixing of seed from different accessions during cleaning and drying of seeds | | 1 | 1 | 0 |
| | **Total** | | **50** | **25** | **25** |
| 2.AGR/N7107 Treat seeds with chemical | PC1. receive the required chemicals like pesticides, insecticide and fungicide from the supervisor as per the types of crop and varieties of seed | 75 | 1 | 1 | 0 |
| | PC2. keep the different type and form of chemicals as per the SOP in safe manner at designated place | | 2 | 1 | 1 |
| | PC3. wear the protective gears as per the SOP | | 2 | 1 | 1 |
| | PC4. prepare the chemical(s) for application on seeds as per the SOP | | 4 | 2 | 2 |
| | PC5. prepare the tools and equipments for manual application of chemical(s) on seeds | | 2 | 1 | 1 |
| | PC6. switch on the 'Seed Treating Barrel' or 'Mixer' in mechanized seed processing units as per the SOP | | 2 | 1 | 1 |
| | PC7. fill the prepared chemical(s) manually in the appropriate tool or equipment safely | | 3 | 1 | 2 |
| | PC8. apply chemical(s) manually on seeds using appropriate tool or equipment as per the SOP | | 4 | 2 | 2 |
| | PC9. take sample of treated seeds, label them and send to lab for quality check | | 4 | 2 | 2 |
| | PC10. send the treated seeds for further processing | | 1 | 1 | 0 |
| | PC11. fill the 'Seed Treating Barrel' or 'Mixer' with prepared chemical(s) safely as per SOP | | 3 | 1 | 2 |
| | PC12. operate the machine after feeding seeds in it at appropriate rate as per the SOP | | 3 | 1 | 2 |
| | PC13. take samples of treated seeds, label them and send to lab for quality check | | 3 | 1 | 2 |

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|---|---|---|---|---|---|
| | PC14. send the treated seeds for further processing | | 1 | 0 | 1 |
| | PC1. apply accurately measured quantities of chemical(s) as described in the SOP | | 1 | 1 | 0 |
| | PC2. ensure that a given amount of the chemical is applied uniformly over a given amount of seed | | 1 | 1 | 0 |
| | PC3. ensure proper documentation as per the company's SOP | | 3 | 2 | 1 |
| | **Total** | | **40** | **20** | **20** |
| 3.AGR/N7108 Pack and label seeds | PC1. receive treated seeds from the seed treatment area | **60** | 1 | 0 | 1 |
| | PC2. receive the test report from lab and check that all the quality parameters of the seeds are in-conformity with the SOP | | 1 | 0 | 1 |
| | PC3. make arrangements of seeds storage materials like plastic bags, bins etc. | | 3 | 2 | 1 |
| | PC4. weigh seeds for packaging to use suitable packaging materials as per company SOP | | 3 | 1 | 2 |
| | PC5. select appropriate packaging materials like plastic bags, containers and bins etc. depending on seed variety as per company SOP | | 2 | 2 | 0 |
| | PC6. pack in a way avoiding any damage to the seeds | | 5 | 2 | 3 |
| | PC7. pack seeds in right quantity as recommended | | 5 | 2 | 3 |
| | PC8. put appropriate seal to packets, bags, containers and bins as per the SOP | | 4 | 2 | 2 |
| | PC9. keep record as per the SOP | | 3 | 1 | 2 |
| | PC10. undertake labeling of packed seeds with self or computer generated self adhesive labels as per company SOP | | 5 | 2 | 3 |
| | PC11. check label should have type of seed, quantity of seeds, season of harvest, date of packaging, expiry date, lot number, name of chemicals with which seeds were treated, caution statement, storage precautions and safe disposal of untreated seeds | | 4 | 4 | 0 |

