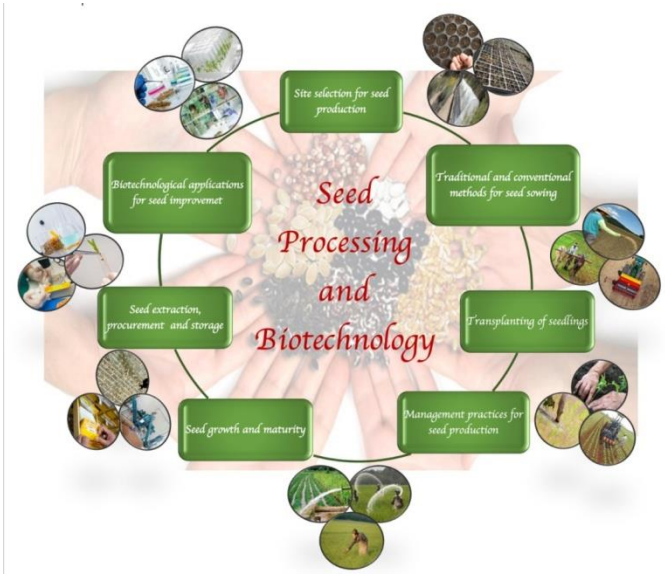
National Vocational Certificate Level 2 in *"Seed Processing & Biotechnology"*

(Field Assistant for Seed Processing)



(Curriculum)

National Vocational and Technical Training Commission (NAVTTC)

Government of Pakistan

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Introduction

Definition/Description of training program (Field Assistant for Seed Processing)

Increase demand in food supply due to rise in population putting pressure on agriculture sector day by day. Many factors like poor cultivation methods, lack of advanced machineries and non-availability of quality inputs also a big challenge for agriculture sector to feed this growing population. Therefore, governing bodies are now focusing for boosting production of agriculture commodities with better quality. Among the various challenges, availability of quality seeds to the farming community also a big challenge for authorities. Seed as a key for successful farming have prime importance in agriculture sector. Fortunately, industry is creating space for new businesses where Seed Processing & Biotechnology have potential for becoming focal point for investors.

Seed processing is a vital part of the technology to produce quality seeds for farming community, which includes operation involved in harvesting, cleaning, drying, seed treatments, seed quality testing, packaging and storage. Properly processed seed is a guaranty for high production rate of crops. Currently working seed processing units are also not producing satisfactory results. Limitation for their success includes various factors, among these factors availability of skilled labor is a major concern.

Keeping in view of the above, NAVTTC developed a qualification which is based on seed processing operations carried out in advanced processing industry.. This competency based national vocational qualifications have been developed to train the unskilled human resource on the technical and entrepreneurial skills to be employed / self-employed and inevitably set sustainable impact on their lives by increasing their livelihood income which ultimately help agriculture sector of country.

Training Course is based on competency standards which are defined by the industry and the traditional role of a trainer changes and shifts towards the facilitation of training. A trainer encourages and assists trainees to learn for themselves. Trainees are likely to work in groups (pairs) and all doing something different. Some are doing practical tasks in the site/workshop, some writing, some not even in the classroom or site/workshop but in another part of the

building using special equipment. As trainees learn at different pace they might be at different stages in their learning, thus learning must be tailored to suit individual needs. The following facilitation methods (teaching strategies) are generally employed.

Purpose of the training program:

The purpose of this training is to set highly professional standards for seed processing and biotechnology in agriculture sector. The basic goals of establishing these credentials are as follows:

1. Equip trainees with the latest Seed processing techniques
2. Improve crop production through availability of processed seed
3. Improve trainees' professional competence
4. Provide in-depth knowledge in seed processing operations
5. Enable the existing workforce to learn new technologies and methods
6. Provide flexible pathways and progressions in agriculture sectors
7. Enabling the youth with greater employment opportunities

Overall objectives of training program:

The main objectives of the National Vocational Certificate Level 2 in Seed Processing & Biotechnology (Field Assistant for Seed Production) are as follows:

