

# National Vocational and Technical Training Commission (NAVTTTC)

## Curriculum for National Vocational Certificate in “Agriculture Farm Supervisor” (NVQF level 4)

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## **1 Introduction**

Agriculture Farm Supervisors plan, organize and coordinate farming operations in agriculture enterprises. They are responsible for pre and post harvest of farm crops, farm record keeping making farm profitable. They ensure that resources are used efficiently to support production in fulfilling contract requirements and market demand. They supervise the lower staff and ensure that necessary safety precautions are taken. Supervisors control the daily operations of a farm, track revenues, and expenditures, and maintain equipment and facilities. They are responsible for implementing strategic and marketing plans for the enterprise. They are front-line workers who represent their enterprises in the agriculture industry and the community at a large.

### **1.1 Overall objective of course**

The course is developed on the philosophy of competency-based training which enables a trainee to acquire competencies required to perform his/her job efficiently. Course has the following objectives:

- Provide qualified skilled supervisors to agriculture industry.
- To build the capacity in trainees for adopting good agricultural practices as per recommendations of GAP at all stages of farm production leading to the improvement in quality and yield.
- Learn to conduct market survey, farm sales and safe transportation within farm.
- Introduction and learning of modern trends of hygiene, safety and work environment at agricultural farm.
- To prevent residues and quarantine threats in farm produce.
- To develop characteristics among the trainees such as self-reliance, reliability, responsibility, team sense and ability to lead in the field.
- To assure post-harvest quality during processing, packaging and storage in ware house to increase their shelf life and better quality product for the consumer.
- To learn safe handling and operating the farm machinery.
- To find out ways and means for increasing the efficiency of farm business through proper allocation of resources.

### **1.2 Competencies gained after completion of course**

On successful completion of this course the trainee will attain following competencies:

- Manage Farm Assets
- Maintain Farm Records
- Perform Market Survey
- Identify soil type and ensure its conservation and sustainability
- Conduct farm operations
- Perform harvesting and post-harvest operations
- Perform health, safety and security
- Enhance Professional Capacity

### **1.3 Job opportunities available immediately and in the future**

After completion of this course trainee can work as:

- Farm supervisor
- Assistant farm manger
- Entrepreneur

### **1.4 Trainee entry level**

**Entry to assessment / training for NVQF National Vocational Certificate in “Agri Farm Supervisor” is open, however entry into this course based on this qualification may require skills and knowledge equivalent to middle, preferably matriculate.**

### **1.5 Minimum qualification of trainer**

- B.Sc honours in agriculture or equivalent must having five years industrial/farm experience
- Diploma in agriculture with minimum seven years’ experience
- Must have the capacity of teaching in a CBT environment

## 1.6 Mode of Delivery in a competency-based environment

Training in a competency-based environment differs from the traditional method of training delivery. It is based on defined competency standards, which are industry oriented.

The traditional role of a trainer changes & shifts towards facilitation of training. A facilitator in Competency Based Training (CBT) encourages and assists trainees to learn for themselves. Trainees are likely to work in groups (pairs) and are engaged in different activities. Few are conducting practical tasks in the workshop, while others are writing & some are not even in the classroom or workshop but in another part of the building using specialized equipment, working on computers doing research on the Internet or in the library. As trainees learn at different pace, they might well be at different stages in their learning, thus learning must be tailored to suit individual needs.

The following facilitation methods (teaching strategies) are generally employed in CBT programs:

- **Direct Instruction Method:** This might be effective when introducing a new topic to a larger group of trainees in a relative short amount of time. In most cases this method relies on one-way communication, hence there are limited opportunities to get feedback on the trainee's Learn.
- **Discussion Method:** This allows trainees to actively participate in sharing knowledge and ideas. It will help the trainer to determine whether trainees understand the content of the topic. On the other hand, there is a possibility of straying off topic under discussion and some trainees dominating others on their views.
- **Small Group Method:** Pairing trainees to help and learn from each other often results in quick knowledge/skill transfer, than with the whole class. The physical arrangement of the classroom/workshop and individual assessment may be challenging also, hence using analogy method is recommended.
- **Problem Solving Method:** This is a very popular teaching strategy for Competency Based Training (CBT). Trainees are challenged and are usually highly motivated when they gain new knowledge and skills by solving problems (Contingency skills). Trainees develop critical thinking skills and the ability to adapt to new learning situations (Transfer skills). It might be time consuming and because trainees sometimes work individually, they may not learn all the things that they are expected to learn.
- **Research Method:** This is used for workshops and laboratory tasks, field experiments, and case studies. It encourages trainees to investigate and find answers for themselves and to critically evaluate information. It however requires a lot of time and careful planning of research projects for the trainee.

