

# Curriculum For “Pesticides & Fertilisers Technology”

(Technician)

(Level -3)



*27<sup>th</sup> to 30<sup>th</sup> December 20 21*



**National Vocational & Technical  
Training Commission**

## Table of Contents

Introduction	3
Definition/ Description of the training programme	3
Purpose of the Training Programme	4
Overall Objectives of Training Programme	4
Competencies to Be Gained After Completion Of Course	5
Possible Available Job Opportunities Available Immediately and Later In The Future	5
Trainee Entry Level	5
Minimum Qualification of Trainer	5
Recommended Trainer: Trainee Ratio	6
Medium of Instruction i.e. Language of Instruction	6
Duration of the Course (Total Time, Theory & Practical Time)	7
Summary – Overview of the Curriculum	9
Modules	12
General assessment guidance for <i>Pesticides &amp; Fertiliser Technology</i>	32
Complete List of Tools and Equipment	36
List of Consumable Supplies	36
Credit Values	38

## Introduction

### **Definition/ Description of the training programme for *Pesticides & Fertilisers Technology***

Agriculture is considered the backbone of Pakistan's economy, which relies heavily on its major crops. Pakistan's agriculture sector plays a central role in the economy as it contributes 18.9 percent to GDP and absorbs 42.3 percent of labour force. It is also an important source of foreign exchange earnings and stimulates industrial growth by supplying byproducts. According to the 6th Population and Housing Census in Pakistan 2017, the country's population is growing at the rate of 2.4 percent per annum. This rapid increase in population is raising demand for agricultural products and services. The agricultural production is mainly depends upon the use of mineral Fertilisers s and other inputs.

Pesticides and Fertilisers s have extensive applications all around the globe including developed and developing countries. The economy and prosperity of the agro based economies mainly depends on the Fertilisers s and pesticides industries so they are considered as a vital component for modern farming. The demand for the use of Fertilisers s and pesticides is increasing day by day due to rapid increase in food demand. These industries help to create business, and jobs opportunities at the national and international levels.

Globally, efficient application of Fertilisers and pesticides is crucial for agriculture sector. Developed countries have launched such a strategy that their agriculture sector is achieving its objective of increased yield. This happened due to the collaboration of industries with research and academia. Whereas, countries like Pakistan are allocating subsidies on Fertilisers s and pesticides, but are unable to achieve their objective of providing sufficient food to its people on reasonable prices. The main purpose of this course is to enable the student to play his/her vital role in country's economy through modern knowledge driven approach.

In short, the main objective of this project is to equip the students with knowledge and skills so that they could be able to handle the issues related with rational use of inputs, minimize the economic cost and can help to enhance agricultural yield potential. The effort of new curriculum development by NAVTTC will help the agro industry of Pakistan to hire trained and skilled manpower that will contribute in the improvement of livelihood. It will also help to establish the link between industry, academia and farming community.

The “Fertilisers and Pesticides technicians” will be vigilant of the challenges that our economy is facing and the long term requirements of food supply. They should also aware of the latest tools and techniques that can be used to upgrade the agricultural sector of Pakistan.

## **Purpose of the Training Programme**

The purpose of this qualification (set of four occupations) is to set professional standards for Fertilisers and Pesticides technicians and to train the unskilled workers (men and women) across the country. The skilled labors will serve as key elements to improve the Agriculture Industry. The agriculture sector is diversified and dynamic in nature. Upon successful completion of this course the trainees should be able to know the basic and specific objectives of these qualifications are as under:

- Improve the professional competence regarding Fertilisers and Pesticides industry
- Capacitate the local community and trainers in modern Competency Based Training (CBT)
- Provide flexible pathways and progressions in Fertilisers and Pesticides industry
- Enable the trainees to perform their duties in efficient manner
- Establish a standardized and sustainable system of training in Fertilisers and Pesticides industry in Pakistan
- Understand the marketing mechanisms of Fertilisers and pesticides products.
- Understand the issues related to agriculture industry
- Know the relevant industry stakeholders & their role

## **Overall Objectives of Training Programme**

The primary objective of this training program is to provide the trainees with updated knowledge and skills required for Pesticides& Fertilisers technology to cope the challenges of the Pesticides& Fertilisers industry. After qualifying the course at different levels (Level 1 – 5), the students will be able to get job in the Pesticides& Fertilisers industry and also be able to perform as entrepreneurs. The contents of the course are specifically designed in such a way that it covers all the major Pesticides& Fertilisers aspects hence, the students are sufficiently exposed to operational requirements of this sector and are ready to perform their duties confidently.