- Improve the professional competence of Seed processing & Biotechnology
- Capacitate the local community and trainers in modern CBT training, methodologies and processes as envisaged under NVQF
- Provide flexible pathways and progressions in the Seed Processing & Biotechnology
- Enable the trainees to perform their duties in efficient manner
- Establish a standardized and sustainable system of training for Seed processing & Biotechnology across the globe

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Competencies to be gained after completion of course:

At the end of the course, the trainee has attained the following core competencies:

1. Follow Safety Rules at Site
2. Perform Basic Communication Skills
3. Perform basic Computer Applications
4. Operate Equipment/Machinery used in Harvesting
5. Maintain Equipment/Machinery used in Harvesting
6. Perform Seed Harvesting
7. Perform Threshing of Seed
8. Post-Harvest Management of Threshed Seed

Possible available job opportunities, available immediately and later in the future:

- Field Assistant
- Field worker

Trainee entry level:

The entry level for National Vocational Certificate Level 2 in Seed Processing & Biotechnology **(Field Assistant for Seed Processing)** is given below:

Title	Entry requirements
National Vocational Certificate Level 2 in Seed Processing & Biotechnology **(Field Assistant for Seed Processing)**	The entry requirement for this qualification would be Matriculation or equivalent

Minimum qualification of trainer:

B.Sc. (Hons) Agriculture with preferably major Biotechnology/Plant Breeding and Genetics with at least two-year experience in relevant field

Recommended trainer: trainee ratio

The recommended maximum trainer: trainee ratio for this program is 1 trainer for 25 trainees.

Medium of instruction i.e., language of instruction:

Instructions will be in Urdu/ English/ Local language.

Duration of the course (Total time, Theory & Practical time):

The distribution of contact hours is given below:

Total	**-**	**600 hours**
Theory	**-**	**120hours (20%)**
Practical	**-**	**480 hours (80%)**

Proposed Course Duration-6 Months

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Sequence of Modules:

Module1: Follow Safety Rules at Site 30 hours	**Module 3:** Perform basic Computer Applications 60 hours	**Module 4:** Operate Equipment/Machinery used in Harvesting 120 hours
Module 2: Perform Basic Communication Skills 30 hours	**Module 5:** Maintain Equipment/Machinery used in Harvesting 60 hours	**Module.6:** Perform Seed Harvesting 150 hours
Module7: Perform Threshing of Seed 90 hours	**Module 8:** Post-Harvest Management of Threshed Seed 60 hours	

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Summary template-overview of the curriculum:

Following is the structure of the course:

Sr No	Code	Competency Standards	Occupation	NVQF Level	Category	Estimated Contact Hours			Cr Hr
						Th	Pr	Total	
Level 2									
1.	0811SP&B01	Follow Safety Rules at Site	**Field Assistant for Seed Processing**	2	Generic	6	24	30	3
2.	0811SP&B01	Perform Basic Communication Skills		2	Generic	6	24	30	3
3.	0732SP&B01	Perform basic Computer Applications		2	Generic	12	48	60	6
4.	0811SP&B01	Operate Equipment/Machinery used in Harvesting		2	Functional	24	96	120	12
5.	0811SP&B01	Maintain Equipment/Machinery used in Harvesting		2	Functional	12	48	60	6

6.	0811SP&B01	Perform Seed Harvesting		2	Technical	30	120	150	15
7.	0811SP&B01	Perform Threshing of Seed		2	Technical	18	72	90	9
8.	0811SP&B01	Post-Harvest Management of Threshed Seed		2	Technical	12	48	60	6
		Total				**120**	**480**	**600**	**60**
		Percentage				**20**	**80**		

Module 1: Follow Safety Rules at Site

Objective: The aim of this module to get knowledge, skills and understanding to follow safety rules at site

Duration: 30Hours **Theory: 6 Hours** **Practice: 24 Hours** **Credit Hours: 3**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Maintain occupational safety and health at workplace	**The trainee will be able to:** **1.** Identify the safety signs and symbols **2.** Erect barricades, hoardings, signage in the hazardous areas **3.** Maintain housekeeping **4.** Report unsafe condition to immediate supervisor (shift person)	• Knowledge of different types of hazards • Explain unsafe working conditions • Understanding of health and safety signs and symbols • Explain housekeeping • Understanding of different methods of dealing with hazard **Activity:** Practice to identify the physical hazards in mock	**Total** 7hrs **Theory:** 1hr **Practical:** 6hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White Board Marker • Duster Non Consumable • White board • Multimedia	• Class Room • Simulated environment

