

# Curriculum For “Pesticide & Fertiliser Technology”

(Supervisor)

(Level -5)



*27<sup>th</sup> to 30<sup>th</sup> December 2021*



**National Vocational & Technical  
Training Commission**

## Table of Contents

Introduction	3
Definition/ Description of the training programme for <i>Textile &amp; Apparel Merchandising</i>	<b>Error! Bookmark not defined.</b>
Purpose of the Training Programme	<b>Error! Bookmark not defined.</b>
Overall Objectives of Training Programme	<b>Error! Bookmark not defined.</b>
Competencies to Be Gained After Completion Of Course	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>Textile Merchandiser</i>	30
Complete List of Tools and Equipment	35
List of Consumable Supplies	35
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 fertilizers and other inputs.

Pesticides and Fertilizers 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 fertilizers and pesticides industries so they are considered as a vital component for modern farming. The demand for the use of fertilizers 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 fertilizer 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 fertilizers 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 “Fertilizer and pesticide 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 Fertilizer and Pesticide 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 fertilizer and pesticide industry
- Capacitate the local community and trainers in modern Competency Based Training (CBT)
- Provide flexible pathways and progressions in fertilizer and pesticide industry
- Enable the trainees to perform their duties in efficient manner
- Establish a standardized and sustainable system of training in fertilizer and pesticide industry in Pakistan
- Understand the marketing mechanisms of fertilizers 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 pesticide & fertilizer technology to cope the challenges of the pesticide & fertilizer industry. After qualifying the course at different levels (Level 1 – 5), the students will be able to get job in the pesticide & fertilizer 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 pesticide & fertilizer 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-** Perform Management Of Grain Storage Houses/Warehouse.
- **B-** Perform Cultural Practices for Soil Improvement
- **C-** Manage Nutritional deficiencies
- **D-** Manage Pesticide and Fertilisers Storage
- **E-** Practice Professionalism

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

- Pesticide & Fertiliser Application Supervisor
- Pesticide Application Supervisor
- Fertiliser Application Supervisor
- Pest Control Supervisor
- Assistant Farm Manager
- Assistant Farm Supervisor
- Assistant Production Officer
- Assistant Pest Control Inspector/Supervisor
- Assistant Research Officer (Entomologist/Soil Scientist/Agronomist)

### **Trainee Entry Level**

Middle or Equivalent (with English, Urdu and Numeracy reading and writing skills)

### **Minimum Qualification of Trainer**

Teaching staff should have DAE with two years' experience or 2 years Certificate with five years' experience in Pesticides & Fertilisers. 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 and English.

### 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> Perform Management of Grain Storage Houses/Warehouse	140	210	350
<b>Module 2:</b> Perform Cultural Practices for Soil Improvement	100	150	250
<b>Module 3:</b> Manage Nutritional Deficiencies	100	150	250
<b>Module 4:</b> Manage Pesticide And Fertilisers Storage	60	90	150
<b>Module 5:</b> Practice Professionalism	50	150	200

---

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

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

## Summary of Competency Standards

The proposed curriculum is composed of 5 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: (40%)**                      **Practical (60%)**
- **Theory: 450 hours**                      **Practical: 750 hours**

## 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:

Supervisor - 12 Months	
<b>Module 1:</b> Execute Post Production Tasks <b>350Hours</b>	<b>Module 4:</b> Manage Pesticide And Fertilisers Storage <b>150Hours</b>
<b>Module 2:</b> Perform Cultural Practices For Soil Improvement <b>250Hours</b>	<b>Module 3:</b> Manage Nutritional Deficiencies <b>250Hours</b>
<b>Module 5:</b> Practice Professionalism <b>200 Hours</b>	



## Summary – overview of the curriculum

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<b>Module 1:</b> Perform Management of Grain Storage Houses/Warehouse  <b>Aim:</b> After successful completion of this module, the trainee is competent in performing Management of Grain Storage Houses/Warehouse	<b>LU1:</b> Identify Stored grain Pests <b>LU2:</b> Perform Pest Management/Control Methods	140	210	350
<b>Module 2:</b> Perform Cultural Practices for Soil Improvement  <b>Aim:</b> After successful completion of this module, the trainee is competent in performing Cultural Practices for Soil Improvement	<b>LU1:</b> Identify Soil Improvement measures <b>LU2:</b> Apply Cultural practices for soil improvement <b>LU3:</b> Perform and Apply Soil Decomposer (PGPR's)	100	150	250