The main objectives of this project are to:

- Improve the quality of training delivery and setting national benchmarks for training of agriculture technology (Level 1-5) at national level.
- Provide progressive and flexible learning environment for trainees.
- Provide basics for competency-based assessment.
- Establish a standardized and sustainable training system.

### **Competencies to Be Gained After Completion Of Course**

- **A-** Identify and implement Workplace Policies and Procedures
- **B-** Apply work health and safety practices (WHS)
- **C-** Communicate at workplace
- **D-** Perform Basic Computer Application Skills
- **E-** Perform Pesticides Application
- **F-** Perform Fertiliser application techniques

### **Possible Available Job Opportunities Available Immediately and Later In The Future**

- Technician (Pesticides & Fertilisers)
- Technician (Pesticides)
- Technician (Fertilisers)
- Pesticides & Fertilisers Applicator
- Fertiliser Spray Technician/Applicator
- Pesticides Spray Technician/Applicator
- Gardener
- Pest Control Operator

### **Trainee Entry Level**

For National Vocational Certificate Level-2 in Pesticides & Fertilisers Technician, the entry requirement is Matriculation or equivalent to Matriculation.

### **Minimum Qualification of Trainer**

Teaching staff should have DAE with two years' experience or 2 years Certificate with two years' experience in relevant field of Agriculture. They should also hold or be working towards a formal teaching qualification.

Other formal qualifications in the relevant field of Agriculture would be useful in addition to the above.

### **Recommended Trainer: Trainee Ratio**

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

### **Medium of Instruction i.e. Language of Instruction**

Instruction will be Urdu, English or Regional Language.

## Duration of the Course (Total Time, Theory & Practical Time)

This curriculum comprises 09 modules. The recommended delivery time is 600 hours. Delivery of the course could therefore be full time, 5 days a week. Training providers are at liberty to develop other models of delivery, including part-time and evening delivery.

The full structure of the course is as follow:

Module	Theory <sup>1</sup> Days/hours	Workplace <sup>2</sup> Days/hours	Total hours
<b>Module 1:</b> Identify and Implement Workplace Policy and Procedures	10	10	20
<b>Module 2:</b> Apply Work Health and Safety Practices (WHS)	20	10	30
<b>Module 3:</b> Communicate at Workplace	20	10	30
<b>Module 4:</b> Perform Basic Computer Application Skills	20	30	50
<b>Module 5:</b> Perform Pesticides Application	40	180	220
<b>Module 6:</b> Perform Fertiliser application techniques	50	200	250

## Summary of Competency Standards

The proposed curriculum is composed of 23 cores along with generic modules that will be covered in 3600 hrs. It is proposed that the course will be delivered in three years period (Level 1-5). The distribution of contact hours (practical & theory) is given below:

- **Theory:** (20%)                      **Practical** (80%)
- **Theory:** 150hours                      **Practical:** 450 hours

<sup>1</sup> Learning Module hours in training provider premises

<sup>2</sup> Training workshop, laboratory and on-the-job workplace

## Sequence of the Modules

Each module covers a range of learning components. These are intended to provide detailed guidance to teachers (for example the Learning Elements component) and give them additional support for preparing their lessons (for example the Materials Required component). The detail provided by each module will contribute to a standardized approach to teaching, ensuring that training providers in different parts of the country have clear information on what should be taught. Each module also incorporates the industrial needs of Pakistan.

The distribution table is shown below:

<b>Technician - 6 Months</b>		
<b>Module 1:</b> Identify and Implement Workplace Policy and Procedures <b>20 Hours</b>	<b>Module 3:</b> Communicate at Workplace <b>30 Hours</b>	
<b>Module 2:</b> Apply Work Health and Safety Practices (WHS) <b>30 Hours</b>		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;"><b>Module 5:</b> Perform Pesticides Application <b>220 Hours</b></td> <td style="padding: 5px;"><b>Module 6:</b> Perform Fertiliser Application techniques <b>250 Hours</b></td> </tr> </table>		<b>Module 5:</b> Perform Pesticides Application <b>220 Hours</b>
<b>Module 5:</b> Perform Pesticides Application <b>220 Hours</b>	<b>Module 6:</b> Perform Fertiliser Application techniques <b>250 Hours</b>	
<b>Module 4:</b> Perform Computer Application Skills <b>50 Hours</b>		