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		situation and apply control measures, safety sign and barricade.			
LU2: Use Personal Protective and Safety Equipment (PPE)	**The trainee will be able to:** **1.** Identify risk associated with job to be done **2.** Select PPE according to job **3.** Wear PPE according to job **4.** Store PPE at Designated place after use	• Describe the types of Personal protective equipment (PPEs) • Describe the procedure to identify risk associated with job to be done • Importance of personal protective equipment • Describe the Maintenance and cleaning of PPEs **Activity:** • Demonstrate to select PPEs for specific job.	**Total:** 8hrs **Theory:** 2hrs **Practical:** 6hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White Board Marker • Duster Non Consumable • White board • Multimedia • PPEs (Safety glasses, Ear	• Class Room • Simulated environment

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.)	
LU3: Perform communication signals	**The trainee will be able to:** **1.** Identify different types of communication hand signals. **2.** Use appropriate hand signals as per situation	• Understanding of different types of communication signals • Explain different types of hand signals • Explain the importance of hand signals **Activity:** Demonstrate the hand signals for different activities	**Total** 8hrs **Theory:** 2hrs **Practical:** 6hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White Board Marker • Duster Non Consumable • White board • Multimedia • Safety manuals	• Class Room • Simulated environment
LU4: Manual	**The trainee will be**		**Total:**	Consumable	• Class Room

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
handling of loads	**able to:** **1.** Check the load's weight to be handles **2.** Check the availability of broad stable base **3.** Lift and place the load with proper posture **4.** Lift the load as per given standards	• Explain the importance of safely lifting loads • Describe types of loads • Explain basic ergonomics principles • State the load lifting procedures **Activity:** Practice of shifting manually the load from ground to a designated location.	7hrs **Theory:** 1hr **Practical:** 6hrs	• Notebooks • Pencils • Erasers • Sharpeners • White Board Marker • Duster Non Consumable • White board • Multimedia • Internet • Computer system	• Simulated environment

Module2: Perform Basic Communication Skills

Objective of the module: The aim of this module to get knowledge, skills and understanding to perform basic communication.

Duration: 30 Hours **Theory: 6Hours** **Practice: 24 Hours** **Credit Hours: 3**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Demonstrate the basic communication skills	**The trainee will be able to:** **1.** Demonstrate the listening skills **2.** Demonstrate the reading skills **3.** Demonstrate the writing skills **4.** Demonstrate the speaking skills	• Knowledge of communication skills (7Cs of effective communication) • Describe verbal and non-verbal communication • Explain reporting techniques **Activity:** • Practice to listen to the audio and write down • Practice to note down the instructions given by the supervisor	**Total:** 21hrs **Theory:** 3hrs **Practical:** 18hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster Non Consumable • White board • Multimedia • Computer	• Class Room

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2. Follow Supervisor's instructions	**The trainee will be able to:** **1.** Carry out the instructions of the supervisor **2.** Report to the supervisor as per organizational SOP's given standards	• Explain the note taking procedure • Understanding of the standard procedure to prepare the report **Activity:** • Prepare different office reports	**Total:** 9hrs **Theory:** 3hrs **Practical:** 6hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster Non Consumable • White board • Multimedia • Computer	• Class Room

Module3: Perform Basic Computer Applications

Objective of the module: The aim of this module to get knowledge, skills and understanding to perform basic computer applications.