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<b>Module 3:</b> Manage Nutritional Deficiencies  <b>Aim:</b> After successful completion of this module, the trainee is competent in managing Nutritional Deficiencies	<b>LU1:</b> Identify Nutrient deficiencies in Soil and Plants samples <b>LU2:</b> Recommend relevant nutrient as per required standard <b>LU3:</b> Perform Post application tasks	100	150	250
<b>Module 4:</b> Manage Pesticide and Fertilisers Storage  <b>Aim:</b> After successful completion of this module, the trainee is competent in managing Pesticide and Fertilisers Storage	<b>LU1:</b> Manage the inputs for production unit <b>LU2:</b> Manage all aspects of receiving, shipping, and storing of pesticide/fertilizer <b>LU3:</b> Maintain Inventory <b>LU4:</b> Manage packaging according to material requirement <b>LU5:</b> Manage loading/offloading tasks	60	90	150

Module Title and Aim	Learning Units	Theory Days/hours	Workplace Days/hours	Timeframe of modules
<b>Module 5:</b> Practice Professionalism  <b>Aim:</b> After successful completion of this module, the trainee is competent in Practicing Professionalism	<b>LU1:</b> Develop Portfolio for industry  <b>LU2:</b> Perform Internship	50	150	200

## Modules

### Module 1: Perform Management of Grain Storage Houses/Warehouse.

**Objective of the module:** After completing this module, the learner will be able to understand how to perform Management of grain storage houses/warehouse. Learner will be able to identify Store grain Pests and performing Pest management practices.

**Duration:** 350 hrs.

**Theory:** 140 hrs.

**Practical:** 210 hrs.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Identify Stored grain Pests	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Select appropriate time for pest inspection</li> <li>2. Select appropriate method for pest inspection</li> <li>3. Visit the site (warehouse/Gangi) for pest inspection</li> <li>4. Assess the severity of pest infestation</li> <li>5. Prepare a site inspection report</li> </ol>	<ul style="list-style-type: none"> <li>• Store grain pests (Khapra Beetle, Red flour Beetle, Rice Weevil, etc.)</li> <li>• Pest Inspection of store grain</li> <li>• Pest Inspection Methods: <ul style="list-style-type: none"> <li>○ Conventional methods (Visual Sampling, Pheromone Traps, etc.)</li> <li>○ Modern methods (Electrical Traps, etc.)</li> </ul> </li> <li>• Site Inspection Report</li> </ul>	<b>Total:</b> 175hrs <b>Theory:</b> 70hrs <b>Practical:</b> 105hrs	<div>Consumable</div> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> <li>• Masks</li> <li>• Gloves</li> <li>• Aspirator</li> <li>• First aid box</li> <li>• Sprayer nozzles</li> <li>• Respiratory mask</li> </ul> <div>Non Consumable</div> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> </ul>	Class Room/ Site Specific Field Area

		<b><u>Practical Activity:</u></b> <b>1.</b> Perform inspection of assigned storage house to identify Pests and prepare Inspection Report.		<ul style="list-style-type: none"> <li>• Internet</li> <li>• Computer system</li> <li>• Fertilizer/pesticide mixer</li> <li>• Calculator</li> <li>• Bins and containers</li> <li>• Sprayer tank</li> <li>• Air blast sprayers</li> </ul>	
<b>LU2:</b> Perform Pest Management/Control Methods	<b>The trainee will be able to:</b> <b>1.</b> Perform pre-disinfection methods for microbes <b>2.</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>3.</b> Demonstrate Post application tasks <b>4.</b> Prepare Treatment Report/Data Sheet	<ul style="list-style-type: none"> <li>• Pre-disinfection methods for microbes (Thermal, Cold, Chemical, etc.).</li> <li>• Pest Control Modern/conventional Methods (Sanitation, Fumigation, Biological, Chemical, Physical, Heat treatment, etc.)</li> <li>• Post application tasks (Tightly seal the storage house, Inspection, etc.)</li> <li>• Personal Protective Equipment's (PPE's)</li> </ul>	<b>Total:</b> 100hrs <b>Theory:</b> 40hrs <b>Practical:</b> 60hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> <li>• Masks</li> <li>• Gloves</li> <li>• Aspirator</li> <li>• First aid box</li> <li>• Sprayer nozzles</li> <li>• Respiratory mask</li> </ul> <b>Non Consumable</b>	Class Room/ Site Specific Field Area