## Summary – Overview of the Curriculum

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<p><b>Module 1:</b> Identify and Implement Workplace Policy and Procedures</p> <p><b>Aim:</b> After successful completion of this module, the trainee is competent in Identifying and Implementing Workplace Policy and Procedures</p>	<p><b>LU1:</b> Identify workplace policy &amp; procedures</p> <p><b>LU2:</b> Implement workplace policy &amp; procedures</p> <p><b>LU3:</b> Communicate workplace policy &amp; procedures</p> <p><b>LU4:</b> Review the implementation of workplace policy &amp; procedures</p>	10	10	20
<p><b>Module 2:</b> Apply Work Health and Safety Practices (WHS)</p> <p><b>Aim:</b> After successful completion of this module, the trainee is competent in Applying Work Health and Safety Practices (WHS)</p>	<p><b>LU1:</b> Implement safe work practices at work place</p> <p><b>LU2:</b> Participate in hazard assessment activities a work place</p> <p><b>LU3:</b> Follow emergency procedures at workplace</p> <p><b>LU4:</b> Participate in OHS consultative processes</p>	20	10	30

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<p><b>Module 3:</b> Communicate at Workplace</p> <p><b>Aim:</b> After successful completion of this module, the trainee is competent in Communicating at Workplace</p>	<p><b>LU1:</b> Communicate within the organization</p> <p><b>LU2:</b> Communicate outside the organization</p> <p><b>LU3:</b> Communicate effectively in workgroup</p> <p><b>LU4:</b> Communicate in writing</p>	20	10	30
<p><b>Module 4:</b> Perform Basic Computer Application Skills</p> <p><b>Aim:</b> After successful completion of this module, the trainee is competent in Performing Computer Application Skills</p>	<p><b>LU1:</b> Prepare In-page documents as per required information</p> <p><b>LU2:</b> Prepare Spreadsheets as per required information</p> <p><b>LU3:</b> Use MS Office as per required information</p> <p><b>LU4:</b> Perform computer graphics in basic applications</p> <p><b>LU5:</b> Create Email account for communications</p>	20	30	50

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<p><b>Module 5: Perform Pesticides Application</b></p> <p><b>Aim:</b> After successful completion of this module, the trainee is competent in performing Pesticides Application</p>	<p><b>LU1:</b> Select the chemical for the application of pesticide</p> <p><b>LU2:</b> Apply the pesticides</p>	40	180	220
<p><b>Module 6: Perform Fertiliser Application Techniques</b></p> <p><b>Aim:</b> After successful completion of this module, the trainee is competent in Performing Product Costing</p>	<p><b>LU1:</b> Determine Nutritional deficiencies in crops</p> <p><b>LU2:</b> Perform Basal Fertiliser application</p> <p><b>LU3:</b> Perform Foliar Fertiliser application</p>	50	200	250

## Modules

### Module 1: Identify and Implement Workplace policies and Procedures

**Objective of the module:** 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.

**Duration:** 20hours      **Theory:** 10 hours      **Practical:** 10 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Identify workplace policy & procedures	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Identify the workplace policy &amp; procedures</li> <li>2. Apply appropriate strategies that can be used to measure whether your workplace health and safety obligations are being met.</li> <li>3. Assure the policies are realistic, resources and personnel to implement</li> <li>4. Implement the policy &amp; procedures that reflects the organizations commitments</li> </ol>	<ul style="list-style-type: none"> <li>• Define the workplace policy &amp; procedures</li> <li>• Enlist the strategies for workplace health and safety obligations</li> <li>• Explain the workplace policies , resources and personnel</li> <li>• Describe the methods of implementation, outcomes and performance indicators</li> </ul>	<b>Total:</b> 05hrs <b>Theory:</b> 02hrs <b>Practical:</b> 02hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <b>Non Consumable</b> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	Class room

	5. Ensure the appropriate methods of implementation, outcomes and performance indicators				
<b>LU2:</b> Implement workplace policy & procedures	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Apply and assign responsibility for recording systems to track continuous improvements in policy &amp; procedures</li> <li>2. Implement strategies for continuous improvement in effective and efficient information</li> </ol>	<ul style="list-style-type: none"> <li>• Explain the procedures of Implementation of strategies for continuous improvement</li> </ul>	<p><b>Total:</b> 05hrs  <b>Theory:</b> 02hrs  <b>Practical:</b> 02hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> <li>• PPEs (Safety glasses, Ear muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.)</li> </ul>	Class room
<b>LU3:</b> Communicate workplace policy & procedures	<b>The trainee will be able to:</b>		<p><b>Total:</b> 05hrs  <b>Theory:</b> 03hrs  <b>Practical:</b> 03hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> </ul>	Class room

