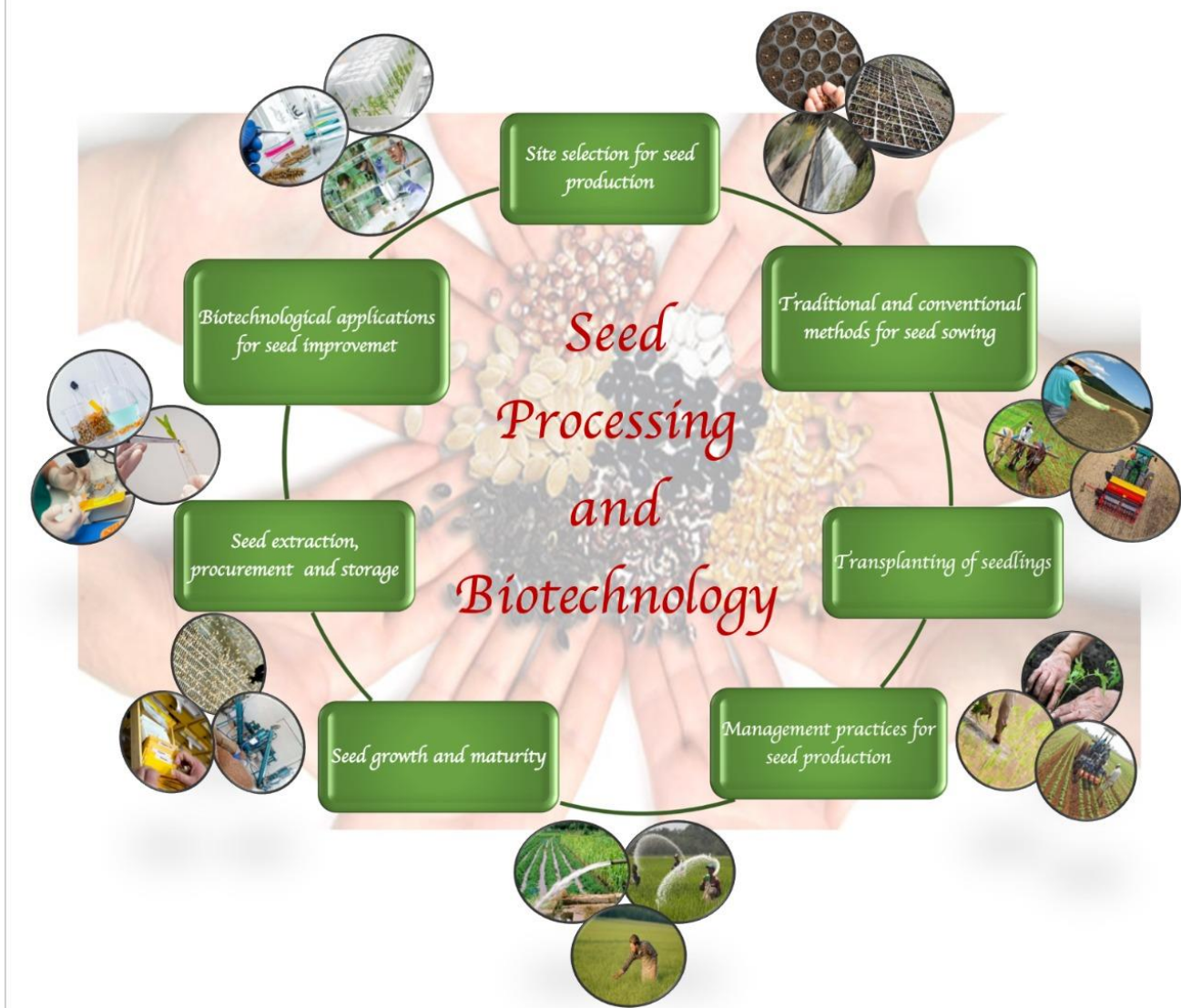




# National Competency Standards Level-4 For "Seed Processing & Biotechnology" (Seed Processing Plant Supervisor)





### **ACKNOWLEDGEMENT**

National Vocational and Technical Training Commission (NAVTTC) extends its gratitude and appreciation to many representatives of business, industry, academia, government agencies, Provincial TEVTAs, Sector Skill Councils and trade associations who spared their time and expertise to the development and validation of National Vocational Qualifications (Competency Standards, Curricula, Assessments Packs and related material) for the trade of Seed processing & Biotechnology. This work would not have been possible without the technical support of the personnel of the above said organizations. The core team for Qualification Development of various trades comprised of:

- *Mr. Naeem Siddique, Director General (Skills Standards and Curricula) NAVTTC*
- *Mr. Sikandar Masood, Director (Skills Standards and Curricula), NAVTTC*
- *Mr. Muhammad Ishaq, Deputy Director (Skills Standards and Curricula), NAVTTC*
- *Mr. Muhammad Aasim, Assistant Director (Skills Standards and Curricula), NAVTTC*

NAVTTC team under the supervision of Dr. Nasir Khan, Executive Director, NAVTTC, initiated development of CBT & A based qualifications for 200 traditional / hi-tech trades under the Prime Minister "skill for all" Program.

Nobody has been more important in the pursuit of this project than Dr. Nasir Khan, Executive Director, NAVTTC, whose patronage and support remained there throughout the development process. Special thanks to Syed Javed Hassan Chairman NAVTTC who made it happen in this challenging time.



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## 1. Introduction

Pakistan has a semi-industrialized economy with a well-integrated agriculture sector. The agriculture sector contributes 18.5 percent to the country's GDP. Despite its impressive and continuously growing agricultural production, the country is still facing high levels of food insecurity. The global community, through the Sustainable Development Goals, has committed to achieving a world free of hunger by 2030. This will require the sustained production of about 60 percent more food than at present, food that is both nutritive and innocuous, and produced in ways that do not mutilate the environment. Under most scenarios, there are no surplus land or water resources to deploy to increase agricultural production. In fact, the most sustainable path to this goal is through enhanced productivity in a sustainable way. That means producing more yield with fewer external inputs. To support this, farmers need to use well-adapted crop varieties. A country's seed delivery system is best conceived as a value chain composed of interrelated components – from the development of well-adapted and nutritious crop varieties and their adoption by farmers, through the production and distribution, including sales of quality seeds and planting materials and to on-farm utilization of these inputs by farmers. The effective functioning of the value chain, enabled by the applicable national seed laws, policies, strategies, action plans and regulations, depends largely on the extent to which the stakeholders are able to put into practical use the relevant knowledge and skills required for producing quality seeds and planting materials. Seeds coming from the field after harvest usually contain undesirable materials which must be removed during processing to obtain clean seed suitable for planting. Seed enterprises often acquire specialized equipment for processing their seed, and they need technical guidance on the effective use and maintenance of the various pieces of equipment in order to enhance performance, minimize breakdowns and ensure prolonged machine life. A scientific knowledge of Biotechnology plays a key role in improving quality of seed which will be available to farmers by facilitating them with new ways to combat weeds, insects and other agronomic challenges, and produce more food, feed and fuel to better fulfil customer requirements. Biotechnology helps agriculture sector by following more sustainable approach, both economically and environmentally.

Therefore, the importance of knowledge related to seed processing and biotechnology through the latest techniques makes this diploma more valuable. Market demands for qualified workers are therefore a need of time and can only be addressed by developing specific skills standards in partnership with all stakeholders and industry experts. Recognizing this fact, the National Vocational and Technical Training Commission (NAVTTTC) has developed the National Vocational Qualifications Framework (NVQF) for seed processing and biotechnology. These competency standards have been developed by the Qualification Development Committee (QDC) and validated by the



## National Competency Standards for "Seed Processing & Biotechnology"



Qualification Validation Committee (QVC) with representation from the country's leading departments, NPSL, FAS, PU Lahore, UVAS, UAF, PCSIR and ARI KPK.