		<ul style="list-style-type: none"> <li>• Importance of Record Keeping (Treatment Report/Data Sheet)</li> </ul>		<ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> <li>• Fertilizer/pesticide mixer</li> <li>• Calculator</li> <li>• Bins and containers</li> <li>• Sprayer tank</li> <li>• Air blast sprayers</li> </ul>	
		<p><b><u>Practical Activity:</u></b></p> <ol style="list-style-type: none"> <li>1. Identify pest in assigned area, apply appropriate pest control method and record information as per given instructions.</li> </ol>			

## Module 2: Manage Nutritional Deficiencies

**Objective of the module:** After completing this module, the learner will be able to develop an understanding to Manage Nutritional deficiencies. That will allow learner to identify Nutrient deficiencies and recommend relevant nutrient as per requirement.

**Duration:** 250 hrs.

**Theory:** 100hrs.

**Practical:** 150 hrs.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Identify Nutrient deficiencies in Soil and Plants samples	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Perform field visit to collect soil and infected plants samples for nutrient deficiencies</li> <li>2. Identify the deficiency symptoms as per standard manual</li> <li>3. Prepare a report for Nutrient deficiencies</li> </ol>	<ul style="list-style-type: none"> <li>• Describe Plant Nutrients</li> <li>• Macro/Micro Nutrient deficiencies in soil (Nitrogen, Potassium, Phosphorus, Calcium, Magnesium, Sulphur, Zinc, etc.)</li> <li>• Nutrient Deficiency symptoms in Soil/Plant</li> <li>• Maintaining Records/Report</li> </ul>	<b>Total:</b> 95hrs <b>Theory:</b> 35hrs <b>Practical:</b> 60hrs	<div>Consumable</div> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> <li>• Masks</li> <li>• Gloves</li> <li>• Aspirator</li> <li>• First aid box</li> <li>• Sprayer nozzles</li> <li>• Respiratory mask</li> </ul> <div>Non Consumable</div> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	Class Room/ Site Specific Field Area
		<b><u>Practical Activity:</u></b> <ol style="list-style-type: none"> <li>1. Perform field inspection and identify nutrient deficiencies in plants/soil. Also prepare a report on the basis of findings.</li> </ol>			

				<ul style="list-style-type: none"> <li>• Fertilizer/pesticide mixer</li> <li>• Calculator</li> <li>• Bins and containers</li> <li>• Sprayer tank</li> <li>• Air blast sprayers</li> </ul>	
<b>LU2:</b> Recommend relevant nutrient as per required standard	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Select and Calculate suitable nutrients according to soil/plant/water analysis report.</li> <li>2. Perform application of nutrients as per required standard</li> <li>3. Maintain the record after nutrient application</li> </ol>	<ul style="list-style-type: none"> <li>• Nutrient Application Methods (Broadcasting, Aerial Application, Placement, Foliar Application, etc.).</li> <li>• Nutrient Management Practices/Techniques (Conservation Practices/Techniques): Time, quantity, irrigation, soils, growing media, and plant tissue, etc.</li> <li>• Interpretation of Soil and Water analysis reports</li> <li>• Protocols to apply Nutrients/Fertiliser (Interpretation of label)</li> <li>• Nutrients/Fertiliser application</li> </ul>	<b>Total:</b> 95hrs <b>Theory:</b> 35hrs <b>Practical:</b> 60hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> <li>• Masks</li> <li>• Gloves</li> <li>• Aspirator</li> <li>• First aid box</li> <li>• Sprayer nozzles</li> <li>• Respiratory mask</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