**1.7 Medium of instruction:** English, Urdu and local language

**1.8 Qualification Level:** **NVQF** Level IV Qualification

**1.9 Duration of Qualification** One year

#### **1.10 Sequence of the modules**

The curriculum consists of seven (7) modules and should be delivered in the following sequence, however the individual learning units within the same module may be delivered interchangeably as stand-alone modules (if need be) or in a holistic approach.

• <b>Module 1:</b> Supervise Farm Assets
• <b>Module 2:</b> Maintain Farm Records
• <b>Module 3:</b> Perform Market Survey
• <b>Module 4:</b> Ensure Soil Conservation and its Sustainability
• <b>Module 5:</b> Conduct Farm Operations
• <b>Module 6:</b> Perform Harvesting and Post-harvest Operations
• <b>Module 7:</b> Perform Health, Safety and Security
• <b>Module 8.</b> Enhance Professional Capacity

#### **1.11 Time frame of assessment (recommendation)**

- Assessments should be scheduled during modules and at the completion of modules, depending on the exercises assigned
- Informal critiques which do not entail grading should be conducted frequently so that students can learn from each other's mistakes.

## 2 Overview about the program – Curriculum for Certificate in Agriculture Farm Supervisor

Module Title	Learning Units	Theory Hrs.	Work place Hrs.	Time frame of modules
<b>Module 1: Supervise Farm Assets</b>	<b>LU1:</b> Maintain farm assets <b>LU2:</b> Perform maintenance of farm machinery / implements <b>LU3:</b> Maintain land units	30	116	146
<b>Module 2. Maintain Farm Records</b>	<b>LU1:</b> Maintain input and farm production records <b>LU2:</b> Prepare and maintain log books of farm machinery <b>LU3:</b> Maintain farm/labor accounts	23	134	157
<b>Module 3: Perform Market Survey</b>	<b>LU1:</b> Sensitize the product marketing <b>LU2:</b> Manage farm sales	13	60	73
<b>Module 4: Conduct Farm Operations</b>	<b>LU1:</b> Supervise Farm labour <b>LU2:</b> Prepare the crop production schedule <b>LU3:</b> Carryout farm cultural practices <b>LU4:</b> Supervise farm inputs <b>LU5:</b> Carryout plant protection measures <b>LU6:</b> Supervise the irrigation schedule <b>LU7:</b> Supervise farm security and safety	112	390	502

<b>Module 5: Ensure Soil Conservation and its Sustainability</b>	<b>LU1:</b> Manage soil fertility analysis <b>LU2:</b> Apply balanced fertilizer (Organic and inorganic) <b>LU3:</b> Schedule crop rotation <b>LU4:</b> Ensure reclamation of soil and water	120	128	248
<b>Module 6: Perform Harvesting and Post-harvest Operations</b>	<b>LU1:</b> Ensure crop harvesting at right time <b>LU2::</b> Manage post-harvest operations <b>LU3:</b> Manage safe storage after effective sorting, grading and packing of farm produce	51	192	243
<b>Module 7: Perform Health, Safety and Security</b>	<b>LU1:</b> Ensure personnel safety <b>LU2:</b> Perform first aid for safety <b>LU3:</b> Ensure safe working environment	46	128	174
<b>Total</b>		395	1148	1543



### 3. Teaching and Learning Guide

#### 3.1 Module 1: Supervise Farm Assets

**Overview of the Module:** This Module provide the trainee necessary skills and knowledge to enable him to prepare farm inventory, machinery and tools record and stock register of farm inputs. Trainee will be expected to learn **Maintain farm inventory**, ensure calibration, fumigation and maintenance history sheet of farm machinery and Maintain land units. After completing this module trainee will gain the necessary knowledge to maintain farm assets required for his/her level of training (level III).