### 2. Purpose of the Qualification

The aim of this qualification is to set high and applicable professional standards for all stake holders in agriculture sector. The basic goals of establishing these credentials are as follows:

1. Equip with the latest Seed processing techniques
2. Improve trainees' professional competence
3. Provide opportunities for recognition of non-formal or informal skills
4. Raise standard and efficacy of scientific training and assessment
5. Improve crop production through the best management skills
6. Enable the existing workforce to learn new technologies and methods
7. Producing a skilled workforce for off-season vegetable production

Code	Competency Standard	Category	Level	Credit
0811SP&B03-A	Establish and Maintain the Occupational Health and Safety System	Generic	4	5
0811SP&B03-B	Perform advance Communication	Generic	4	5
0811SP&B03-C	Perform Collection of Procured Seed at Processing Plant	Technical	4	8
0811SP&B03-D	Operate basic Seed Processing Machines	Technical	4	18
0811SP&B03-E	Perform Drying and Cleaning of Seed at Processing Plant	Technical	4	9
0811SP&B03-F	Perform Seed Treatments	Technical	4	20
0811SP&B03-G	Perform Seed Sorting	Technical	4	15
0811SP&B03-H	Perform Seed Grading	Technical	4	15
0811SP&B03-I	Perform Seed Extraction	Technical	4	20
0811SP&B03-J	perform Basic Green Skills	Technical	4	5



### 3. Date of Validation

The level 4 of National qualification on Seed processing & Biotechnology has been validated by the Qualifications Validation Committee (QVC) members on June 21-25, 2021 at PITAC, Lahore and will remain valid for ten years i.e., **25 June, 2031**

### 4. Date of Review

The level 4 of National qualification on Seed processing & Biotechnology has been validated by the Qualifications Validation Committee (QVC) members on June 21-25, 2021 at PITAC, Lahore and shall be reviewed after three years i.e., 24-06-2024.

### 5. Codes of Qualifications

The International Standard Classification of Education (ISCED) is a framework for assembling, compiling and analyzing cross-nationally comparable statistics on education and training. ISCED codes for these qualifications are assigned as follows:

ISCED Classification for Seed Processing & Biotechnology Level 4	
ISCED Code	Description
<b>Seed Processing Plant Supervisor(Level 4)</b>	
0811SP&B03-A	Establish and Maintain the Occupational Health and Safety System
0811SP&B03-B	Perform advance Communication
0811SP&B03-C	Perform Collection of Procured Seed at Processing Plant
0811SP&B03-D	Operate basic Seed Processing Machines
0811SP&B03-E	Perform Drying and Cleaning of Seed at Processing Plant
0811SP&B03-F	Perform Seed Treatments
0811SP&B03-G	Perform Seed Sorting
0811SP&B03-H	Perform Seed Grading
0811SP&B03-I	Perform Seed Extraction
0811SP&B03-J	Perform Basic Green Skills



## 6. Members of Qualification Development Committee

The following members participated in the qualification development process on 26<sup>th</sup> to 30<sup>th</sup> April 2021 at PITAC, Lahore.

S#	Name	Designation
1.	Mr. Awais Waheed	Research Associate, Agronomy Department, AU Rawalpindi.
2.	Dr. Sumaira Maqsood	Assistant Professor – Faculty of Agricultural Sciences, PU Lahore
3.	Mr. Amir Rehman	Assistant Director, KPK Seed Corporation, Peshawar KPK.
4.	Mr. Adnan Zahid	Lecturer – Faculty of Agricultural Sciences, PU Lahore
5.	Ms. Hina Ashraf	PhD Scholar – Faculty of Agricultural Sciences, PU Lahore
6.	Mr. Muhammad Abdul Basit	Fast Agro Chemicals, Lahore
7.	Ms. Noor ul Ain	M.phil Scholar, Lahore
8.	Mr. Umair Khan	Plant Breeding & Genetics Expert, Tara Group Lahore
9.	Mr. Muhammad Asif	Master Trainer(Agriculture Sector), Lahore
10.	Mr. Muzammil Usman Khan	Green Lands Pvt Ltd Lahore
11.	Hafiz Muhammad Waqas Amjad	Green Gold Agri Seed Pvt Ltd Lahore
12.	Mr. Muhammad Ahmad	Mercury Seeds Lahore
13.	Ms. Samia Amir Hamza	M.Phil. Scholar, GCU Faisalabad
14.	Engr. Danish Khan	DACUM Facilitator
15.	Mr. Muhammad Ishaq	Deputy Director/ Coordinator –(Skills Standards and Curricula) NAVTTC HQ





## 7. Members of Qualification Validation Committee

The following members participated in the qualification validation process on 12-01-2021 to 16-01-2021 at PITAC, Lahore.

