



National Competency Standards for
“Pesticide & Fertiliser Technology”
(Technician)
Level-3



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



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INTRODUCTION

Fertilisers and Pesticides have extensive application all around the globe including Pakistan, considered as a vital component of modern farming. The main objective of Fertilisers 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 Fertilisers rapidly gained great attention. Today, Fertilisers 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 Fertilisers 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 3, in Pesticide & Fertiliser Technology (Technician)	

ENTRY REQUIREMENTS

- For National Vocational Certificate Level-3 in Pesticide & Fertiliser Technology, the entry requirement is award of National Vocational Certificate Level-2 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	NAVTTTC 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 Technician” (6 Months)								
Code	Competency Standards	Level	Theory		Practical		Total	
			C	Hr.	C	Hr.	C	Hr.
	Identify and implement Workplace Policies and Procedures	3	1	10	1	10	2	20
	Apply work health and safety practices (WHS)	3	2	20	1	10	3	30
	C-Communicate at workplace	3	2	20	1	10	3	30
	Perform Basic Computer Operations	3	2	20	3	30	5	50
	Perform Pesticide Application	3	4	40	18	180	22	220
	Perform Fertiliser application techniques	3	5	50	20	200	25	250
Total			16	160	44	440	60	600



Competency Standard A: Identify and Implement Workplace policies and Procedures - 041700840

Overview: This unit describes the skills and knowledge required to develop and implement a workplace policy & procedures and to modify the policy to suit changed circumstances. It applies to individuals with managerial responsibilities who undertake work developing approaches to create, monitor and improve strategies and policies within workplaces and engage with a range of relevant stakeholders and specialists.

Competency Units	Performance Criteria
CU1. Identify workplace policy & procedures	You must be able to: P1. Identify the workplace policy & procedures P2. Apply appropriate strategies that can be used to measure whether your workplace health and safety obligations are being met. P3. Assure the policies are realistic, resources and personnel to implement P4. Implement the policy & procedures that reflects the organizations commitments P5. Ensure the appropriate methods of implementation, outcomes and performance indicators
CU2. Implement workplace policy & procedures	You must be able to: P1. Apply and assign responsibility for recording systems to track continuous improvements in policy & procedures P2. Implement strategies for continuous improvement in effective and efficient information
CU3. Communicate workplace policy & procedures	You must be able to: P1. Communicate procedures to help implement workplace policy P2. Inform those involved in implementing the policy about expected outcomes, activities to be undertaken and assigned responsibilities



CU4. Review the implementation of workplace policy & procedures	<i>You must be able to</i> P1. Identify the trends that may require remedial actions P2. Record the trends that may require remedial actions. P3. Ensure policy and procedures as required are made for continuous improvement of performance
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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.** Legislation, regulations and codes of practice applicable to the organization
- K2.** internal and external sources of information and organizational policy & procedures
- K3.** Typical barriers to implementing policies and procedures in an organization.

Critical Evidence(s) Required

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

- 1.** Identify evidences of the ability to implement work place policy and procedures. Briefly identify work place procedures to avoid incident.



Competency Standard B: Apply Work Health and Safety Practices (WHS) - 102200846

Overview: This unit describes the skills to work with safety and participate in hazard assessment activities, follow emergency procedures and participate in OHS practices in process.

Competency Units	Performance Criteria
CU1. Implement safe work practices at work place	<i>You must be able to</i> P1. Implement relevant rules and procedures of WHS at work place. P2. Comply with duty of care requirements P3. Use personal protective equipment according to safe work practices P4. Contribute to WHS consultative activities P5. Raise WHS issues with relevant personnel
CU2. Participate in hazard assessment activities a work place	<i>You must be able to</i> P1. Identify hazards or WHS issues in the workplace to relevant personnel P2. Assess and control risks according to own level of responsibility, in line with workplace procedures P3. Report hazards or WHS issues in the workplace to relevant personnel P4. Document risk control actions as required
CU3. Follow emergency procedures at workplace	<i>You must be able to</i> P1. Report emergencies or incidents promptly to relevant personnel P2. Deal with emergencies in line with own level of responsibility P3. Implement evacuation procedures as required
CU4. Participate in OHS consultative processes	<i>You must be able to</i> P1. Contribute to workplace meetings, inspections or other consultative activities



