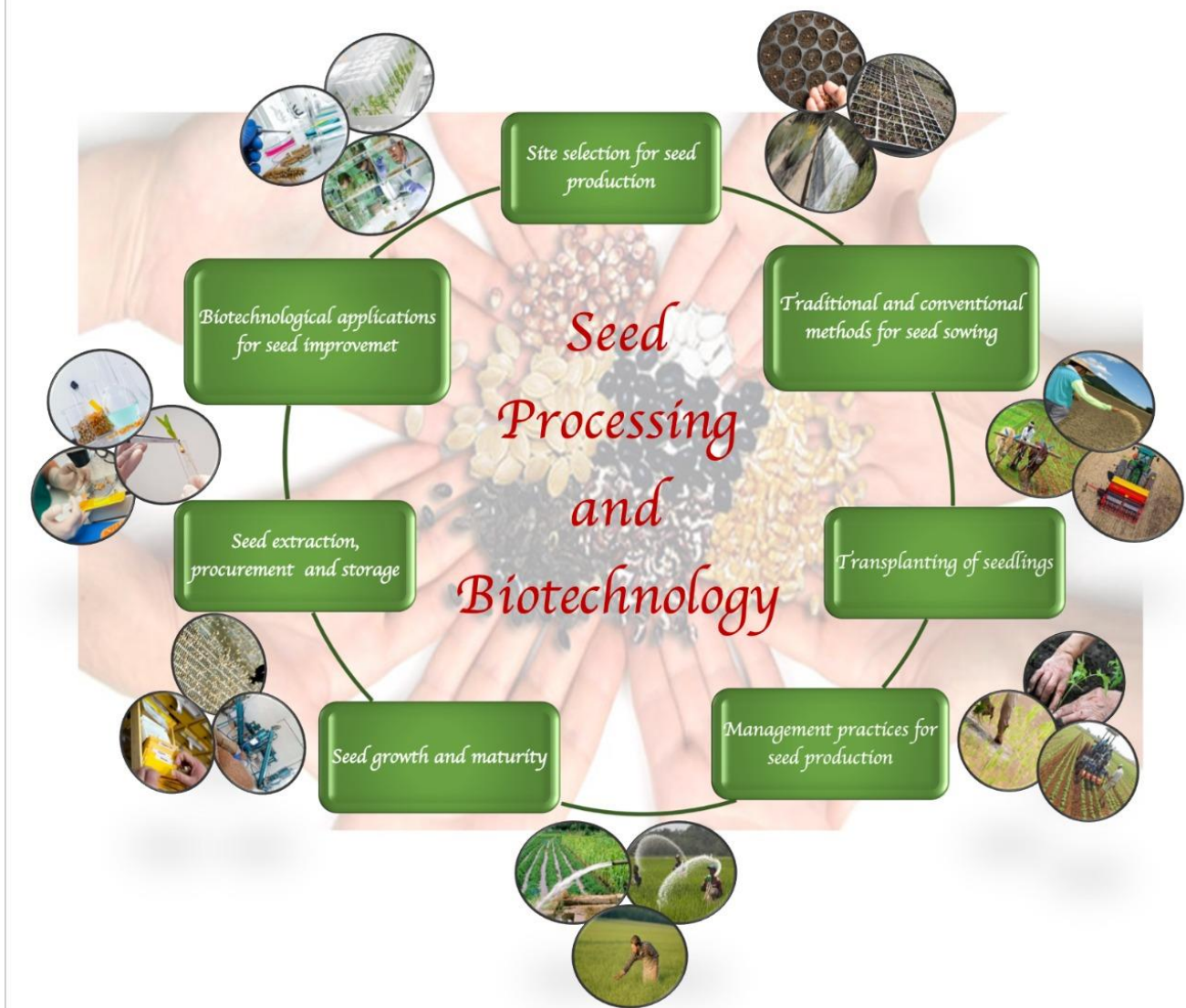




National Competency Standards Level-3 For "Seed Processing & Biotechnology" (Seed Procurement Assistant)





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 Asim, 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 happened in this challenging time.