Duration: 60 Hours **Theory: 12 Hours** **Practice: 48 Hours** **Credit Hours: 6**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Perform Basic Configuration of Computer System	**The trainee will be able to:** **1.** Connect computer components and peripherals as per requirement **2.** Install drivers and applications according to the software specification **3.** Troubleshoot applications to trace and fix faults in a specific application to bring it in a	• Knowledge of different computer components. • Explain operating systems • Differentiate Hardware and Software • Describe the process of troubleshooting of application software. **Activity** • Practice of installing operating system. • Practice of installing Microsoft Office. • Practice of printer and scanner installation.	**Total:**8hrs **Theory:**2hrs **Practical:**6hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster Non Consumable • White board • Multimedia • Internet • Computer system • Pen • Operating system CD • Software and peripheral driver CD	• Computer Lab

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	running condition				
LU2: Create a document using MS Word	**The trainee will be able to:** **1.** Compose a document as per the requirement **2.** Format Word Document according to given requirements **3.** Print Word Documents according to requirements	• Describe the page set up and paragraph for formatting. • Describe the font size and style. • Knowledge of short keys • Explain printing and type of printers. **Activity:** • Practice of short keys, document opening/closing, saving, coping and pasting. • Practice of creating and editing a document/letter in MS word and print it.	**Total:**16hrs **Theory:**4hrs **Practical:**12hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster Non Consumable • White board • Multimedia • Internet • Computer system • Software CD	• Computer Labs

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU3: Create an e-mail account	**The trainee will be able to:** **1.** Select email browser **2.** Go to sign in page **3.** Add Personal Information **4.** Enter and confirm password	• Describe Internet and E-mail address. • Knowledge of email attachments • Explain encryption of email address and documents. **Activity:** • Practice of creating an email address and sending an email along with an attachment (document and picture	**Total:**8hrs **Theory:**2hr **Practical:**6hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker Non Consumable • White board • Multimedia • Internet browser • Internet • Computer system	• Computer Lab

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU4: Prepare Spreadsheet using MS Excel	**The trainee will be able to:** **1.** Create worksheet as per given data **2.** Format the worksheet according to given criteria **3.** Apply formulas according to the requirement **4.** Generate Charts/Graphs according to the given data **5.** Print Worksheet according to requirements	• Explain different types of formulas in MS Excel • Describe short Keys MS Excel **Activity:** • Develop a practice to develop a work sheet as per given data • Format and apply a formula to a work sheet according to the requirement. • Practice to generate chart/graph according to given data.	**Total:**14hrs **Theory:**2hrs **Practical:**12hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • Pen • White board marker • Duster Non Consumable • White board • Multimedia • Internet • Computer system • MS Office Software	• Class Room / Computer Lab

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU5: Prepare a presentation using MS Power Point	**The trainee will be able to:** **1.** Insert slides with different layouts according to requirements of presentation. **2.** Insert text, tables, images, etc. according to the requirement. **3.** Apply a set of effects to animate the slide according to requirement. **4.** Apply slide transitions on slides according to requirement. **5.** Apply sound effects on objects/text/images according to requirement.	• Explain types of presentation format • Describe short Keys of MS power point **Activity:** • Practice of inserting slides different layout according to the requirement of presentation. • Practice of inserting text, tables, images into the slides. • Practice of applying effects, slide transition and sound effects according to requirement.	**Total:**14hrs **Theory:**2hrs **Practical:**12hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker Non Consumable • White board • Multimedia • Internet • Computer system • Printer • MS Office Software	• Class Room / Computer Lab

Module 4: Operate Equipment/Machinery Used in Harvesting

Objective of the module: The aim of this module to get knowledge, skills and understanding tooperate equipment/machinery used in harvesting.