S#	Name	Designation
1.	Mr. Awais Waheed	Research Associate, Agronomy Department, AU Rawalpindi.
2.	Dr. Sumaira Maqsood	Assistant Professor – Faculty of Agricultural Sciences, PU Lahore
3.	Mr. Amir Rehman	Assistant Director, KPK Seed Corporation, Peshawar KPK.
4.	Mr. Muhammad Abdul Basit	Fast Agro Chemicals, Lahore
5.	Ms. Hina Ashraf	PhD Scholar – Faculty of Agricultural Sciences, PU Lahore
6.	Hafiz Muhammad Waqas Amjad	Green Gold Agri Seed Pvt Ltd Lahore
7.	Ms. Samia Amir Hamza	M.Phil. Scholar, GCU Faisalabad
8.	Mr. Muhammad Hashim	Training and Development Officer, Agrilla Seeds Faisalabad
9.	Mr. Shoukat Ali Rana	PBTE, Representative
10.	Mr. Liaqat Ali Jamhro	Director S-TEVTA
11.	Mr. Mushtaq Ahmad	Dy. Director Training, P-TEVTA Representative
12.	Ms. Hadia Maqsood	Faculty of Agricultural Sciences, PU Lahore
13.	Ms. Noor ul Ain	M.Phil. Scholar, Lahore
14.	Engr. Danish Khan	DACUM Facilitator
15.	Mr. Muhammad Ishaq	Deputy Director/ Coordinator – (Skills Standards and Curricula) NAVTTC HQ

## 8. Entry Requirements

The entry requirement for this qualification would be SSC.



## 9. Detail of Competency Standards

### Seed Processing Plant Supervisor

#### 0811SP&B03-A: Establish and Maintain the Occupational Health and Safety System

**Overview:** This competency standard covers the skills and knowledge required to establish and maintain the occupational health and safety system.

Competency Units	Performance Criteria
<b>Cu1.</b> Carryout Risk assessment at workplace	<b>P1.</b> Identify potential hazards at workplace <b>P2.</b> Evaluate the risk <b>P3.</b> Take corrective/preventive action to mitigate the risk <b>P4.</b> Record your findings <b>P5.</b> Review the risk assessment
<b>CU2.</b> Follow emergency response protocol/procedure	<b>P1.</b> Identify emergency exits at workplace <b>P2.</b> Select suitable positions for the relevant equipment <b>P3.</b> Identify assembly area at workplace <b>P4.</b> Follow procedure and instructions to evacuate the building <b>P5.</b> Report immediately at designated assembly area in case of emergency
<b>CU3.</b> Perform safe storage and disposal of waste	<b>P1.</b> Identify different types of waste material <b>P2.</b> Identify types of containers to store the different types of waste material <b>P3.</b> Use required labels on storage containers <b>P4.</b> Store the waste materials according to standards <b>P5.</b> Identify types of waste bins <b>P6.</b> Dispose- off waste material according to the safety procedure
<b>CU4.</b> Maintain ergonomics condition at workplace	<b>P1.</b> Follow standard working posture/position at workplace <b>P2.</b> Follow standard procedure to provide sufficient light at workplace <b>P3.</b> Use ergonomic workstations to avoid muscle fatigue



### **Knowledge & Understanding.**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

**K1.**Standard working posture/position at workplace

**K2.**Standard procedure for sufficient light at workplace

**K3.**Types of noises at workplace

**K4.**Types of hazardous waste

**K5.**Emergency protocol/procedures for fire, hazardous chemical spillage, major power failure, terrorism activities and natural disasters