		<p>record keeping (Right rate, Right timing, Right source, and Right placement).</p> <p><b><u>Practical Activity:</u></b></p> <ol style="list-style-type: none"> <li>1. Identify nutrient deficiency by interpreting Soil/water analysis report and apply appropriate nutrients/fertiliser. Also prepare a report on the basis of findings.</li> </ol>		<ul style="list-style-type: none"> <li>• Computer system</li> <li>• Fertilizer/pesticide mixer</li> <li>• Calculator</li> <li>• Bins and containers</li> <li>• Sprayer tank</li> <li>• Air blast sprayers</li> </ul>	
<b>LU3:</b> Perform Post application tasks	<p><b>The trainee will be able to:</b></p> <ol style="list-style-type: none"> <li>1. Perform post application inspection</li> <li>2. Compare pre- and post-application results</li> <li>3. Prepare a report of post application tasks</li> </ol>	<ul style="list-style-type: none"> <li>• Post application tasks <ul style="list-style-type: none"> <li>◦ Inspection of Soil (Analysis Report)</li> <li>◦ Inspection of Plant (Health, Maturity Rate, Produce Quality, etc.)</li> </ul> </li> <li>• Maintaining Pre and Post application records</li> </ul>	<p><b>Total:</b> 60hrs</p> <p><b>Theory:</b> 30hrs</p> <p><b>Practical:</b> 30hrs</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>• Masks</li> <li>• Gloves</li> <li>• Aspirator</li> </ul>	Class Room/ Site Specific Field Area

		<p><b><u>Practical Activity:</u></b></p> <p>1. Prepare a report on the basis of Pre- and Post-application Results.</p>		<ul style="list-style-type: none"> <li>• First aid box</li> <li>• Sprayer nozzles</li> <li>• Respiratory mask</li> </ul> <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>• Fertilizer/pesticide mixer</li> <li>• Calculator</li> <li>• Bins and containers</li> <li>• Sprayer tank</li> <li>• Air blast sprayers</li> </ul>	
--	--	--	--	--	--

### Module 3: Perform Cultural Practices for Soil Improvement

**Objective of the module:** After completing this module, the learner will be able to develop an understanding to deal in Performing Cultural Practices for Soil Improvement. Learner will able to identify soil Improvement measures and application of Soil Decomposer (PGPR).

**Duration:** 250 hrs.

**Theory:** 100 hrs.

**Practical:** 150 hrs.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Identify Soil Improvement measures	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Perform field visit to evaluate the soil requirements for its health improvement</li> <li>2. Perform Cost Benefit Analysis for specific soil</li> </ol>	<ul style="list-style-type: none"> <li>• Evaluation of the soil requirements for its health improvement</li> <li>• Methods to improve soil health (Water flow, Pesticide use, Plant species, Nutrient management, Grazing, etc.</li> <li>• Evaluate cost benefit analysis.</li> </ul>	<b>Total:</b> 65hrs <b>Theory:</b> 35hrs <b>Practical:</b> 30hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> <li>• Masks</li> <li>• Gloves</li> <li>• Aspirator</li> <li>• First aid box</li> </ul>	Class Room/ Site Specific Field Area
		<b><u>Practical Activity:</u></b> <ol style="list-style-type: none"> <li>1. Perform Cost Benefit Analysis Ratio of assigned area</li> </ol>		<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>• Fertilizer/pesticide mixer</li> <li>• Calculator</li> </ul>	

				<ul style="list-style-type: none"> <li>• Bins and containers</li> <li>• Gardening tool kit</li> <li>• Tillage implements</li> <li>• Chisel plough</li> <li>• Sickle</li> <li>• Sieve</li> <li>• Bamboo basket</li> <li>• Soil Augar</li> </ul>	
<b>LU2:</b> Apply Cultural practices for soil improvement	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Perform calculation for required material used for soil improvement</li> <li>2. Perform application of Cultural practices as per requirement</li> </ol>	<ul style="list-style-type: none"> <li>• Quantification of Organic Matter (Carbon to nitrogen ratio).</li> <li>• 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)</li> </ul>	<b>Total:</b> 95hrs <b>Theory:</b> 35hrs <b>Practical:</b> 60hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> <li>• Masks</li> <li>• Gloves</li> <li>• Aspirator</li> <li>• First aid box</li> </ul> <b>Non Consumable</b> <ul style="list-style-type: none"> <li>• White board</li> </ul>	Class Room/ Site Specific Field Area