Duration: 120Hours **Theory: 24Hours** **Practice: 96Hours** **Credit Hours: 12**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Prepare for work	**The trainee will be able to:** **1.** Arrange tools and equipment for maintenance of machinery **2.** Perform pre checks according to SOPs	• Understanding of basic agriculture tools and equipment • Knowledge of power tools **Activity** • Practice to perform pre checks of available on farm equipment • Practice to prepare list of agricultural implements	**Total:**15hrs **Theory:**3hrs **Practical:** 12hrs	Consumable • Notebooks • Erasers • Sharpeners • White board marker • Duster • Pencil Non Consumable • White board • Multimedia • Internet • Computer	• Class Room/site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				system • Tractor • Power tools • Disc harrow • Chisel plough • Rotavator • Ridger • Disc plough • Molt board plough • Sub soil plough • Disc tiller plough • Rollers and Pulverizer • Harvester	
LU2. Operate Tractor	**The trainee will be able to:** **1.** Drive tractor according to SOPs **2.** Follow health and	• Knowledge of tractor operations • Understanding of tractor maintenance • Knowledge of tractor types	**Total:**60hrs **Theory:**12hrs	Consumable • Notebooks • Erasers • Sharpeners	• Class Room/site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	safety guidelines	according to horsepower **Activity:** • Practice to drive tractor as per SOPs	**Practical:**48hrs	• White board marker • Duster Non Consumable • White board • Multimedia • Internet • Computer system • Tractor • Power tools	
LU3. Operate harvesting machinery	**The trainee will be able to:** **1.** Arrange tools for required task	• Knowledge of harvesting machinery and tools • Understanding of harvesting operations	**Total:**45hrs **Theory:**9hrs	Consumable • Notebooks • Erasers • Sharpeners	• Class Room/Site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	2. Operate harvesting machines according to SOPs **3.** Follow health and safety guidelines	**Activity:** • Practice to operate harvester	**Practical:**36hrs	• White board marker • Duster Non Consumable • White board • Multimedia • Internet • Computer system • Different types of Harvesters • Tractor • Small sickle • Big sickle	

Module 5:Maintain Equipment/Machinery Used in Harvesting

Objective of the module: The aim of this module is to get knowledge, skills and understanding tomaintain equipment/machinery used in harvesting.

Duration 60 Hours **Theory: 12 Hours** **Practice: 48Hours** **Credit Hours: 6**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Perform Routine checks	**The trainee will be able to:** **1.** Prepare history sheet/card for required machinery according to SOPs **2.** Clean machines according to SOPs **3.** Maintain records	• Knowledge of history sheet/card for machine • Knowledge of cleaning of machinery • Understanding the importance of maintaining record	**Total:**16hrs **Theory:**4hrs **Practical:**12hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster	• Class Room/Site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		Activity: • Practice to prepare machine history sheet/card • Practice to cleaning/washing of harvesting machinery and tools • Practice to perform lubrication of harvesting tools and machinery		• Pencil • History sheet/card Non Consumable • White board • Multimedia • Internet • Computer system • Printer • Harvesting machinery	
LU2: Perform troubleshooting	**The trainee will be able to:** **1.** Select and arrange tools for required task **2.** Perform machinery pre checks according to	• Knowledge of troubleshooting • Understanding the importance of machinery pre	**Total:**28hrs **Theory:** 4hrs. **Practical:**24hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners	Class Room/Site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	SOPs **3.** Calibrate basic machines according to SOPs **4.** Execute troubleshot operations according to work instructions **5.** Maintain records	checks • Knowledge of calibration of basic machinery **Activity** • Practice to perform calibration of basic machinery • Practice to perform machinery pre checks • Practice to maintain record		• White board marker • Duster Non Consumable • White board • Multimedia • Internet • Computer system • Tractor • Farm machinery	
LU3: Perform handling of machinery	**The trainee will be able to:** **1.** Clean machines before and after use according to instructions **2.** Place machines in	• Knowledge of log books • Understanding of record maintenance • Knowledge of placement of machinery	**Total:**16hrs **Theory:** 4hrs. **Practical:**12hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners	Class Room/site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	parking area according to SOPs **3.** Maintain log books according to work instructions **4.** Maintain records	**Activity** • Practice to place machines in parking area		• White board marker • Duster Non Consumable • White board • Multimedia • Internet • Computer system • Tractor • Farm machinery • Tags	

Module 6: Perform Seed Harvesting

Objective of the module: The aim of this module is to gets knowledge, skills and understanding toperform seed harvesting

Duration: 150 Hours **Theory: 30 Hours** **Practice: 120Hours** **Credit Hours: 15**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Prepare materials to Identify produce maturity	**The trainee will be able to:** **1.** Arrange tools and equipment as per requirements **2.** Collect information regarding crop maturity according to instructions **3.** Prepare report **4.** Maintain records	• Define produce maturity and its type • Knowledge of different stages of crop maturity • Understanding factors affecting produce maturity • Understanding of maturity indicator parameters **Activity** • Prepare report on on-farm crop maturity	**Total:**15hrs **Theory:**3hrs **Practical:** 12hrs	Consumable • Notebooks • Erasers • Sharpeners • White board marker • Duster Non Consumable • White board • Multimedia • Internet • Computer system • Refractometer • Pressure gauge • Digital fruit firmness tester • Mohr fruit tester	• Class Room/site