**K6.**Current safety /emergency principles and practices at workplace

**K7.**Types of waste materials

### **Critical Evidence(s) Required**

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- ✓ Perform mock drill for collection and safe storage of waste material
- ✓ Perform mock drill for safe disposal of waste material

### **TOOLS AND EQUIPMENT**

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	White board
2.	Multimedia
3.	Internet
4.	Computer system
5.	PPES
6.	Pencil
7.	Notebook



## 0811SP&B03-B: Perform Advance Communication

**Overview:** This competency standard covers the skills and knowledge required to perform advance communication

Competency Units	Performance Criteria
<b>CU1.</b> Demonstrate Professional skills	<b>P1.</b> Demonstrate different modes of communication: ✓ Speaking ✓ Reading ✓ Writing ✓ Listening <b>P2.</b> Demonstrate presentation skills through multimedia etc. <b>P3.</b> Develop CV according requirements <b>P4.</b> Develop interview skills according to job requirement
<b>CU2.</b> Plan and Organize work	<b>P1.</b> Identify task requirements <b>P2.</b> Plan steps to complete tasks <b>P3.</b> Review planning and organizing process <b>P4.</b> Organize work as per task requirement
<b>CU3.</b> Conduct Professional Activities Ethically	<b>P1.</b> Identify the ethical problems <b>P2.</b> Identify affected parties and their interests <b>P3.</b> Evaluate each solution using the interest those involves

### Knowledge & Understanding.

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- K1.**Modes of communication
- K2.** Types of communication skills
- K3.**Direct and indirect communication methods
- K4.**Interview techniques
- K5.**Assessment and trainees feedback methods

### Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- ✓ Prepare report to plan and organize work asper job assigned



- ✓ Develop CV for the post of crushing plant technician/supervisor

### **TOOLS AND EQUIPMENT**

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Pen
2.	Note book
3.	Computer system
4.	Printer



## 0811SP&B03-C: Perform Collection of Procured Seed at Processing Plant

**Overview:** This competency standard covers the skills and knowledge required to perform Collection of seed at processing plant

<b>Competency Units</b>	<b>Performance Criteria</b>
<b>CU1.</b> Prepare for collection of procured seed	<b>P1.</b> Collect procurement details <b>P2.</b> Arrange tools and equipment according to requirement <b>P3.</b> Maintain collection sites according to procurement details <b>P4.</b> Follow safety standards according to SOPs
<b>CU2.</b> Receive procured seed	<b>P1.</b> Arrange collection material according to procured seed <b>P2.</b> Receive procured seed according to SOPs <b>P3.</b> Maintain record
<b>CU3.</b> Maintain collection site	<b>P1.</b> Follow sanitation of collection site <b>P2.</b> Maintain required environmental conditions <b>P3.</b> Follow health and safety guidelines

### **Knowledge & Understanding.**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- K1.** Handling of stock Collection mechanism
- K2.** Health and safety principles involved in operations

### **Critical Evidence(s) Required**

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- Maintain condition for collection site
- Maintain collection sites

### **TOOLS AND EQUIPMENT**



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The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Hygrometer
2.	Seed Storage Structure
3.	Air distribution System
4.	Heated Air-drying System
5.	Dehumidifier
6.	Management and maintenance tools
7.	L.S.U Dryer
8.	Raw seed
9.	Seed processing plant
10.	Notebooks
11.	Stationary
12.	First Aid kits
13.	PPEs



## 0811SP&B03-D: Operate Basic Seed Processing Machineries

**Overview:** This competency standard covers the skills and knowledge required to perform basic operations through seed processing machineries.