		<b><u>Practical Activity:</u></b> 1. Perform suitable Cultural practice on assigned area as per requirement.		<ul style="list-style-type: none"> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> <li>• Fertilizer/pesticide mixer</li> <li>• Calculator</li> <li>• Bins and containers</li> <li>• Gardening tool kit</li> <li>• Tillage implements</li> <li>• Chisel plough</li> <li>• Sickle</li> <li>• Sieve</li> <li>• Bamboo basket</li> <li>• Soil Auger</li> </ul>	
<b>LU3:</b> Perform and Apply Soil Decomposer (PGPR's)	<b>The trainee will be able to:</b> 1. Prepare the solution of PGPR's as per protocol 2. Perform application of PGPR's	<ul style="list-style-type: none"> <li>• Define PGPR's</li> <li>• Eco-friendly PGPR's</li> <li>• PGPR's solution preparation procedure</li> <li>• Maintain records.</li> </ul>	<b>Total:</b> 90hrs <b>Theory:</b> 30hrs <b>Practical:</b> 60hrs	<b>Consumable</b> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul>	Class Room/ Site Specific Field Area

	<p>3. Prepare a report on PGPR's activities in soil</p>	<p><b><u>Practical Activity:</u></b></p> <p>1. Apply appropriate PGPR's as per requirement and prepare a report on their activities.</p>		<ul style="list-style-type: none"> <li>• Masks</li> <li>• Gloves</li> <li>• Aspirator</li> <li>• First aid box</li> </ul> <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>• Fertilizer/pesticide mixer</li> <li>• Calculator</li> <li>• Bins and containers</li> <li>• Gardening tool kit</li> <li>• Tillage implements</li> <li>• Chisel plough</li> <li>• Sickle</li> <li>• Sieve</li> <li>• Bamboo basket</li> <li>• Soil Auger</li> </ul>	
--	---	--	--	--	--

## Module 4: Manage Pesticide and Fertilisers Storage

**Objective of the module:** After completing this module, the learner will be able to handle Pesticide and Fertilizer Formulation. The underpinning knowledge will be sufficient to provide learner the basis for work.

**Duration:** 150 hrs.

**Theory:** 60 hrs.

**Practical:** 90 hrs.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1.</b> Manage the inputs for production unit	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Manage the material according to the formulation/recipe provided by chemist</li> <li>2. Check the availability of material</li> <li>3. Deliver required material to the production plant</li> <li>4. Maintain the record</li> </ol>	<ul style="list-style-type: none"> <li>• Classification of Chemicals (Very Toxic, Toxic, Harmful, Corrosive, etc.)</li> <li>• Labelling of Chemicals (antidote, dose preparation, dose formulation, precautions and usage)</li> </ul> <hr/> <b>Practical Activity:</b> <ol style="list-style-type: none"> <li>1. Visit fertiliser/pesticides Company to observe the production unit of pesticide/fertiliser and prepare the report.</li> </ol>	<b>Total:</b> 27hrs <b>Theory:</b> 12hrs <b>Practical:</b> 15hrs	<div>Consumable</div> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <div>Non Consumable</div> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	Class Room/ Site Specific Field Area
<b>LU2.</b> Manage all aspects of receiving, shipping, and	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Check the packing equipment/material for shipment</li> </ol>	<ul style="list-style-type: none"> <li>• Packaging materials for shipment of pesticide</li> </ul>	<b>Total:</b> 32hrs <b>Theory:</b> 12hrs <b>Practical:</b> 20hrs	<div>Consumable</div> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> </ul>	Class Room/ Site Specific Field Area

storing of pesticide/fertilizer	<ol style="list-style-type: none"> <li>2. Manage Periodic sampling of product</li> <li>3. Manage storage of product in recommended conditions</li> <li>4. Compliance with all Safety, Environmental and Operating Standards</li> </ol>	<ul style="list-style-type: none"> <li>• Standard Procedures for receiving, shipping and storing of fertilizer/pesticide</li> <li>• Policies and procedure with reference to environment and personal health issues as per WHO (Ergonomic Hazards, Safety Hazards, Biological hazards, Chemical Hazards ,Work Organization Hazards)</li> </ul> <p><b><u>Practical Activity:</u></b></p> <ol style="list-style-type: none"> <li>1. Perform Periodic sampling of provided products and manage storage of these products as per Standard procedures.</li> </ol>		<ul style="list-style-type: none"> <li>• Sharpeners</li> <li>• Masks</li> <li>• Gloves</li> <li>• Aspirator</li> <li>• First aid box</li> <li>• Packaging material</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>• Fertilizer/pesticide mixer</li> <li>• Calculator</li> <li>• Bins and containers</li> <li>• Gardening tool kit</li> <li>• Sickle</li> <li>• Sieve</li> <li>• Bamboo basket</li> <li>• Soil Auger</li> </ul>	
---------------------------------	--	--	--	--	--