Table of Contents

1. Introduction	3
2. Purpose of the Qualification.....	5
4. Date of Validation	5
5. Date of Review.....	5
6. Codes of Qualifications	5
7. Members of Qualification Development Committee	6
8. Members of Qualification Validation Committee.....	7
9. Entry Requirements	8
10. Detail of Competency Standards	9
1. Seed Procurement Assistant.....	Error! Bookmark not defined.
0811SP&B02-A- Maintain Safety at Site.....	Error! Bookmark not defined.
0811SP&B02 -B-Work in a Team Environment	12
0811SP&B02-C- Perform Seed Sampling	Error! Bookmark not defined.
0811SP&B02-D- Perform Seed Procurement.....	Error! Bookmark not defined.
0811SP&B02-E- Perform Seed Transportation	18
0811SP&B02-F- Perform Basic Operations for Warehouse Management	20
0811SP&B02-G- Manage Inventory of Material.....	23



National Competency Standards for “Seed Processing & Biotechnology”



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 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

3. Date of Validation

The level 2 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 2 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:



National Competency Standards for "Seed Processing & Biotechnology"



ISCED Classification for Seed Processing & Biotechnology Level 3	
ISCED Code	Description
Seed Procurement Assistant (Level 3)	
0811SP&B02-A	Maintain Safety at Site
0811SP&B02-B	Work in a Team Environment
0811SP&B02-C	Perform Seed Sampling
0811SP&B02-D	Perform Seed Procurement
0811SP&B02-E	Perform Seed Transportation
0811SP&B02-F	Perform Basic Operations for Warehouse Management
0811SP&B02-G	Manage Inventory of Material



6. Members of Qualification Development Committee

The following members participated in the qualification development process on 26th to 30th 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

Code	Competency Standard	Category	Level	Credit
0811SP&B02-A	Maintain Safety at Site	Generic	3	8
0811SP&B02-B	Work in a Team Environment	Generic	3	3
0811SP&B02-C	Perform Seed Sampling	Technical	3	8
0811SP&B02-D	Perform Seed Procurement	Technical	3	14
0811SP&B02-E	Perform Seed Transportation	Technical	3	9
0811SP&B02-F	Perform Basic Operations for Warehouse Management	Technical	3	12
0811SP&B02-G	Manage Inventory of Material	Technical	3	6



Seed Procurement Assistant

0811SP&B02-A: Maintain Safety at Site

Overview: This competency standard covers the skills, knowledge and understanding required to maintain safety at site.

Competency Units	Performance Criteria
CU1. Maintain safe work condition at site	You must be able to: P1. Recognize the safety signs and symbols P2. Identify potential hazards at work site P3. Identify the risk of slip, trip and fall at work place P4. . Perform fall protection measures as per job requirements P5. Label and store chemicals as per Material Safety Data Sheet (MSDS)
CU2. Perform fire fighting	P1. Identify source of fire. P2. Identify classes of fire P3. Raise fire alarms P4. Select suitable fire extinguishers P5. Check expiry of fire extinguisher P6. Check wind direction P7. Locate emergency exits P8. Perform PASS (Pull, aim, squeeze and sweep) on fire extinguisher
CU3. Carry out first aid treatment	P1. Follow COVID-19 SOP's P2. Identify basic elements for first aid kit P3. Maintain a fully stocked first aid kit P4. Check expiry date of medicines P5. Perform mock first aid treatment for minor injuries

Knowledge & Understanding



National Competency Standards for "Seed Processing & Biotechnology"



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

- Safety signs at work place
- Fall protection measures
- Unsafe act and unsafe conditions
- Hazardous materials and relevant safety procedures
- Fire triangle
- Principles of fire fighting
- Source of fire
- Classes of fire
- Firefighting techniques
- Types of fire extinguisher
- First aid procedure for minor cut
- Components of first aid kit

Critical Evidence(s) Required

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

- ✓ Perform first aid treatment for minor cut
- ✓ Identify the potential hazards and apply control measures

TOOLS AND EQUIPMENT

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

S. No.	Items
1.	PPES
2.	Multimedia
3.	White board
4.	Pencil
5.	Notebook
6.	Erasers
7.	White board markers



0811SP&B02-B. Work in a Team Environment

Overview: This competency standard covers the skills, knowledge and understanding required to work in a team environment

Competency Units	Performance Criteria
CU1. Obtain and convey Workplace information	You must be able to: P1. Assess the specific and relevant information from the appropriate sources P2. Convey the information using the appropriate medium and ideas P3. Use appropriate non- verbal communication P4. Identify appropriate lines of communication with supervisors and colleagues P5. Use the defined workplace procedures for storage of information P6. Inform co-workers and superiors about any deviation
CU2. Participate in workplace meetings and discussions	P1. Express your own opinions P2. Listen other's point of view without interruption P3. Prepare simple questions about workplace procedures
CU3. Identify own role and responsibility within team	P1. Identify the individual role and responsibilities within the team environment P2. Recognize the roles and responsibility of other team members. P3. Report relationships within team and external to team P4. Share report with co-workers.
CU4. Support the co-workers	P1. Hand over the required materials and tools timely to interfacing team P2. Work together with co-workers in an effective manner. P3. Address the problems of co-worker effectively P4. Report to immediate boss

