



**National Competency Standards for  
“Pesticide & Fertiliser Technology”  
(Supervisor)  
Level-5**



**National Vocational and Technical Training Commission  
(NAVTTTC) Government of Pakistan**



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## INTRODUCTION

Fertilizers and Pesticides have extensive application all around the globe including Pakistan, considered as a vital component of modern farming. The main objective of Fertilizers application is to enrich soil with essential nutrients to attain higher crop yield. The application of manure for nutrient was the principal fertilizer method for quite some time, but in 1940's the chemical-based fertilizers rapidly gained great attention. Today, fertilizers are available in many forms and are extensively used to enhance crop growth and production. Pesticides are the chemicals, used to target the weeds and insects which pose threat to crop production both in field and store conditions.

Efficient application of fertilizer and Pesticides is very crucial for agriculture sector. Government of Pakistan investing millions of rupees by offering subsidies on fertilizers and Pesticides, but the outcomes are not achieving the set-targets. Knowledge regarding soil chemistry, insect behavior and morphology are the important criteria for dose recommendation. The purpose of this course is to enable the candidate to play his/her vital role to adopt economically feasible and environmentally sustainable approaches. In short, the main objective of this study pack is to minimize the input cost and generates the product in accordance with international standards.

To become more beneficial "Fertiliser and Pesticide technician" he/she must be vigilant and smart accordingly, and for the purpose they need to work on the first impression, manipulating procedures to highlight the importance of the product, knowing professional metrics and being responsive etc.

## PURPOSE OF THE QUALIFICATION

The competency based NVQ has been developed to train the unskilled men and women of Pakistan on the technical and entrepreneurial skills to be employed / self-employed and inevitably set sustainable impact on their lives by increase in their livelihood income generation.

The purpose of these qualifications is to set professional standards for Fertiliser and



Pesticide technician, who will serve as key elements enhancing quality of Pakistan Agriculture sector. The specific objectives of developing these qualifications are as under:

- Improve the professional competence of Fertiliser and Pesticide industry
- Capacitate the local community and trainers in modern CBT trainings, methodologies and processes as envisaged under NVQF
- Provide flexible pathways and progressions in Fertiliser and Pesticide industry
- Enable the trainees to perform their duties in efficient manner
- Establish a standardized and sustainable system of training in Fertiliser and Pesticide industry in Pakistan

## **DATE OF VALIDATION**

This national vocational qualification (NVQ) has been validated by the Qualifications Development Committee (QDC) in January 2021 and will remain in currency until 2023



## CODE OF QUALIFICATIONS

Qualification Title	Code
National Vocational Certificate Level 5, in Pesticide & Fertiliser Technology (Supervisor)	

## ENTRY REQUIREMENTS

- For National Vocational Certificate Level-5 in Pesticide & Fertiliser Technology, the entry requirement is award of National Vocational Certificate Level-4 in Pesticide & Fertiliser Technology.



## QUALIFICATIONS DEVELOPMENT COMMITTEE

The following members participated in the qualification development of these qualifications:

Sr. No.	Name	Designation	Organization
1.	M. Asim	Assistant Director, NAVTTC Co-ordinator	NAVTTC HQ, Islamabad
2.	Ms. Mehwish Aisha	DACUM Facilitator	CBT Expert/Certified Assessor
3.	Dr Shah Alam Khan	Chairman Plant Protection	The University of Agriculture, Peshawar
4.	Dr Adnan Zahid	Lecturer	Institute of Agricultural Sciences, University of Punjab
5.	Dr Sumaira Maqsood	Assistant Professor/Entomologist	Institute of Agricultural Sciences, University of Punjab
6.	Mr Saeed Alam Malik	CEO	Pestex, Lahore
7.	MsHina Ashraf	PhD Scholar	Institute of Agricultural Sciences, University of Punjab
8.	Ms Noor Ul Ain	M. Phill Scholar	Institute of Agricultural Sciences, University of Punjab
9.	Mr Abid Hussain Shah	Agronomist	Philip Morris Mardan, Pakistan LTD
10.	Faiz Ur Rehman	CEO	Pest Out, PVT. LTD.
11.	Mr Nisar Hussain	General Manager	R&D Tara Group Pakistan
12.	Mslqra Haider Khan	PhD Scholar	Institute of Agricultural Sciences, University of Punjab
13.	Mr Ch. Athar Amin	Principal Engineer	PCSIR, Lahore
14.	MrKhwaja Junaid	Lecturer	The University of Agriculture, Peshawar
15.	Muzamil Usman Khan	Consultant	Greenlands PVT. Limited