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Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2: Schedule the harvesting operation	**The trainee will be able to:** **1.** Collect information regarding weather conditions according to work instructions **2.** Arrange required resources for harvesting process **3.** Prepare work plan and submit	• Understanding of climatic condition regarding harvesting • Knowledge of harvesting tools and equipment • Understanding of work plan for harvesting **Activity** • Practice to schedule harvesting operation according to climatic conditions • Practice to arrange required tool and implements for harvesting	**Total:**15hrs **Theory:** 3hrs **Practical:**12hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster • Weather report Non Consumable • White board • Multimedia • Internet • Computer system • Harvester • Tractor • Big sickle • Small sickle • Harvesting tool kit	• Class room/ Site
LU3. Perform Harvesting	**The trainee will be able to:** **1.** Arrange tools and	• Define harvesting • Knowledge of harvesting tools	**Total:**90hrs	Consumable • Notebooks • Erasers	• Class Room/site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	machinery as per crop requirement. **2.** Perform manual harvesting according to crop requirement **3.** Perform mechanical harvesting according to set practices. **4.** Maintain record according to SOPs	• Knowledge of manual/mechanical harvesting techniques **Activity:** • Practice to perform manual harvesting of on-farm seed crop • Practice to perform mechanical harvesting of on-farm seed crop	**Theory:**18hrs **Practical:**72hrs	• Sharpeners • White board marker • Duster • Pencils Non Consumable • White board • Multimedia • Internet • Computer system • Tractor • Harvester • Big sickle • Small sickle • Harvesting tool kit	

Module7: Perform Threshing of Seed

Objective of the module: The aim of this module is to get knowledge, skills and understanding toperform threshing of seed

Duration: 90 Hours **Theory: 18 Hours** **Practice: 72 Hours** **Credit Hours: 9**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Prepare for seed threshing	**The trainee will be able to:** **1.** Arrange tools and equipment as per requirements **2.** Collect harvested commodity according to SOPs **3.** Maintain records	• Knowledge of threshing implements • Understanding the importance of maintaining record • Knowledge of collection process for harvested commodity • Knowledge of quality requirements for ideal threshing **Activity** • Practice to prepare harvested commodity for threshing • Practice to check initial and final weight of harvested commodity	**Total:**15hrs **Theory:**3hrs **Practical:**12hrs	Consumable • Notebooks • Erasers • Sharpeners • White board marker • Duster • Pencils Non Consumable • White board • Multimedia • Internet • Computer system • Thresher • Thresher • Dry heat Oven • Weigh balance	• Class Room/Site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU2: Schedule the thereshing operation	**The trainee will be able to:** **1.** Collect information regarding weather conditions according to work instructions **2.** Arrange required resources for threshing process **3.** Prepare work plan and submit	• Understanding of climatic condition regarding thereshing • Knowledge of thereshing tools and equipment • Understanding of work plan for thereshing **Activity** • Practice to schedule thereshing operation according to climatic conditions • Practice to arrange required tool and implements for thereshing	**Total:**15hrs **Theory:**3hrs **Practical:**12hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • Whiteboard marker • Duster Non Consumable • White board • Multimedia • Tractor • Different type of thresher	• Class / site
LU3: Execute Threshing Operations	**The trainee will be able to:** **1.** Arrange machinery as per crop requirement. **2.** Perform mechanical threshing according to	• Define threshing • Knowledge of threshing implements • Understanding of manual /mechanical threshing operations	**Total:**60hrs **Theory:**12hrs **Practical:**48hrs	Consumable • Notebooks • Erasers • Sharpeners • White board marker • Duster Non	• Class Room/Site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	set practices. **3.** Perform manual threshing according to crop requirement **4.** Maintain record according to SOPs	**Activity** • Practice to perform manual threshing • Practice to perform mechanical threshing		Consumable • White board • Multimedia • Internet • Computer system • Tractor • Thresher	

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Module 8: Perform Post Harvest Management of Threshed Seed

Objective of the module: The aim of this module is to get knowledge, skills and understanding to post-harvest management of threshed seed.