<b>Competency Units</b>	<b>Performance Criteria</b>
<b>CU1.</b> Prepare for Seed processing operations	<b>P1.</b> Arrange pre-requisites required for seed processing machineries. <b>P2.</b> Perform pre-checks <b>P3.</b> Report malfunctioning of machines to supervisor. <b>P4.</b> Plan equipment utilization for seed processing <b>P5.</b> Follow safety standards.
<b>CU2.</b> Operate seed processing machines	<b>P1.</b> Perform operations through seed cleaning machines according to SOPs <b>P2.</b> Perform operations through seed drying machines according to SOPs <b>P3.</b> Perform operations through seed graders according to SOPs <b>P4.</b> Follow health and safety guidelines <b>P5.</b> Maintain records
<b>CU1.</b> Perform maintenance of basic processing machineries	<b>P1.</b> Arrange tools and material <b>P2.</b> Check performance of all tools and equipment <b>P3.</b> Perform sanitization of tools and equipment as per standard. <b>P4.</b> Calibrate the tools and equipment properly <b>P5.</b> Perform trouble shooting <b>P6.</b> Follow standard safety checks before and after use of machinery

### **Knowledge & Understanding.**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- K1.** Acclimatize with various steps involved in seed processing operations.
- K2.** Understand basic operations involved seed processing.
- K3.** Standard operating procedures for required task.
- K4.** Health and safety principles involved in operations.





### Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- Perform examination of operating machines
- Adhere to safety standard involved in process.

### TOOLS AND EQUIPMENT

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Scalper
2.	Dehumidifier
3.	Grain separator cleaning machine
4.	Sheller
5.	Air classifier
6.	Dehullers
7.	Management and maintenance tools
8.	Destoners
9.	First Aid kits
10.	Sanitization chemical
11.	PPEs



## 0811SP&B03-E: Perform Drying and Cleaning of Seed at Processing Plant

**Overview:** This competency standard covers the skills and knowledge required to Perform Drying and Cleaning of Seed at Processing Plant

Competency Units	Performance Criteria
<b>CU1.</b> Perform cleaning of raw seed	<b>P1.</b> Arrange tools and equipment <b>P2.</b> Perform pre cleaning of seed as work instructions <b>P3.</b> Perform fine cleaning of seed <b>P4.</b> Maintain record
<b>CU2.</b> Prepare for drying	<b>P1.</b> Collect and submit seed sample for moisture test <b>P2.</b> Prepare seed for drying according to lab report <b>P3.</b> Maintain record
<b>CU3.</b> Perform Drying with Air distribution system	<b>P1.</b> Arrange tools and equipment <b>P2.</b> Dry seed according to air distribution system <b>P3.</b> Follow standard safety checks before and after drying.

### Knowledge & Understanding.

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- K1** Seed cleaning
- K2** Seed drying
- K3.** Knowledge of seed graders
- K4.** Procedure for processing machineries
- K5.** Equipment calibration
- K6.** Seed cleaning techniques at processing plant

### Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- Perform cleaning of raw seed at processing plant
- Perform seed drying at processing plant
- Perform seed drying at processing plant by using different types of air distribution system

### TOOLS AND EQUIPMENT

The tools and equipment required for this competency standard are given below:

#### **S. No. Items**

- |    |             |
|----|-------------|
| 1. | White board |
|----|-------------|



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2.	Multimedia
3.	Internet
4.	Computer system
5.	Tools/equipment/Machinery
6.	Cleaning material
7.	Heated air seed distribution system
8.	Continuous flow dryers
9.	Seed graders
10.	Seed dryers
11.	Sampling bags
12.	Processing plant
13.	Air seed distribution system
14.	First Aid kits
15.	PPEs