## QUALIFICATIONS REVIEW AND VALIDATION COMMITTEE

The following members participated in the qualification development of these qualifications:

Sr. No.	Name	Designation	Organization
1.	M. Asim	Assistant Director, NAVTTC Co-ordinator	NAVTTC HQ, Islamabad
2.	Ms. Mehwish Aisha	DACUM Facilitator	CBT Expert/Certified Assessor
3.	Mr. Shaukat Ali Rana	Controller	PBTE
4.	Engr. Rizwan Ahmed	Assistant Manager	Punjab TEVTA
5.	Mr. Haider Ali	Assistant Manager	Punjab TEVTA
6.	Mr Saeed Alam Malik	CEO	Pestex, Lahore
7.	MissHina Ashraf	PhD Scholar	Institute of Agricultural Sciences, University of Punjab
8.	Mr. Ibrahim Anwar	Lecturer	KP TEVTA
9.	Mr. Abid Hussain Shah	Agronomist	Philip Morris Mardan, Pakistan LTD
10.	Mr. Faiz Ur Rehman	CEO	Pest Out, PVT. LTD.
11.	Mr. Iqra Haider Khan	PhD Scholar	Institute of Agricultural Sciences, University of Punjab
12.	Mr. Ch. Athar Amin	Principal Engineer	PCSIR, Lahore
13.	Muzamil Usman Khan	Consultant	Greenlands PVT. Limited
14.	Mr. Muhammad Asif	Master Trainer	Off Season Vegetable Production Lahore
15.	Mr Nisar Hussain	General Manager	R&D Tara Group Pakistan



## SUMMARY OF COMPETENCY STANDARDS

“Pesticide & Fertiliser Supervisor” (12 Months)								
Code	Competency Standards	Level	Theory		Practical		Total	
			C	Hr.	C	Hr.	C	Hr.
	Perform Management of Grain Storage Houses/Warehouse	5	14	140	21	210	35	350
	Perform Cultural Practices for Soil Improvement	5	10	100	15	150	25	250
	Manage Nutritional Deficiencies	5	10	100	15	150	25	250
	Manage Pesticide and Fertilisers Storage	5	6	60	9	90	15	150
	Practice Professionalism	5	5	50	15	150	20	200
<b>Total</b>			<b>45</b>	<b>450</b>	<b>75</b>	<b>750</b>	<b>120</b>	<b>1200</b>



## Competency Standard A: Perform Management Of Grain Storage Houses/Warehouse.

**Overview:** This competency standard deal with learning the competencies needed to Perform Management of grain storage houses/warehouse. That includes identification of Store grain Pests and performing Pest management Methods. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
<b>CU1.</b> Identify Stored grain Pests	<b>You must be able to:</b> <b>P1.</b> Select appropriate time for pest inspection <b>P2.</b> Select appropriate method for pest inspection <b>P3.</b> Visit the site (warehouse/Gangi) for pest inspection <b>P4.</b> Assess the severity of pest infestation <b>P5.</b> Prepare a site inspection report
<b>CU2.</b> Perform Pest Management/Control Methods	<b>You must be able to:</b> <b>P1.</b> Perform pre-disinfection methods for microbes <b>P2.</b> Perform Pest Control Methods, including: <ul style="list-style-type: none"><li>○ Sanitation</li><li>○ Fumigation</li><li>○ Pesticides</li><li>○ Traps</li></ul> <b>P3.</b> Demonstrate Post application tasks <b>P4.</b> Prepare Treatment Report/Data Sheet