Knowledge & Understanding

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

- ✓ Effective communication
- ✓ Sources of information



- ✓ Mode of communication
- ✓ Types of non-verbal communication
- ✓ Mode of communication while operating machines
- ✓ Method of recording the information/instructions.
- ✓ Protocol of meeting
- ✓ Role and objective of team
- ✓ Importance of creating cooperative work environment
- ✓ Role and objective of team.
- ✓ Risk of failure team work on the project.
- ✓ Importance of resolving the co-worker's problems

Critical Evidence(s) Required

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

- ✓ Arrange workplace meetings and discussions

TOOLS AND EQUIPMENT

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

S. No.	Items
1.	Multimedia
2.	White board
3.	Pencil
4.	Notebook
5.	Erasers
6.	White board markers



0811SP&B02-C: Perform Seed Sampling

Overview: This competency standard covers the skills and knowledge related to the Seed Sampling

Competency Units	Performance Criteria
CU1. Prepare for sampling	<p>P1. Schedule activities according to work instructions</p> <p>P2. Arrange the tools and equipment</p> <p>P3. Visit source site as per SOPs</p> <p>P4. Follow health and safety standards</p>
CU2. Execute Seed Sampling	<p>P1. Schedule activities according to work instructions</p> <p>P2. Arrange the tools and equipment</p> <p>P3. Collect sampling materials</p> <p>P4. Collect seed sample according to standard method</p> <p>P5. Seal sample according to SOPs</p>
CU3. Perform labeling	<p>P1. Arrange Labeling material</p> <p>P2. Label sample according to work instructions</p> <p>P3. Transfer collected sample from field to lab according to SOPs</p> <p>P4. Maintain record</p> <p>P5. Follow health and safety standards</p>

Knowledge and Understanding

This competency standard will provide knowledge related to

- K1.** Material/tools required for Seed Sampling
- K2.** Sampling techniques
- K3.** Health and safety protocols involved

Critical Evidence(s) Required

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



- Collect seed sample according to SOPs

TOOLS AND EQUIPMENT

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

S. No.	Items
1.	Note book and Pencil
2.	Seed sampling Kit
3.	PPEs
4.	First aid kit
5.	Erasers
6.	Sharpener
7.	White board marker
8.	Duster
9.	Auger
10.	Sampling bags
11.	White board
12.	Multimedia
13.	Internet
14.	Computer system
15.	Sampling probe
16.	Seed
17.	Sealing heater



0811SP&B02-D: Perform Seed Procurement

Overview: This competency standard covers the skills and knowledge related to the execution of Seed procurement.

Competency Units	Performance Criteria
CU1.Prepare for seed procurement	<p>P1. Collect information regarding type/variety of crop on prescribed format</p> <p>P2. Collect information regarding seed collection mechanism on prescribed format</p> <p>P3. Collect information regarding seed quality on prescribed format</p> <p>P4. Collect information regarding intercultural practices on prescribed format</p> <p>P5. Follow health and safety standards</p>
CU2.Execute Seed procurement	<p>P1. Collect sample report</p> <p>P2. Perform purchases according to SOPs</p> <p>P3. Manage seed to avoid post-harvest losses, as per the requirement</p> <p>P4. Maintain record</p> <p>P5. Follow health and safety standards</p>
CU3.Collect procured Seed	<p>P1. Arrange site for seed collection</p> <p>P2. Maintain sanitary conditions at site according to SOPs</p> <p>P3. Perform weighing according to work instructions</p> <p>P4. Perform loading and unloading according to standard instructions</p> <p>P5. Maintain records</p>

Knowledge and Understanding

This competency standard will provide knowledge related to

- K1.** Material/tools required for Seed procurement



- K2. Procurement mechanism
- K3. Health and safety protocols involved

Critical Evidence(s) Required

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

- Maturity of different crops
- Arrange tools for maturity indices and harvesting operation
- Health and safety standards involved

TOOLS AND EQUIPMENT

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

S. No.	Items
1.	Notebooks
2.	Pencils
3.	Erasers
4.	Sharpeners
5.	Pencils
6.	White board marker
7.	Duster
8.	Seeds
9.	White board
10.	Computer system
11.	Multimedia
12.	Internet
13.	Vehicles
14.	Different type of weighing balance



0811SP&B02-E: Perform Seed Transportation

Overview: This competency standard covers the skills and knowledge related to the perform seed transportation.