## 0811SP&B03-F: Perform Seed Treatment

**Overview:** This competency standard covers the skills and knowledge required to perform seed treatment

Competency Units	Performance Criteria
<b>CU1.</b> Prepare seed treatment solutions	<b>P1.</b> Arrange tools/equipment /chemical <b>P2.</b> Wear PPEs <b>P3.</b> Prepare solutions for applications as per SOPs <b>P4.</b> Follow health and safety guidelines <b>P5.</b> Handle chemicals according to SOPs
<b>CU2.</b> Apply Solutions Manually	<b>P1.</b> Arrange tools/equipment /chemical <b>P2.</b> Treat seed as per SOPs <b>P3.</b> Collect and submit sample of treated seed for quality check <b>P4.</b> Maintain record
<b>CU3.</b> Apply Solutions Mechanically	<b>P1.</b> Arrange tools/equipment /chemical <b>P2.</b> Treat seed mechanically as per SOPs <b>P3.</b> Collect and submit sample of treated seed for quality check <b>P4.</b> Maintain record
<b>CU4.</b> Perform storage of treated seed	<b>P1.</b> Arrange tools/equipment <b>P2.</b> Perform storage of treated seed according to SOPs <b>P3.</b> Collect and submit sample of treated seed for quality check <b>P4.</b> Maintain record
<b>CU5.</b> Perform seed coating by different biological and natural products	<b>P1.</b> Prepare for work <b>P2.</b> Perform beneficial fungal coating <b>P3.</b> Perform bacterial inoculum coating <b>P4.</b> Perform PGPR's (Plant growth promoting rhizobacteria) media coating <b>P5.</b> Perform seed coating with nutrients (macro and micronutrients) <b>P6.</b> Perform seed coating with natural products

### **Knowledge & Understanding.**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:



- K1. Manual seed treatment
- K2. Seed quality check
- K3. Mechanically seed treatment
- K4. Mechanical seed treatment methods
- K5. Record keeping

### Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- Apply seed treatment mechanically
- Store treated seed
- Perform seed coating by different methods

### TOOLS AND EQUIPMENT

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	Scalpers
2.	Debearder
3.	Separators
4.	Buckhorn machine
5.	Sheeler
6.	Shakers
7.	Sieve
8.	Management and maintenance tools
9.	Brushes
10.	First Aid kits
11.	PPEs
12.	Glass wares
13.	Autoclave



## 0811SP&B03-G: Perform Seed Sorting

**Overview:** This competency standard covers the skills and knowledge required to understand and identify basic operations of seed sorting process.

Competency Units	Performance Criteria
<b>CU1.</b> Prepare for seed sorting	<b>P1.</b> Arrange tools and equipment for sorting <b>P2.</b> Perform pre checks for required machinery <b>P3.</b> Calculate production requirement according to demand <b>P4.</b> Schedule activities according to production demand <b>P5.</b> Collect seed for sorting <b>P6.</b> Maintain Records <b>P7.</b> Follow safety measures according to workplace safety guidelines
<b>CU2.</b> Execute seed sorting operations	<b>P1.</b> Arrange machines/tools/equipment according to sorting requirement <b>P2.</b> Wear PPEs <b>P3.</b> Perform sorting operation according to work instructions <b>P4.</b> Segregate sorted seed according to work instructions <b>P5.</b> Perform post-checks for required machinery
<b>CU3.</b> Maintain Record	<b>P1.</b> Maintain record of seed sorting (Type of seeds, supplier details, quality parameters) <b>P2.</b> Maintain records for wasted seed <b>P3.</b> Maintain stock register according to standard work instructions

### Knowledge & Understanding.

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- K1.** Seed sorting procedures
- K2.** Seed sorting
- K3.** Sorting machineries



**K4.** Standard operating procedures for required task

**K5.** Health and safety principles involved in operations

### Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- Perform seed sorting
- Perform basic operations involved in seed sorting
- Adhere to safety standard involved in process

### TOOLS AND EQUIPMENT

The tools and equipment required for this competency standard are given below:

S. No.	Items
14.	Scalpers
15.	Debearders
16.	Separators
17.	Buckhorn machine
18.	Seed Sorter
19.	Shakers
20.	Sieve
21.	Management and maintenance tools
22.	Brushes
23.	First Aid kits
24.	PPEs



## 0811SP&B03-H: Perform Seed Grading

**Overview:** This competency standard covers the skills and knowledge required to understand and identify basic operations of seed grading machineries using different tools and implements.