## 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.** Types of Store grain pests
- K2.** Pest Control Methods

## Critical Evidence(s) Required



**The candidate needs to produce any or all of the following documents/evidences:**

1. Portfolio
2. Assignment(s)/Project(s)
3. Relevant Certification(s)
4. Relevant Job/Experience Letter

**Furthermore, the candidate must execute demonstration(s) which may include the following:**

1. Perform disinfection, fumigation and rodenticides application in warehouses/Gangis



## Competency Standard B: Manage Nutritional Deficiencies

**Overview:** This competency standard deal with learning the competencies needed to Manage Nutritional deficiencies. That includes identification of Nutrient deficiencies and recommending relevant nutrient as per requirement. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
<b>CU1.</b> Identify Nutrient deficiencies in Soil and Plants samples	<b>You must be able to:</b> <b>P1.</b> Perform field visit to collect soil and infected plants samples for nutrient deficiencies <b>P2.</b> Identify the deficiency symptoms as per standard manual <b>P3.</b> Prepare a report for Nutrient deficiencies
<b>CU2.</b> Recommend relevant nutrient as per required standard	<b>You must be able to:</b> <b>P1.</b> Select and Calculate suitable nutrients according to soil/plant/water analysis report. <b>P2.</b> Perform application of nutrients as per required standard <b>P3.</b> Maintain the record after nutrient application
<b>CU3.</b> Perform Post application tasks	<b>You must be able to:</b> <b>P1.</b> Perform post application inspection <b>P2.</b> Compare pre- and post-application results <b>P3.</b> Prepare a report of post application tasks

## 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.** Nutrient deficiencies
- K2.** Macro and Micro Nutrients
- K3.** Nutrient application methods

## Critical Evidence(s) Required

The candidate needs to produce any or all of the following documents/evidences:

1. Portfolio
2. Assignment(s)/Project(s)



3. Relevant Certification(s)
4. Relevant Job/Experience Letter

**Furthermore, the candidate must execute demonstration(s) which may include the following:**

1. Identify Nutrient deficiency in plant and soil
2. Apply the required Nutrient using appropriate method



## Competency Standard C: Perform Cultural Practices for Soil Improvement

**Overview:** This competency standard deal with performing Cultural Practices for Soil Improvement. That includes Identification of Soil Improvement measures and application of Soil Decomposer (PGPR). Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
<b>CU1.</b> Identify Soil Improvement measures	<b>You must be able to:</b> <b>P1.</b> Perform field visit to evaluate the soil requirements for its health improvement <b>P2.</b> Perform Cost Benefit Analysis for specific soil
<b>CU2.</b> Apply Cultural practices for soil improvement	<b>You must be able to:</b> <b>P1.</b> Perform calculation for required material used for soil improvement <b>P2.</b> Perform application of Cultural practices as per requirement
<b>CU3.</b> Perform and Apply Soil Decomposer (PGPR's)	<b>You must be able to:</b> <b>P1.</b> Prepare the solution of PGPR's as per protocol <b>P2.</b> Perform application of PGPR's <b>P3.</b> Prepare a report on PGPR's activities in soil

## 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.** Cultural Practices for soil improvement measures (Land preparation, Crop and Variety selection, Crop Rotation, Soil fertigation, Tillage, Thinning, Manuring, Mulching and Integrated Pest/Disease Management)
- K2.** Cost Benefit Analysis
- K3.** Plant Growth Promoting Rhizobacteria (PGPR's)

## Critical Evidence(s) Required

The candidate needs to produce any or all of the following documents/evidences:



1. Portfolio
2. Assignment(s)/Project(s)
3. Relevant Certification(s)
4. Relevant Job/Experience Letter

**Furthermore, the candidate must execute demonstration(s) which may include the following:**

1. Identify Soil Improvement measures and apply suitable cultural practice



## Competency Standard D: Manage Pesticide and Fertilisers Storage

**Overview:** After successful completion of this module, you will be able to handle Pesticide and Fertiliser Formulation. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
<b>CU1.</b> Manage the inputs for production unit	<p><b>You must be able to:</b></p> <p><b>P1.</b> Manage the material according to the formulation/recipe provided by chemist</p> <p><b>P2.</b> Check the availability of material</p> <p><b>P3.</b> Deliver required material to the production plant</p> <p><b>P4.</b> Maintain the record</p>
<b>CU2.</b> Manage all aspects of receiving, shipping, and storing of Pesticide/fertilizer	<p><b>You must be able to:</b></p> <p><b>P1.</b> Check the packing equipment/material for shipment</p> <p><b>P2.</b> Manage Periodic sampling of product</p> <p><b>P3.</b> Manage storage of product in recommended conditions</p> <p><b>P4.</b> Compliance with all Safety, Environmental and Operating Standards</p>
<b>CU3.</b> Maintain Inventory	<p><b>You must be able to:</b></p> <p><b>P1.</b> Maintain a list for inventory</p> <p><b>P2.</b> Perform the record checking</p> <p><b>P3.</b> Manage the inventory according to the expiry dates</p> <p><b>P4.</b> Evaluate Inventory Report</p>
<b>CU4.</b> Manage packaging according to material requirement	<p><b>You must be able to:</b></p> <p><b>P1.</b> Identify the packaging material as per standards.</p> <p><b>P2.</b> Maintain working environment according to the material requirement</p> <p><b>P3.</b> Manage packaging operations as per standard</p>
<b>CU5.</b> Manage loading/offloading tasks	<p><b>You must be able to:</b></p> <p><b>P1.</b> Manage loading operations according to the requirement</p> <p><b>P2.</b> Manage offloading operations according to the requirement</p>

### 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. Identification of the components of recipes
- K2. Packaging standards
- K3. Packaging and storage conditions
- K4. Loading/offloading process
- K5. Expiry dates of products

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

**The candidate needs to produce any or all of the following documents/evidences:**

- 1. Portfolio
- 2. Assignment(s)/Project(s)
- 3. Relevant Certification(s)
- 4. Relevant Job/Experience Letter

**Furthermore, the candidate must execute demonstration(s) which may include the following:**

- 1. Manage and handle the packaging and delivery of end product



## Competency Standard E: Practice Professionalism

**Overview:** This competency standard deal with learning the competencies needed to Practice Professionalism. Your concept of making garment design will prepare you to contextualise the work from different sources.

Competency Units	Performance Criteria
<b>CU1.</b> Develop Portfolio for industry	<b>P1.</b> Select previous assignments for portfolio <b>P2.</b> Work on previous selected assignments for portfolio <b>P3.</b> Compile variety of assignments for portfolio <b>P4.</b> Make Professional Portfolio for industry <b>P5.</b> Develop Digital Portfolio for industry
<b>CU2.</b> Perform Internship	<b>P1.</b> Prepare for internship <ul style="list-style-type: none"><li>• Personal Presentation</li><li>• Portfolio Presentation</li><li>• Interview preparation</li></ul> <b>P2.</b> Demonstrate Ethics for Internship <b>P3.</b> Identify Industry for internship <b>P4.</b> Perform Internship in Industry <ul style="list-style-type: none"><li>• Fill the Performa of Internship</li><li>• Report the performance of internship</li></ul>

## 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.** Importance of portfolio
- K2.** Ethics for Internship

## Critical Evidence(s) Required

The candidate needs to produce any or all of the following documents/evidences:

1. Portfolio
2. Assignment(s)/Project(s)



3. Relevant Certification(s)
4. Relevant Job/Experience Letter

**Furthermore, the candidate must execute demonstration(s) which may include the following:**

1. Professional Portfolio



## COMPLETE LIST OF TOOLS AND EQUIPMENT

SR#	Tools & Equipment	Quantity
1.	Computer Systems	25
2.	Scanner	1
3.	Printer	1
4.	Pen	25
5.	Pencil	25
6.	Eraser	25
7.	Notebooks	25
8.	Chart Papers	25
9.	Board markers	1
10.	File covers	25
11.	Scotch tape	25
12.	Masks	25
13.	Gloves	25
14.	Goggles	25
15.	Fertilizer mixer	5
16.	Motors	5
17.	Measuring cylinders/containers	25
18.	Spade	25
19.	Microscopes	5
20.	Sprayer Tank	10
21.	Air Blast Sprayers	5
22.	Spraying Nozzle Sets	10
23.	Fire Buckets	1



24.	Respiratory Mask	25
25.	First Aid Box	5
26.	Calculator	25
27.	Measuring Tape	25
28.	Measuring Scale	25
29.	Ladder	1
30.	Soil Augars	12
31.	Polyethylene Sheets	100
32.	Sample collection Polyethylene bags	500
33.	Ice Box	5
34.	Magnifying glass/Lens	25
35.	Forceps	25
36.	Gardening Tool Kit	25