	<ol style="list-style-type: none"> <li>1. Communicate procedures to help implement workplace policy</li> <li>2. Inform those involved in implementing the policy about expected outcomes, activities to be undertaken and assigned responsibilities</li> </ol>	<ul style="list-style-type: none"> <li>• Define the Communication procedures to help implement workplace policy</li> </ul>		<ul style="list-style-type: none"> <li>• Erasers</li> <li>• Sharpeners</li> <li><b>Non Consumable</b></li> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> <li>• Safety manuals</li> </ul>	
<p><b>LU4:</b> Review the implementation of workplace policy &amp; procedures</p>	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Identify the trends that may require remedial actions</li> <li>2. Record the trends that may require remedial actions</li> <li>3. Ensure policy and procedures as required are made for continuous improvement of performance</li> </ol>	<ul style="list-style-type: none"> <li>• Describe the trends for required remedial actions</li> </ul>	<p><b>Total:</b> 05hrs  <b>Theory:</b> 03hrs  <b>Practical:</b> 03hrs</p>	<ul style="list-style-type: none"> <li><b>Consumable</b></li> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> <li><b>Non Consumable</b></li> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	Class room

## Module 2: Apply Work Health and Safety Practices (WHS)

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

**Duration:** 30 hours      **Theory:** 20 hours      **Practical:** 10hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Implement safe work practices at work place	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Implement relevant rules and procedures of WHS at work place</li> <li>2. Comply with duty of care requirements</li> <li>3. Use personal protective equipment according to safe work practices</li> <li>4. Contribute to WHS consultative activities</li> <li>5. Raise WHS issues with relevant personnel</li> </ol>	<ul style="list-style-type: none"> <li>• Explain the WHS rights and responsibilities that apply to own role</li> <li>• Explain the term duty of care</li> </ul>	<b>Total:</b> 07hrs <b>Theory:</b> 05hrs <b>Practical:</b> 02hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pen</li> </ul> <b>Non Consumable</b> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	Class room with multimedia aid and flip charts Visit to merchandiser establishments <b>EITHER</b> Training Office <b>OR</b> Access to a commercial office for training purposes (for example textile industry, leather industry, shoe

					industry, fan manufacture, electrical manufacture)
<p><b>LU2:</b>Participate in hazard assessment activities a work place</p>	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Identify hazards or WHS issues in the workplace to relevant personnel</li> <li>2. Assess and control risks according to own level of responsibility, in line with workplace procedures</li> <li>3. Report hazards or WHS issues in the workplace to relevant personnel</li> <li>4. Document risk control actions as required</li> </ol>	<ul style="list-style-type: none"> <li>• List and describe common safety signs and symbols</li> </ul>	<p><b>Total:</b> 08hrs  <b>Theory:</b> 05hrs  <b>Practical:</b> 03hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pen</li> </ul> <p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	<p>Class room with multimedia aid and flip charts</p> <p>Visit to merchandiser establishments</p> <p><b>EITHER</b></p> <p>Training Office</p> <p><b>OR</b></p> <p>Access to a commercial office for training purposes (for example textile industry, leather industry, shoe industry, fan manufacture,</p>

					electrical manufacture)
<b>LU3:</b> Follow emergency procedures at workplace	<b>The trainee will be able to:</b> 1. Report emergencies or incidents promptly to relevant personnel 2. Deal with emergencies in line with own level of responsibility 3. Implement evacuation procedures as required	<ul style="list-style-type: none"> <li>Describe typical health and safety roles in the workplace</li> <li>Enlist emergencies or incidents relevant personnel</li> <li>Define evacuation procedures at workplace</li> </ul>	<b>Total:</b> 07hrs <b>Theory:</b> 05hrs <b>Practical:</b> 02hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>Notebooks</li> <li>Pen</li> </ul> <b>Non Consumable</b> <ul style="list-style-type: none"> <li>White board</li> <li>Multimedia</li> <li>Internet</li> <li>Computer system</li> </ul>	Class Room
<b>LU4:</b> Participate in OHS consultative processes	<b>The trainee will be able to:</b> 1. Contribute to workplace meetings, inspections or other consultative activities 2. Raise OHS (Occupational Health and Safety) issues with designated persons in accordance with organizational procedures 3. Take actions to eliminate workplace hazards or to reduce risks	<ul style="list-style-type: none"> <li>Importance of workplace meetings, inspections or other consultative activities</li> <li>Enlist common OHS (Occupational Health and Safety) issues with accordance to the organizational procedures</li> <li>Describe actions to eliminate workplace hazards or to reduce risks</li> </ul>	<b>Total:</b> 08hrs <b>Theory:</b> 05hrs <b>Practical:</b> 03hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>Notebooks</li> <li>Pen</li> </ul> <b>Non Consumable</b> <ul style="list-style-type: none"> <li>White board</li> <li>Multimedia</li> <li>Internet</li> <li>Computer system</li> </ul>	Class room with multimedia aid and flip charts Visit to merchandiser establishments <b>EITHER</b> Training Office <b>OR</b> Access to a commercial office for training purposes (for

					example textile industry, leather industry, shoe industry, fan manufacture, electrical manufacture)
--	--	--	--	--	---

## Module 3: Communicate at Workplace

**Objective of the module:** The aim of this module to get knowledge, skills and understanding to Communicate at Workplace.