<b>Competency Units</b>	<b>Performance Criteria</b>
<b>CU1.</b> Prepare for seed grading	<b>P1.</b> Arrange tools and equipment for sorting <b>P2.</b> Perform pre-checks for required machinery <b>P3.</b> Follow safety measures according to workplace safety guidelines <b>P4.</b> Calculate production requirement according to demand <b>P5.</b> Schedule activities according to production demand <b>P6.</b> Collect sorted seed for grading <b>P7.</b> Maintain Records
<b>CU2.</b> Execute seed grading operations	<b>P1.</b> Arrange machines/tools/equipment according to grading requirement <b>P2.</b> Perform grading operation according to work instructions <b>P3.</b> Segregate graded seed according to work instructions <b>P4.</b> Maintain records

### **Knowledge & Understanding.**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- K1.** Seed grading procedures
- K2.** Understand the basic knowledge of grading machineries
- K3.** Standard operating procedures for required task
- K4.** Health and safety principles involved in operations

### **Critical Evidence(s) Required**

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- Perform seed grading operations





- Adhere to safety standard involved in process

## **TOOLS AND EQUIPMENT**

The tools and equipment required for this competency standard are given below:

S. No.	Items
5.	Separators
6.	Buckhorn machine
7.	Sheeler
8.	Knockers
9.	Seed grader
10.	Air screen cleaner
11.	Management and maintenance tools
12.	Brushes
13.	First Aid kits
14.	PPEs



## 0811SP&B03-I: Perform Seed Extraction

**Overview:** This competency standard covers the skills and knowledge required to perform seed extraction

Competency Units	Performance Criteria
<b>CU1.</b> Prepare for seed extraction	<b>P1.</b> Arrange tools/equipment and material for required extraction <b>P2.</b> Perform pre-checks for required machinery <b>P3.</b> Follow safety measures according to workplace safety guidelines
<b>CU2.</b> Execute Seed Extraction Methods	<b>P1.</b> Perform manual extraction <b>P2.</b> Perform fermentation <b>P3.</b> Perform mechanical extraction <b>P4.</b> Perform chemical method

### Knowledge & Understanding.

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- K1. Methods of seed extraction
- K2. Pre and post checks for seed extraction machinery
- K3. Record keeping
- K4. Health and safety principles involved in operations.
- K5. Manual extraction of seed
- K6. Procedure for seed fermentation
- K7. Procedure for mechanical extraction
- K8. Procedure for seed extraction through chemicals

### Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- Perform manual extraction
- Perform mechanical extraction
- Perform chemical method



## **TOOLS AND EQUIPMENT**

The tools and equipment required for this competency standard are given below:

<b>S. No.</b>	<b>Items</b>
1.	Moisture meter
2.	Dehumidifier
3.	Power tools
4.	Storage bag
5.	Management and maintenance tools
6.	Mechanical fan
7.	Chemicals for seed extraction
8.	Seed extraction machine
9.	First Aid kits
10.	PPEs
11.	Seed extraction tool kit





## 0811SP&B03-J: Perform Basic Green Skills

**Overview:** This competency standard covers the skills and knowledge required to perform Basic green skills

Competency Units	Performance Criteria
<b>Cu1.</b> Manage sustainability of materials used at site	<b>P1.</b> Select sustainable raw materials as per requirement <b>P2.</b> Follow standard procedure to manage systems (waste, energy, water) <b>P3.</b> Perform impact quantification of used material at site
<b>CU2.</b> Manage site waste	<b>P1.</b> Identify various types of waste at site <b>P2.</b> Sort and categorize reusable waste <b>P3.</b> Dispose unusable waste as per set standards <b>P4.</b> Place reusable material at designated storage area <b>P5.</b> Transport waste material to designated place

### Knowledge & Understanding.

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:

- K1.Environmental degradation
- K2.Types of raw materials at site
- K3.Types of waste
- K4.Waste reduction techniques
- K5.Concept of 6 R approach (Reduce, Reuse, Recycle, Repair, Renew, and Rethink)
- K6.Reusable materials
- K7.Recyclable materials
- K8.Methods for disposal of unusable materials
- K9.Just-in-time (JIT) approach

Basic knowledge of green energy resources (solar, biogas, natural light, rainwater, wind energy etc.)

### Critical Evidence(s) Required



The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- ✓ Manage sustainability of materials used at site

### **TOOLS AND EQUIPMENT**

The tools and equipment required for this competency standard are given below:

S. No.	Items
1.	White board
2.	Multimedia
3.	Internet
4.	Computer system
5.	PPES
6.	Pencil
7.	Notebook