	<p>P2. Raise OHS (Occupational Health and Safety) issues with designated persons in accordance with organizational procedures</p> <p>P3. Take actions to eliminate workplace hazards or to reduce risks</p>
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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.** Outline the WHS rights and responsibilities that apply to own role
- K2.** Explain the term duty of care
- K3.** Describe typical health and safety roles in the workplace
- K4.** List and describe common safety signs and symbols
- K5.** Explain procedures for reporting hazards, risks, incidents and accidents
- K6.** Identify and describe common hazards and major causes of accidents relevant to the workplace
- K7.** Explain what the term risk control means
- K8.** List and describe potential emergency situations and how to respond to them

Critical Evidence(s) Required

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

- 1.** Demonstrate evidences of the Health and safety Processes to avoid any incident.



Competency Standard C: Communicate at Workplace - 001100852

Overview: This unit describes the performance outcomes, skills and knowledge required to develop communication skills in the workplace. It covers gathering, conveying and receiving information, along with completing assigned written information under direct supervision.

Competency Units	Performance Criteria
CU1. Communicate within the organization	<p>You must be able to</p> <p>P1. Communicate within a department</p> <p>P2. Communicate with other departments.</p> <p>P3. Use various media to communicate effectively</p> <p>P4. Communicate orally and written</p>
CU2. Communicate outside the organization	<p>You must be able to</p> <p>P1. Deal with vendors</p> <p>P2. Deal with clients/customers</p> <p>P3. Interact with other organisations</p> <p>P4. Use various media to communicate effectively</p> <p>P5. Work with people of different cultures / backgrounds</p>
CU3. Communicate effectively in work group	<p>You must be able to</p> <p>P1. Assess the issues to provide relevant suggestion to group members</p> <p>P2. Resolve the issues/ problems /conflicts within the group</p> <p>P3. Arrange group working sessions to increase the level of participation in the group processes</p> <p>P4. Communicate messages to group members clearly to ensure interpretation is valid</p> <p>P5. Communicate style /manner to reflect professional standards/ awareness of appropriate cultural practices</p> <p>P6. Act upon constructive feedback</p>
CU4. Communicate in writing	<p>You must be able to</p> <p>P1. Identify relevant procedures for written information</p> <p>P2. Use strategies to ensure correct communication in writing .i.e.</p>



	<ul style="list-style-type: none">• correct composition• clarity• comprehensiveness• accuracy• appropriateness <p>P3. Draft assigned written information for approval, ensuring it is written within designated timeframes</p> <p>P4. Ensure written information meets required standards of style, format and detail</p> <p>P5. Seek assistance / feedback to aid communication skills development</p>
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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:

- K1.** Importance of intra and inter organizational communication
- K2.** Basics of business communication
- K3.** Defining Modes of communication
- K4.** Effective communication in work group
- K5.** Communicating through writing
- K6.** The importance of teamwork

Critical Evidence(s) Required

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

1. In your current position, what types of written communication do you use most often? (List them all).



Competency Standard D: Perform Basic Computer Operations - 081PF02A

Overview: This competency standard will provide skills and knowledge related to basic computer hardware, software, applications and troubleshooting. You will be able to demonstrate your skills in operating a computer system and software such as MS Word, MS PowerPoint, MS Excel as well as installation and troubleshooting of operating system and software. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Configure Computer System	<i>You must be able to:</i> P1. Connect computer components and peripherals as per requirement. P2. Install Drivers and applications according to the software specification. P3. Troubleshoot Applications to trace and fix faults in a specific application to bring it in a running condition.
CU2. Create a Document using MS Word	<i>You must be able to:</i> P1. Compose a document as per the requirement. P2. Format Word Document according to given requirements. P3. Print Word Documents according to requirements.
CU3. Prepare a Worksheet using MS Excel	<i>You must be able to:</i> P1. Develop a worksheet as per given data. P2. Format the worksheet according to given criteria. P3. Apply Formulas according to the requirement. P4. Generate Charts/Graphs according to the given data.