| | | | | | |
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| | PC12. check for any deficiencies and damages in seeds packaging material and sealing of it | | 2 | 2 | 0 |
| | PC13. move the packets for storage | | 1 | 0 | 1 |
| | PC14. ensure that seeds from different seasons are not mixed | | 2 | 1 | 1 |
| | PC15. ensure that bags/containers/bins do not contain seeds more than their capacity | | 2 | 1 | 1 |
| | PC16. ensure that label contain proper identification, instructions for maintaining the quality and traceability information | | 2 | 1 | 1 |
| | PC17. maintain work area and equipment in a clean and orderly condition | | 2 | 1 | 1 |
| | PC18. ensure proper documentation as per the company's SOP | | 3 | 1 | 2 |
| | **Total** | | **50** | **25** | **25** |
| 4.AGR/N7109 Store seeds | PC1. ensure the cleanliness of the environment around storage room / godown as per the SOP | **60** | 2 | 1 | 1 |
| | PC2. ensure the cleanliness of the storage room / godown as per the SOP | | 2 | 2 | 0 |
| | PC3. ensure that storage room is free from insects, fungi and rodents | | 2 | 2 | 0 |
| | PC4. ensure that storage room is dry, cool and well ventilated | | 2 | 2 | 0 |
| | PC5. ensure that there is no leakage of rain water in the facility | | 1 | 1 | 0 |
| | PC6. ensure adequate lighting and drainage facilities | | 1 | 1 | 0 |
| | PC7. ensure adequate stacking facilities like poles, wooden platforms etc. | | 2 | 2 | 0 |
| | PC8. ensure security and fire fighting arrangements | | 2 | 2 | 0 |
| | PC9. receive seed bags/bins/containers in the receiving area and check that they are not open or damaged | | 1 | 0 | 1 |
| | PC10. stack bags/bins/containers on poles / wooden platforms leaving 10-15 cm of air space under them | | 3 | 0 | 3 |

| | | | | | |
|---|---|---|---|---|---|
| | PC11. keep bags in a way that air space is maintained between bags/bins/containers and walls & roof of the store room / godown | | 3 | 0 | 3 |
| | PC12. keep bags in upright position or as mentioned in the SOP | | 3 | 0 | 3 |
| | PC13. stack different seeds lots separately | | 2 | 0 | 2 |
| | PC14. ensure that no other feed; fertilizer; salt; medicines or chemicals are stored alongside seed bags / bins / containers in the store room / godown | | 3 | 2 | 1 |
| | PC15. keep complete and up-to-date records of the seed inventory as per the SOP | | 5 | 1 | 4 |
| | PC16. ensure storage of different seed lots separately | | 2 | 1 | 1 |
| | PC17. ensure that stack bags of one lot are not on top of a different lot | | 2 | 2 | 0 |
| | PC18. ensure stacking of bags to any efficient storage height without causing weight or pressure damage to seed at the bottom | | 2 | 1 | 1 |
| | PC19. ensure that different area of the store room / godown are properly marked for easy traceability of seed bags/bins/containers | | 2 | 1 | 1 |
| | PC20. ensure proper upright position of seed bags/bins/containers | | 2 | 1 | 1 |
| | PC21. ensure that bags are not dropped-off during handling | | 2 | 2 | 0 |
| | PC22. ensure that the storage place is spotlessly clean all the time | | 2 | 1 | 1 |
| | PC23. ensure proper documentation as per the company's SOP | | 2 | 0 | 2 |
| | **Total** | | **50** | **25** | **25** |
| 5.AGR/N9906 Maintain safe work Environment | PC1. comply with general safety procedures of the company | **30** | 6 | 6 | 0 |
| | PC2. follow standard safety procedures while handling equipment, hazardous material or tool | | 4 | 3 | 1 |
| | PC3. check parts of the workplace and take preventive actions like spraying and other steps to protect from leakages, water logging, pests, fire, pollution, etc. | | 2 | 0 | 2 |

| | | | | | |
|---|---|---|---|---|---|
| | PC4. ensure no accidents and damages at the workplace, reporting of any breach of company safety procedure | | 2 | 2 | 0 |
| | PC5. keep the workplace organized, swept, clean and hazard free | | 2 | 0 | 2 |
| | PC6. attend fire drills and other safety related workshops organized at the workplace | | 2 | 0 | 2 |
| | PC7. be aware of first aid, evacuation and emergency procedures | | 2 | 2 | 0 |
| | PC8. be alert of any events and do not be negligent of any safety procedures to be followed | | 2 | 2 | 0 |
| | PC9. avoid accidents while using hazardous chemicals, machines, sharp tools and equipments | | 2 | 0 | 2 |
| | PC10. use safety materials such as protective gear, goggles, caps, shoes, etc. (as applicable with workplace) | | 4 | 0 | 4 |
| | PC11. handle heavy and hazardous materials with care and using appropriate tools and handling equipment such as trolleys, ladders | | 2 | 0 | 2 |
| | | | **30** | **15** | **15** |
| | **TOTAL** | **220** | **220** | **110** | **110** |
| | **Percentage Weightage:** | | | **50%** | **50%** |
| | **Minimum Pass% to qualify (aggregate):** | | | **50%** | |