**Duration:** 30 hours    **Theory:** 10 hours    **Practical:** 20 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1:Communicate within the organization	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Communicate within a department</li> <li>2. Communicate with other departments</li> <li>3. Use various media to communicate effectively</li> <li>4. Communicate orally and written</li> </ol>	<ul style="list-style-type: none"> <li>• Importance of intra and inter organizational communication</li> <li>• Types of Modes of communication</li> <li>• 8C's of communication</li> </ul>	<p><b>Total:</b> 08hrs  <b>Theory:</b> 03hrs  <b>Practical:</b> 05hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	<p>Class room with multimedia aid and flip charts            Visit to merchandiser establishments  <b>EITHER</b>            Training Office  <b>OR</b>            Access to a commercial office for training purposes (for example textile industry, leather industry, shoe industry, fan manufacture, electrical manufacture)</p>

<p><b>LU2:</b> Communicate outside the organization</p>	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Deal with vendors</li> <li>2. Deal with clients/customers</li> <li>3. Interact with other organisations</li> <li>4. Use various media to communicate effectively</li> <li>5. Work with people of different cultures / backgrounds</li> </ol>	<ul style="list-style-type: none"> <li>• Basics of business communication</li> <li>• Importance of communication with clients/customers/vendor</li> </ul>	<p><b>Total:</b> 08hrs <b>Theory:</b> 03hrs <b>Practical:</b> 05hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> <li>• PPEs (Safety glasses, Ear muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.)</li> </ul>	<p>Class room with multimedia aid and flip charts Visit to merchandiser establishments <b>EITHER</b> Training Office <b>OR</b> Access to a commercial office for training purposes (for example textile industry, leather industry, shoe industry, fan manufacture, electrical manufacture)</p>
<p><b>LU3:</b> Communicate effectively in work group</p>	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Assess the issues to provide relevant suggestion to group members</li> </ol>	<ul style="list-style-type: none"> <li>• Explain the method of Communication in work group</li> <li>• Importance of communication style/manner</li> </ul>	<p><b>Total:</b> 07hrs <b>Theory:</b> 02hrs <b>Practical:</b> 05hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul>	<p>Class room with multimedia aid and flip charts</p>

	<ol style="list-style-type: none"> <li>2. Resolve the issues/problems /conflicts within the group</li> <li>3. Arrange group working sessions to increase the level of participation in the group processes</li> <li>4. Communicate messages to group members clearly to ensure interpretation is valid</li> <li>5. Communicate style /manner to reflect professional standards/ awareness of appropriate cultural practices</li> <li>6. Act upon constructive feedback</li> </ol>	<ul style="list-style-type: none"> <li>• Method of feed back <ul style="list-style-type: none"> <li>○ Verbal</li> <li>○ Written etc.</li> </ul> </li> <li>• Types of feed back <ul style="list-style-type: none"> <li>○ Informal</li> <li>○ Formal</li> <li>○ Formative</li> <li>○ Summative etc.</li> </ul> </li> </ul>		<p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> <li>• Safety manuals</li> </ul>	<p>Visit to merchandiser establishments</p> <p><b>EITHER</b></p> <p>Training Office</p> <p><b>OR</b></p> <p>Access to a commercial office for training purposes (for example textile industry, leather industry, shoe industry, fan manufacture, electrical manufacture)</p>
<p><b>LU4:</b></p> <p>Communicate in writing</p>	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Identify relevant procedures for written information</li> <li>2. Use strategies to ensure correct communication in writing .i.e. <ul style="list-style-type: none"> <li>• Correct composition</li> <li>• Clarity</li> </ul> </li> </ol>	<ul style="list-style-type: none"> <li>• Define procedures for written information</li> </ul> <p>Importance of communication strategies in writing</p>	<p><b>Total:</b> 07hrs</p> <p><b>Theory:</b> 02hrs</p> <p><b>Practical:</b> 05hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> </ul>	<p>Class room with multimedia aid and flip charts</p> <p>Visit to merchandiser establishments</p> <p><b>EITHER</b></p> <p>Training Office</p>

	<ul style="list-style-type: none"> <li>• Comprehensiveness</li> <li>• Accuracy</li> <li>• Appropriateness</li> </ul> <p>3. Draft assigned written information for approval, ensuring it is written within designated timeframes</p> <p>4. Ensure written information meets required standards of style, format and detail</p> <p>5. Seek assistance / feedback to aid communication skills development</p>			<ul style="list-style-type: none"> <li>• Internet</li> <li>• Computer system</li> <li>• PPEs (Safety glasses, Ear muffs/ear plugs, Protective Gloves, Cap, Safety shoes etc.)</li> </ul>	<p><b>OR</b></p> <p>Access to a commercial office for training purposes (for example textile industry, leather industry, shoe industry, fan manufacture, electrical manufacture)</p>
--	--	--	--	--	--

## Module 4: Perform Basic Computer Operations

**Objective of the module:** After successful completion of this module, the trainee is competent in performing Basic Computer Operations.