<p>CU4. Prepare a presentation using MS PowerPoint</p>	<p>You must be able to:</p> <p>P1. Insert Slides with different Layouts according to requirements of presentation.</p> <p>P2. Insert text, tables, images, etc. according to the requirement.</p> <p>P3. Apply a set of effects to animate the slide according to requirement.</p> <p>P4. Apply Slide Transitions on Slides according to requirement.</p> <p>P5. Apply Sound Effects on Objects/text/images according to requirement.</p> <p>P6. Present a presentation according to 7Cs of communication.</p>
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Knowledge & Understanding

This competency standard will provide knowledge related to:

- K1.** Operating systems
- K2.** Hardware and Software
- K3.** Troubleshooting
- K4.** Internet and E-mailing
- K5.** Hyperlink and referencing
- K6.** Printing
- K7.** Formulas
- K8.** Short Keys
- K9.** WPM (Word Per Minute)
- K10.** 7 Cs of communication

Critical Evidence(s) Required

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

1. Install MS Office Application correctly



2. Prepare a formatted document using MS Word
3. Enter data into the respective columns and rows as per given instructions
4. Set page layouts and margins
5. Apply any slide transition on entire presentation.



Competency Standard C: Perform Pesticide Application - 081PF02A

Overview: This competency standard deal with learning the competencies needed to Perform Pesticide Application. That includes comprehensive knowledge of different chemicals and their application procedures. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Select the chemical for the application of pesticide	You must be able to: P1. Identify the functions of chemicals (insecticides, fungicides, nematicides, herbicides, etc.) P2. Identify symbols and read chemical labels P3. Identify active ingredients of the Pesticides P4. Ensure the use of Personal Protective Equipment (PPEs)
CU2. Apply the Pesticides	You must be able to: P1. Select appropriate pest control equipment for the application of pesticide P2. Perform the Calibration of pest control Equipment according to the manufacturer's instructions P3. Calculate the dose of chemical for the selected area P4. Perform mixing of Pesticide according to the instructions P5. Perform pesticide application according to the instructions P6. Perform the maintenance of the Pest control Equipment P7. Protect the area as per requirement P8. Perform field visits to prepare evaluation report



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: Classifications and functions of chemicals

- K1.** Reading and understanding chemical labels
- K2.** Relevant PPEs
- K3.** Different types of pesticide equipment
- K4.** Dose calculation methods
- K5.** Maintenance of different pest control equipment

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 the chemical labels
- 2. Prepare the pesticide solution and apply as per given instructions



Competency Standard D: Perform Fertiliser Application Techniques- 081PF02B

Overview: This competency standard deal with learning the competencies needed to perform Fertiliser application techniques. That includes comprehensive knowledge of crop nutritional deficiencies and the application of Fertiliser by using appropriate method. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Determine Nutritional deficiencies in crops	You must be able to: P1. Visually inspect colour/other changes in the crops P2. Identify the deficiency symptoms in crops P3. Prepare an inspection report
CU2. Perform Basal Fertiliser application	You must be able to: P1. Prepare the dose of Fertiliser according to the requirement P2. Perform Fertiliser application using conventional methods based on Soil Analysis Report P3. Perform Fertiliser application using modern methods based on Soil Analysis Report
CU3. Perform Foliar Fertiliser application	You must be able to: P1. Identify the dose of Foliar Fertiliser application according to the requirement P2. Perform Foliar Fertiliser application as per requirement

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.** Classifications and functions of chemicals
- K2.** Factors accounted for visual inspection of crops
- K3.** Basal Fertiliser application
- K4.** Foliar Fertiliser application
- K5.** Conventional and Modern Irrigation 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 Basal Fertiliser application
2. Perform Foliar Fertiliser application



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