Duration: 60 Hours **Theory: 12Hours** **Practice: 48 Hours** **Credit Hours: 6**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1: Handle threshed seed	**The trainee will be able to:** **1.** Arrange tools and material for handling **2.** Store threshed seed according to instructions **3.** Maintain record as per SOPs	• Define post-harvest • Knowledge of post-harvest techniques • Understanding of storage for threshed seed **Activity** • Practice to store threshed seed • Practice to maintain record	**Total:** 15hrs. **Theory:**3 hrs. **Practical:**12hrs.	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster • Different types of bags	• Class Room/Site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
				• Seed Non Consumable • White board • Computer system • Multimedia • Internet	
LU2: Perform Sundrying of Seed	**The trainee will be able to:** **1.** Arrange tools and material **2.** Schedule the sundrying operation according to	• Knowledge of seed sun drying method • Knowledge of weather conditions and day length **Activity:** • Practice to perform sundering of seed	**Total:** 15hrs. **Theory:** 3 hrs. **Practical:** 12hrs.	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker • Duster	• Class Room/Site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	environmental condition **3.** Select place for sun drying of seeds **4.** Place seed for sun drying according to instructions **5.** Maintain record as per SOPs			• Seed Non Consumable • White board • Multimedia • Internet • Computer system • Printer	
LU3: Perform Cleaning of seeds	**The trainee will be able to:** **1.** Arrange tools and material **2.** Remove derbies/dust/trash using graded	• Define seed winnowing • Understanding the importance of cleaning seed • Knowledge of seed cleaning methods **Activity**	**Total:**30hrs **Theory:** 6hrs. **Practical:**24hrs	Consumable • Notebooks • Pencils • Erasers • Sharpeners • White board marker	Class Room/site

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	sieves as per instruction **3.** Separate light weight material by gentle winnowing method **4.** Separate damaged seeds **5.** Pack and label seeds according to instructions **6.** Maintain record as per SOPs	• Practice to perform seed cleaning by using different graded sieves • Practice to perform seed cleaning by using winnowing method		• Duster • Seed Non Consumable • White board • Multimedia • Internet • Computer system • Different graded sieves • Seed cleaners • Packaging material	

General assessment guidance for "*Field Assistant for Seed Processing"*

Good practice in Pakistan makes use of sessional and final assessments, the basis of which is described below. Good practice by vocational training providers in Pakistan is to use a combination of these sessional and final assessments, combined to produce the final qualification result.

Sessional assessment is going on all the time. Its purpose is to provide feedback on what students are learning:

- To the student: to identify achievement and areas for further work
- To the teacher: to evaluate the effectiveness of teaching to date, and to focus future plans.

Assessors need to devise sessional assessments for both theoretical and practical work. Guidance is provided in the assessment strategy

Final assessment is the assessment, usually on completion of a course or module, which says whether or not the student has "passed". It is – or should be – undertaken with reference to all the objectives or outcomes of the course, and is usually fairly formal. Considerations of security – ensuring that the student who gets the credit is the person who did the work – assume considerable importance in final assessment.

Methods of assessment

For lessons with a high quantity of theory, written or oral tests related to learning outcomes and/ or learning content can be conducted. For workplace lessons, assessment can focus on the quality of planning the related process, the quality of executing the process, the quality of the product and/or evaluation of the process.

Methods include direct assessment, which is the most desirable form of assessment. For this method, evidence is obtained by direct observation of the student's performance.

Examples for direct assessment of a ***Field Assistant for Seed Processing*** include:

- Work performances, for example seed threshing
- Demonstrations, for example identify maturity indices of produce
- Direct questioning, where the assessor would ask the student how to follow safety at site, how they can perform troubleshoot machineries(Tractor, Thresher, Harvester etc.)

- Paper-based tests, such as multiple choice or short answer questions on safety at site, seed harvesting, threshing etc
- Indirect assessment is the method used where the performance could not be watched and evidence is gained indirectly.