<b>LU3. Maintain Inventory</b>	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Maintain a list for inventory</li> <li>2. Perform the record checking</li> <li>3. Manage the inventory according to the expiry dates</li> <li>4. Evaluate Inventory Report.</li> </ol>	<ul style="list-style-type: none"> <li>• Inventory management</li> <li>• (Stock management, labelling, active ingredients expiry and manufacturing dates, FRP, MRP, etc.)</li> <li>• Storage Requirements</li> <li>• Maintaining records</li> <li>• Waste management</li> <li>• Inventory Report</li> </ul> <p><b><u>Practical Activity:</u></b></p> <ol style="list-style-type: none"> <li>1. Prepare inventory report as per given instructions.</li> </ol>	<b>Total:</b> 32hrs <b>Theory:</b> 12hrs <b>Practical:</b> 20hrs	<div>Consumable</div> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Color pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> </ul> <div>Non Consumable</div> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	Class Room/ Site Specific Field Area
<b>LU4. Manage packaging according to material requirement</b>	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Identify the packaging material as per standards.</li> <li>2. Maintain working environment according to the material requirement</li> <li>3. Manage packaging operations as per standard</li> </ol>	<ul style="list-style-type: none"> <li>• Packaging materials (primary packaging and secondary packaging).</li> <li>• Packaging Operations (bagging, boxing, crating, canning, containerizing, cutting, measuring, weighing,</li> </ul>	<b>Total:</b> 32hrs <b>Theory:</b> 12hrs <b>Practical:</b> 20hrs	<div>Consumable</div> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> <li>• Sharpeners</li> <li>• Masks</li> <li>• Gloves</li> </ul>	Class Room/ Site Specific Field Area

		wrapping, labeling, palletizing, etc.)		<ul style="list-style-type: none"> <li>• Aspirator</li> <li>• First aid box</li> <li>• Packaging material</li> </ul> <div>Non Consumable</div> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> <li>• Fertilizer/pesticide mixer</li> <li>• Calculator</li> <li>• Bins and containers</li> <li>• Gardening tool kit</li> <li>• Sickle</li> <li>• Sieve</li> <li>• Bamboo basket</li> <li>• Soil Auger</li> </ul>	
		<b><u>Practical Activity:</u></b>  1. Perform packaging of given product (pesticide/fertiliser).			
<b>LU5.</b> Manage loading/offloading tasks	<b>The trainee will be able to:</b>  1. Manage loading operations according to the requirement	<ul style="list-style-type: none"> <li>• Protocols for Loading and Off-loading</li> <li>• Loading and off-loading operations (vehicle</li> </ul>	<b>Total:</b> 27hrs <b>Theory:</b> 12hrs <b>Practical:</b> 15hrs	<div>Consumable</div> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Pencils</li> <li>• Erasers</li> </ul>	Class Room/ Site Specific Field Area

	2. Manage offloading operations according to the requirement	assurance, flat loading area, availability of light temperature, humidity maintenance, etc.)		<ul style="list-style-type: none"> <li>• Sharpeners</li> <li>• PPE's</li> <li>• First aid box</li> <li>• Packaging material</li> </ul>	
		<b><u>Practical Activity:</u></b> 1. Perform Loading and off-loading of assigned material as per set standards.			

Non Consumable

- White board
- Multimedia
- Internet
- Computer system

## Module 7: Practice Professionalism

**Objective of the module:** The aim of this module to get knowledge, skills and understanding to Practice Professionalism.