**Duration:** 50 hours      **Theory:** 20 hours      **Practical:** 30 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Configure Computer System	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Connect computer components and peripherals as per requirement.</li> <li>2. Install Drivers and applications according to the software specification.</li> <li>3. Troubleshoot Applications to trace and fix faults in a specific application to bring it in a running condition.</li> </ol>	<ul style="list-style-type: none"> <li>• Introduction to hardware and software</li> <li>• Introduction to configuring computer</li> <li>• Install and Configure a Computer System</li> <li>• Introduction to troubleshooting</li> <li>• Types of troubleshooting</li> </ul>	<p><b>Total:</b> 10hrs  <b>Theory:</b> 05hrs  <b>Practical:</b> 05hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Pocket files</li> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	Class room/Computer Lab
LU2. Create a Document using MS Word	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Compose a document as per the requirement.</li> <li>2. Format Word Document according to given requirements.</li> <li>3. Print Word Documents</li> </ol>	<ul style="list-style-type: none"> <li>• Introduction to MS Word</li> <li>• Creating a file in MS Word</li> <li>• Uses of Templates in MS Word</li> <li>• File and types of files</li> </ul>	<p><b>Total:</b> 13hrs  <b>Theory:</b> 05hrs  <b>Practical:</b> 08hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Pocket files</li> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <p><b>Non Consumable</b></p>	Class room/Computer Lab

	according to requirements.	<ul style="list-style-type: none"> <li>• Creating and printing different documents in MS Word</li> </ul>		<ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	
<b>LU3.</b> Prepare a Worksheet using MS Excel	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Develop a worksheet as per given data.</li> <li>2. Format the worksheet according to given criteria.</li> <li>3. Apply Formulas according to the requirement.</li> <li>4. Generate Charts/Graphs according to the given data.</li> </ol>	<ul style="list-style-type: none"> <li>• Introduction to MS Excel</li> <li>• Creating a worksheet in MS Excel</li> <li>• Uses of Templates in MS Excel</li> <li>• Formulas for calculations</li> <li>• Adding Graphs in MS Excel sheet</li> <li>• Creating and printing different documents in MS Excel</li> </ul>	<p><b>Total:</b> 14hrs  <b>Theory:</b> 05hrs  <b>Practical:</b> 09hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Pocket files</li> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	Class room/Computer Lab
<b>LU4.</b> Prepare a presentation using MS PowerPoint	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Insert Slides with different Layouts according to requirements of presentation.</li> <li>2. Insert text, tables, images, etc. according to the requirement.</li> </ol>	<ul style="list-style-type: none"> <li>• Introduction to MS PowerPoint</li> <li>• Creating a presentation in MS PowerPoint</li> <li>• Uses of Templates in MS PowerPoint</li> <li>• Setting the transitions for slides</li> </ul>	<p><b>Total:</b> 13hrs  <b>Theory:</b> 05hrs  <b>Practical:</b> 08hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Pocket files</li> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>• White board</li> </ul>	Class room/Computer Lab

	<ol style="list-style-type: none"> <li>3. Apply a set of effects to animate the slide according to requirement.</li> <li>4. Apply Slide Transitions on Slides according to requirement.</li> <li>5. Apply Sound Effects on Objects/text/images according to requirement.</li> <li>6. Present a presentation according to 7Cs of communication.</li> </ol>	<ul style="list-style-type: none"> <li>• Presentation of slides</li> </ul>		<ul style="list-style-type: none"> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	
--	---	--	--	---	--

## Module 5: Perform Pesticides Application

**Objective of the module:** After completing this module, the learner will be able to perform Pesticides application which includes comprehensive knowledge of different chemicals and their application procedures.