Competency Units	Performance Criteria
CU1.Prepare for Seed transportation	P1. Collect weather forecast data P2. Schedule activities according to work instructions P3. Arrange materials required for transportation activity P4. Follow health and safety standards
CU2.Execute Transportation	P1. Arrange transportation tools P2. Perform loading of bags as per standards P3. Weighing of vehicle as per requirement. P4. Load material according to work instructions. P5. Transport the loaded material to warehouse. P6. Maintain record P7. Follow health and safety standards
CU3.Handle Transportation Material	P1. Arrange site for seed collection P2. Maintain sanitary conditions at site according to SOPs P3. Perform weighing according to work instructions P4. Perform loading and unloading according to standard instructions P5. Maintain records

Knowledge and Understanding

This competency standard will provide knowledge related to

- K1.** Material/tools required for Seed Transportation
- K2.** Transportation mechanism
- K3.** Health and safety protocols involved

Critical Evidence(s) Required



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

- Health and safety standards involved
- Prepare checklist for seed transportation

TOOLS AND EQUIPMENT

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

S. No.	Items
1.	Notebooks
2.	Pencils
3.	Erasers
4.	Sharpeners
5.	Pen
6.	White board marker
7.	Duster
8.	Different types of bag
9.	Seed
10.	Polythene bags
11.	Jute bags
12.	Plastic sheets
13.	White board
14.	Computer system
15.	Multimedia
16.	Internet
17.	Vehicles
18.	Warehouses



0811SP&B02-F: Perform Basic Operations for Warehouse Management

Overview: This competency standard covers the skills and knowledge required to understand and identify basic operation involved in management of warehouse using different required procedures.

Competency Units	Performance Criteria
CU1. Receive Raw Seed	P1. Verify procurement data and purchase invoice. P2. Receive shipments. P3. Weight the raw material. P4. Pack raw material in bags. P5. Follow safety standards.
CU2. Maintain Storage Environment	P1. Keeping store clean and hygiene. P2. Separate damaged and intact bags. P3. Maintain storage temperature and humidity. P4. Keep record of temperature and humidity in cold storage, report if there is any deviation. P5. Keep storage pest free. P6. Perform prior fumigation. P7. Follow safety standards involved in processing.
CU3. Perform Coding of Raw Seed	P1. Assign batch number to each shipment. P2. Maintain shipment record. P3. Take Sample of product if required for Govt. department FSC&RD (Federal seed certification and registration department). P4. Follow health and safety standards.

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. Basic Seed Storage operation procedures
- K2. Understand operation of warehouse management.
- 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:

- Understand basic SOP for each function
- Perform basic operations involved in warehouse management.
- 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.	Notebooks
2.	Pencils
3.	Erasers
4.	Sharpeners
5.	White board marker
6.	Duster
7.	Polythene bags
8.	Labels
9.	Sticker
10.	Raw seed
11.	Packaging bags
12.	White board
13.	Multimedia
14.	Internet
15.	Computer system
16.	Different types of weighing balance
17.	Chalk powder
18.	Fumigants



National Competency Standards for "Seed Processing & Biotechnology"



19.	Pesticides
20.	Thermometer
21.	Hygrometer
22.	Humidifier



0811SP&B02-H: Manage Inventory of Materials

Overview: This competency standard identifies competencies required to manage inventory of material for production process, material and quality requirements. You will be able to maintain stock register, collect raw material and perform safe storage of materials. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Collect Raw material	You must be able to: P1. Arrange required raw material according to SOPs P2. Calculate number of materials available on site P3. Cross check with the log register P4. Manage plan accordingly
CU2. Perform Storage of Materials	P1. Segregate the received material according to work instruction P2. Store materials as per nature of material P3. Check materials quality & quantity as per standard procedures.
CU3. Maintain the Stock Register	P1. Manage stock Register on daily basis P2. Enter data corresponding to every type of material P3. Report to in charge P4. Prepare production / dispatch record sheet

Knowledge & Understanding

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

- Types of raw material
- Classification of material according to nature of size and shape
- Moisture on the raw material
- Safety of aggregates against the weather and dust
- Importance of gradation of raw material
- Principles of safe and efficient storage
- Material characteristics
- Indenting material procedure



Critical Evidence(s) Required

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

Maintain Log book including quantity, quality, types of stored raw material and quantity of finished aggregate

TOOLS AND EQUIPMENT

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

S. No.	Items
1.	Notebooks
2.	Erasers
3.	Sharpener
4.	White board marker
5.	Material Log register
6.	Pencils
7.	Raw material
8.	White board
9.	Multimedia
10.	Internet
11.	Computer system
12.	Duster
13.	Material Stock register