Examples for indirect assessment of a Field Assistant for Seed Processing include:

- Work products, such as maintain and operate equipment/Machinery Used in seed harvesting and threshing.
- Indirect assessment should only be a second choice. (In some cases, it may not even be guaranteed that the work products were produced by the person being assessed.)

Principles of assessment

All assessments should be valid, reliable, fair and flexible:

Fairness means that there should be no advantages or disadvantages for any assessed person. For example, it should not happen that one student gets prior information about the type of work performance that will be assessed, while another candidate does not get any prior information.

Validity means that a valid assessment assesses what it claims to assess. For example, if harvesting or threshing is to be assessed and certificated, the assessment should involve performance criteria that are directly related to that activity. An interview about the harvesting or threshing would not meet the performance criteria.

Reliability means that the assessment is consistent and reproducible. For example, if the work performance of preparing documents in words has been assessed, another assessor (e.g., the future employer) should be able to see the same work performance and witness the same level of achievement.

Flexibility means that the assessor has to be flexible concerning the assessment approach. For example, if there is a power failure during the assessment, the assessor should modify the arrangements to accommodate the students' needs.

Assessment strategy for Field Assistant for Seed Processing

This curriculum consists of 08 modules:

- **Module 1:** Follow Safety Rules at Site
- **Module 2:** Perform basic communication skills
- **Module 3:** Perform Basic computer applications
- **Module 4:** Operate Equipment/Machinery Used in Harvesting
- **Module 5:** Maintain Equipment/Machinery Used in Harvesting
- **Module 6:** Perform Seed Harvesting
- **Module 7:** Perform Threshing of Seed
- **Module 8:** Post-Harvest Management of Threshed Seed

Sessional assessment

The sessional assessment for all modules shall be in two parts: theoretical assessment and practical assessment. The sessional marks shall contribute to the final qualification.

Theoretical assessment for all learning modules must consist of a written paper lasting at least one hour per module. This can be a combination of multiple choice and short answer questions.

For practical assessment, all procedures and methods for the modules must be assessed on a sessional basis. Guidance is provided below under Planning for assessment.

Final assessment

Final assessment shall be in two parts: theoretical assessment and practical assessment. The final assessment marks shall contribute to the final qualification.

The assessment teams

The number of assessors must meet the needs of the students and the training provider. For example, where two assessors are conducting the assessment, there must be a maximum of five students per assessor. In this example, a group of 25 students shall therefore require assessments to be carried out over a four-day period. For a group of only 10 to 15 students, assessments would be carried out over a two-day period only.

Planning for assessment

Sessional assessment: assessors need to plan in advance how they will conduct sessional assessments for each module. The tables on the following pages are for assessors to use to insert how many hours of theoretical and practical assessment will be conducted and what the scheduled dates are.

Final assessment: Training providers need to decide ways to combine modules into a cohesive two-day final assessment programme for each group of five students. Training providers must agree the content for practical assessments in advance.

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List of Tool, Machinery and Equipment:

SR#	Items/Tools & Equipment	Quantity
1.	**PPEs:** Safety Helmet Safety Shoes Gloves Goggles	 30 30 30 Pairs 30
2.	First Aid Kit	01
3.	Computer	26
4.	Multimedia	01
5.	Tractor	02
6.	Power tools	02
7.	Disc harrow	02

8.	Chisel plough	02
9.	Rotavator	01
10.	Ridger	02
11.	Sub soil plough	02
12.	Disc tiller plough	02
13.	Rollers and Pulverizer	02
14.	Harvester	02
15.	Small sickle	25
16.	Big sickle	25
17.	Disc plough	02
18.	Refractometer	05

19.	Pressure gauge	05
20.	Digital fruit firmness tester	05
21.	Mohr fruit tester	05
22.	Thresher	01

List of Consumable Supplies

SR#	Consumable Supplies	Quantity
1.	PPEs Surgical Face Masks	2 Boxes
2.	Printer paper	As per requirement
3.	White board marker	25
4.	Duster	05

5.	Stationary	As per requirement
6.	Collection bags	50

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8	Ms. Iqra Haider Khan	PhD Scholar, Punjab University, Lahore
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