**Duration:** 220 hrs.

**Theory:** 40 hrs.

**Practical:** 180 hrs.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Select the chemical for the application of pesticide	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>Identify the functions of chemicals (insecticides, fungicides, nematicides, herbicides, etc.)</li> <li>Identify symbols and read chemical labels</li> <li>Identify active ingredients of the pesticides</li> <li>Ensure the use of Personal Protective Equipment (PPEs)</li> </ol>	<ul style="list-style-type: none"> <li>Describe different types of Raw Material</li> <li>Explain the purpose of a raw material list</li> <li>Describe the content of the raw material</li> <li>Explain the use of formulas for quantity calculation</li> <li>Define price</li> <li>Explain target price</li> <li>Describe the purpose of a Target price for raw material</li> <li>Define economic order</li> <li>Explain the purpose of economic order quantity</li> </ul>	<b>Total:</b> 110hrs <b>Theory:</b> 20hrs <b>Practical:</b> 90hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>Notebooks</li> <li>Pencils</li> <li>Erasers</li> <li>Sharpeners</li> <li>Chemicals (insecticides, fungicides, nematicides, herbicides, etc.)</li> <li>Pesticides calculation charts</li> </ul> <b>Non Consumable</b> <ul style="list-style-type: none"> <li>White board</li> <li>Multimedia</li> <li>Internet</li> </ul>	Class Room/ Site Specific Field Area

		<ul style="list-style-type: none"> <li>Describe the use of relevant formulas to calculate economic order quantity</li> </ul>		<ul style="list-style-type: none"> <li>Computer system</li> </ul>	
		<p><b><u>Practical Activity:</u></b></p> <ol style="list-style-type: none"> <li>Prepare a chart to classify chemicals on the basis of symbols and labels.</li> </ol>			
<b>LU2:</b> Apply the pesticides	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>Select appropriate pest control equipment for the application of pesticide</li> <li>Perform the Calibration of pest control Equipment according to the manufacturer's instructions</li> <li>Calculate the dose of chemical for the selected area</li> <li>Perform mixing of Pesticides according to the instructions</li> <li>Perform Pesticides application according to the instructions</li> </ol>	<ul style="list-style-type: none"> <li>Tools and equipment for Pesticides application (knapsack, hand sprayer, power sprayer, boom sprayer, etc.)</li> <li>Calibration and maintenance of Pesticides application equipment.</li> <li>Measurement of dosage of chemicals</li> <li>Mixing of pesticides on the basis of classification and types</li> <li>Pesticides application methods</li> <li>Interpretation of Safety Signs</li> <li>Evaluation of the results/Evaluation report</li> </ul>	<p><b>Total:</b> 110hrs  <b>Theory:</b> 20hrs  <b>Practical:</b> 90hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>Notebooks</li> <li>Pencils</li> <li>Erasers</li> <li>Sharpeners</li> <li>Chemicals (insecticides, fungicides, nematicides, herbicides, etc.)</li> <li>Pesticides calculation charts</li> </ul> <p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>White board</li> <li>Multimedia</li> </ul>	Class Room/ Site Specific Field Area

	<p>6. Perform the maintenance of the Pest control Equipment</p> <p>7. Protect the area as per requirement</p> <p>8. Perform field visits to prepare evaluation report</p>	<p><b><u>Practical Activity:</u></b></p> <p>1. Prepare a list of parameters on which vendors can be evaluated.</p>		<ul style="list-style-type: none"> <li>• Internet</li> <li>• Computer system</li> <li>• Pesticides application equipment</li> </ul>	
--	---	--	--	---	--

## Module 7: Perform Fertiliser Application Techniques

**Objective of the module:** After completing this module, the learner will be able to perform Fertilisers application techniques which include comprehensive knowledge of crop nutritional deficiencies and the application of Fertilisers by using appropriate method.

**Duration:** 250 hrs.

**Theory:** 50 hrs.

**Practical:** 200 hrs.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Determine Nutritional deficiencies in crops	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Visually inspect colour/other changes in the crops</li> <li>2. Identify the deficiency symptoms in crops</li> <li>3. Prepare an inspection report</li> </ol>	<ul style="list-style-type: none"> <li>• Conduct field visits to observe the nutritional deficiencies in crops</li> <li>• Deficiency symptoms in crops (growth, colour, size, shape, texture, etc.)</li> <li>• Explain Field Inspection Report</li> </ul>	<b>Total:</b> 60hrs <b>Theory:</b> 10hrs <b>Practical:</b> 50hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <b>Non Consumable</b> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> <li>• Calculator</li> </ul>	Class Room/ Site Specific Field Area
		<b>Practical Activity:</b> <ol style="list-style-type: none"> <li>1. Identify nutritional deficiencies in given crops and prepare inspection report.</li> </ol>			