**Duration:** 200 hours    **Theory:** 50 hours    **Practical:** 150 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1.</b> Develop Portfolio for industry	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Select previous assignments for portfolio</li> <li>2. Work on previous selected assignments for portfolio</li> <li>3. Compile variety of assignments for portfolio</li> <li>4. Make Professional Portfolio for industry</li> <li>5. Develop Digital Portfolio for industry</li> </ol>	<ul style="list-style-type: none"> <li>• Importance of portfolio</li> <li>• Compilation of different assignments for portfolio</li> <li>• Types of Portfolios</li> </ul>	<b>Total:</b> 70 hrs. <b>Theory:</b> 20hrs. <b>Practical:</b> 50hrs.	<div>Consumable</div> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Sketch files</li> <li>• Paint Mediums</li> <li>• Pencils</li> <li>• Erasers</li> </ul> <div>Non Consumable</div> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	Class Room/ Site Specific Field Area
<b>LU2.</b> Perform Internship	<b>The trainee will be able to:</b> <ol style="list-style-type: none"> <li>1. Prepare for internship               <ul style="list-style-type: none"> <li>○ Personal Presentation</li> <li>○ Portfolio Presentation</li> <li>○ Interview preparation</li> </ul> </li> </ol>	<ul style="list-style-type: none"> <li>• Advantages of Internship</li> <li>• Ethics for Internship</li> <li>• Identifying industry for internship</li> </ul>	<b>Total:</b> 130hrs. <b>Theory:</b> 30hrs. <b>Practical:</b> 100hrs.	<div>Consumable</div> <ul style="list-style-type: none"> <li>• Notebooks</li> <li>• Sketch files</li> <li>• Paint Mediums</li> <li>• Pencils</li> </ul>	Class Room/ Site Specific Field Area

	<p>2. Demonstrate Ethics for Internship</p> <p>3. Identify Industry for internship</p> <ul style="list-style-type: none"> <li>○ Brands</li> <li>○ Boutiques</li> <li>○ Stitching Units</li> <li>○ Garment Factories</li> <li>○ Textile Industries</li> </ul> <p>4. Perform Internship in Industry</p> <ul style="list-style-type: none"> <li>○ Fill the Performa of Internship</li> <li>○ Report the performance of internship</li> </ul>			<ul style="list-style-type: none"> <li>• Erasers</li> </ul> <p>Non Consumable</p> <ul style="list-style-type: none"> <li>• White board</li> <li>• Multimedia</li> <li>• Internet</li> <li>• Computer system</li> </ul>	
--	---	--	--	--	--

## **General assessment guidance for *Pesticides & Fertilisers 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 & Fertilisers Technology "Supervisor" include:

- Work performances, for example perform basic communication, maintain personal health, hygiene and safety, perform basic computer operations, and dispose the waste materials.
- Demonstrations, for example Manage Nutritional deficiencies, handling documents

- 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 Textile Merchandiser include:

- Work products, such as preparing and handling documents, perform some procedures of store merchandising

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 Managing Nutritional deficiencies are to be assessed and certificated, the assessment should involve performance criteria that are directly related to that documentation activity. An interview about Managing Nutritional deficiencies 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 *Supervisor Pesticides & Fertilisers* Technology “Supervisor”**

This curriculum consists of 05 modules:

- Module 1: Execute post production tasks
- Module 2: Implement Cross Merchandising
- Module 3: Execute Brand Marketing Strategy
- Module 4: Manage Financial Budget
- Module 5: Practice Professionalism

### **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.	Note book	25
2.	Flip chart	25
3.	Pencil	25
4.	White sheets	25
5.	Eraser	25
6.	Sharpener	25

<b>7.</b>	Pen	25
<b>8.</b>	Chart Papers	25
<b>9.</b>	Board markers	1
<b>10.</b>	File covers	25
<b>11.</b>	Scotch tape	25
<b>12.</b>	Masks	25
<b>13.</b>	Gloves	25
<b>14.</b>	Goggles	25
<b>15.</b>	Fertilizer mixer	5
<b>16.</b>	Motors	5
<b>17.</b>	Measuring cylinders/containers	25
<b>18.</b>	Spade	25
<b>19.</b>	Microscopes	5
<b>20.</b>	Sprayer Tank	10
<b>21.</b>	Air Blast Sprayers	5
<b>22.</b>	Spraying Nozzle Sets	10
<b>23.</b>	Fire Buckets	1
<b>24.</b>	Respiratory Mask	25

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

## Credit Values

The credit value of the National Certificate Level 2 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	Estimate of hours	Credit
<b>A.</b> Perform Management of grain storage houses/warehouse.	350	35
<b>B.</b> Perform Cultural Practices for Soil Improvement	250	25
<b>C.</b> Manage Nutritional deficiencies	250	25
<b>D.</b> Manage Pesticide and Fertilisers Storage	150	15
<b>E.</b> Practice Professionalism	200	20