<p><b>LU2:</b> Perform Basal Fertiliser application</p>	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Prepare the dose of Fertiliser according to the requirement</li> <li>2. Perform Fertiliser application using conventional methods based on Soil Analysis Report</li> <li>3. Perform Fertiliser application using modern methods based on Soil Analysis Report</li> </ol>	<ul style="list-style-type: none"> <li>• Basal Fertilisers requirement for different crops.</li> <li>• Fertilisers calculation as per requirement</li> <li>• Fertilisers application methods (Modern and Conventional) according to crop requirements</li> <li>• Interpretation of Soil Analysis Report</li> </ul> <p><b>Practical Activity:</b></p> <ol style="list-style-type: none"> <li>1. Apply Basal Fertilisers as per crop requirement.</li> </ol>	<p><b>Total:</b> 90hrs  <b>Theory:</b> 15hrs  <b>Practical:</b> 75hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> <li>• Basal fertiliser application Charts</li> </ul> <p><b>Non Consumable</b></p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> <li>• Fertiliser application equipment</li> </ul>	<p>Class Room/ Site Specific Field Area</p>
<p><b>LU3:</b> Perform Foliar Fertiliser application</p>	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Identify the dose of Foliar Fertiliser application according to the requirement</li> <li>2. Perform Foliar Fertiliser application as per requirement</li> </ol>	<ul style="list-style-type: none"> <li>• Foliar Fertilisers requirement for different crops.</li> <li>• Calculation of Foliar Fertilisers as per requirement</li> <li>• Foliar application criteria</li> </ul>	<p><b>Total:</b> 90hrs  <b>Theory:</b> 15hrs  <b>Practical:</b> 75hrs</p>	<p><b>Consumable</b></p> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> <li>• Foliar fertiliser application</li> </ul>	<p>Class Room/ Site Specific Field Area</p>

		<ul style="list-style-type: none"> <li>• of the final price</li> </ul>		<p>Charts</p> <p>Non Consumable</p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> <li>• Fertiliser application equipment</li> </ul>	
		<p><b>Practical Activity:</b></p> <ol style="list-style-type: none"> <li>1. Apply Foliar Fertilisers as per crop requirement.</li> </ol>			

## **General assessment guidance for *Pesticides & Fertiliser Technology***

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 Pesticides & Fertiliser Technology include:

- Work performances, for example communication at workplace, application of work health and safety practices (WHS), performing basic computer operations, and identification of and implement Workplace Policies and Procedures.
- Demonstrations, for example Pesticides Application and Fertiliser Application
- Direct questioning, where the assessor would ask the student how to perform personal safety at work place, how they can communicate work place policy and

procedures, how they can handle documents, what are the benefits of organizing store merchandising

- Paper-based tests, such as multiple choice or short answer questions on communication at work place policy and procedures, handling documents, organizing store merchandizing
- Indirect assessment is the method used where the performance could not be watched and evidence is gained indirectly.

Examples for indirect assessment of a Pesticides & Fertiliser Technology include:

- Perform Pesticides Application and Perform Fertiliser application techniques

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 documentation or organizing procedures of Pesticides Pre-Application Tasks are to be assessed and certificated, the assessment should involve performance criteria that are directly related to that documentation activity. An interview about the Pesticides Pre-Application Tasks 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 Pesticides & Fertilisers Technology**

This curriculum consists of 06 modules:

- **Module 1:** Identify and Implement Workplace Policy and Procedures
- **Module 2:** Apply Work Health and Safety Practices (WHS)
- **Module 3:** Communicate at Workplace
- **Module 4:** Perform Computer Application Skills
- **Module 5:** Perform Pesticides Application
- **Module 6:** Perform Fertiliser Application Techniques

### **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 Team**

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.

## Complete List of Tools and Equipment

Sr no	Description	Quantity
1	Computer with relevant software and internet	26
2	Printer	1
3	Multi media	1
4	Whiteboard	1
5	Lights	1
6	Mannequin	5
7	Props	

## List of Consumable Supplies

Sr no	Material	Quantity
1	Colour box pencil(12 )	25
2	Color box water color	25
3	Colour box oil colours	25
4	White sheets	40
5	Stencils	30

<b>6</b>	White sheets	30
<b>7</b>	A4 rim	13
<b>8</b>	Note books	25
<b>9</b>	Eraser	25
<b>10</b>	Pencils	25
<b>11</b>	Sharpener	25

## Credit Values

The credit value of the National Certificate Level 3 in Textile Merchandizing is defined by estimating the amount of time/ instruction hours required to complete each competency unit and competency standard. The NVQF uses a standard credit value of 1 credit = 10 hours of learning (Following Higher Education Commission (HEC) guidelines).

The credit values are as follows:

Competency Standard	Credit	Estimate of hours
A. Identify and Implement Workplace Policy and Procedures	2	20
B. Apply Work Health and Safety Practices (WHS)	3	30
C. Communicate at Workplace	3	30
D. Perform Computer Application Skills	5	50
E. Perform Pesticides Application	22	220
F. Perform Fertiliser application techniques	25	250