**Duration:** Total: 146 hours    **Theory:** 30 hours    **Practice:** 116 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1: Maintain farm inventory</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>Identify inventory of farm assets</li> <li>Perform basic numeracy to maintain physical record</li> <li>Maintain stock register for farm assets</li> </ul>	<ul style="list-style-type: none"> <li>Types, quantity and size of equipment</li> <li>Functions of farm assets</li> <li>Basic mathematics operation through manual and calculator.</li> <li>Incoming and outgoing of assets</li> </ul>	<p>Total hrs:14</p> <p>Theory hrs: 08</p> <p>Practical hrs: 06</p>	<ol style="list-style-type: none"> <li>Register</li> <li>Calculator</li> <li>Stationary</li> <li>Cupboard</li> </ol>	At agriculture farm and training place.
<b>LU2: Ensure maintenance of farm machinery/</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>Maintain history sheet of farm machinery</li> </ul>	<ul style="list-style-type: none"> <li>Working and importance of calibration</li> <li>Operating manuals of machinery</li> </ul>	Total hrs: 72	<ol style="list-style-type: none"> <li>Fumigator</li> <li>Goggles</li> <li>Protecting</li> </ol>	At agriculture farm and training place.

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
implements	<ul style="list-style-type: none"> <li>• Ensure smooth operations of farm machinery by calibrating to optimal specification</li> <li>• Ensure preventive maintenance as per maintenance schedule</li> <li>• Adopt safety measure while performing maintenance of farm machinery</li> <li>• Store farm machinery appropriately</li> </ul>	<ul style="list-style-type: none"> <li>• Fumigation material</li> <li>• Method of fumigation</li> <li>• Pre and Post fumigation safety measures</li> <li>• Selection/concentration of fumigation material</li> <li>• Waste management</li> <li>• Specific use of nozzles</li> <li>• Warranty and life of equipment</li> <li>• Workability status of farm machinery</li> </ul>	Theory Hrs: 12  Practical hrs: 60	clothes  4. Face masks  5. Anti -allergens  6. Eye washers  7. Nozzles  8. Measuring tape  9. De choking needle  10. Iron rod	
<b>LU3:</b> Maintain land units	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li>• Measure boundary of farm to record total available area</li> <li>• Mark cultivated and non-cultivated land.</li> </ul>	<ul style="list-style-type: none"> <li>• Geographical and topographical characteristics of farm land.</li> <li>• Factors hindering cultivation of non-cultivated land and knowledge to bring this land under cultivation.</li> </ul>	Theory hrs: 10  Practical hrs: 50  Total hrs: 60	<ol style="list-style-type: none"> <li>1. Measuring tape</li> <li>2. Auger</li> <li>3. Peg</li> <li>4. Tags</li> <li>5. Sign boards</li> </ol>	At agriculture farm and training place.

**3.2 Module 2: Maintain Farm Records****Overview of the Module:**This module will enable the trainee to prepare data sheets and maintain farm records including farm crop, farm inputs, utility bills and farm labor accounts etc. These informations will enable farm supervisor to regulate the farm, make it more productive, cost effective and sustainable. After completing this module of training level III, the trainee will be capable to maintain farm records necessarily required for good production.

**Duration: Total: 157 hours Theory: 23 hours Practice: 134 hours**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	
<b>LU1: Maintain input and farm production records</b>	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li>Record the crop specific inputs</li> <li>Record the irrigational requirements according to crop</li> <li>Record of crop specific cultivation</li> <li>Record the crop production for data reference</li> <li>Record irrigation charges and power tariff</li> </ul>	<ul style="list-style-type: none"> <li>Type of fertilizer to be used at the farm</li> <li>Types and concentration of Pesticide, fungicide and herbicide</li> <li>Types and variety of Seeds and their sowing rates</li> <li>Fertility level of soil and quality of irrigation water available</li> <li>Canal irrigation schedule</li> <li>Alternative sources of irrigation</li> <li>Types of</li> </ul>	<p>Theory hrs:10 Practical hrs: 90 Total hrs: 100.</p>	<p>1. In and out registers</p>	<p>Agriculture farm and training place</p>

		<p>implements used for cultivation</p> <ul style="list-style-type: none"> <li>• Handling of total yield or produce</li> <li>• Modern techniques of storage</li> <li>• Agriculture and market taxes</li> </ul>			
<b>LU2: Prepare and maintain log books of farm machinery</b>	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li>• Design basic template for log books</li> <li>• Maintain the log books as per requirement on regular basis</li> <li>• Ensure maintenance protocol based on log book entry</li> </ul>	<ul style="list-style-type: none"> <li>• Importance of the log book</li> <li>• Storage and utilization of fuel and lubricant</li> <li>• Cost effective efficiency of farm machinery</li> <li>• Calculation of fuel consumption</li> <li>• Maintenance protocols</li> <li>•</li> </ul>	<p>Theory hrs: 05.  Practical hrs: 20  Total hrs: 25</p>	<ol style="list-style-type: none"> <li>1. Packing material</li> <li>2. Weighing balance</li> <li>3. Cover Sheet (tarpal)</li> <li>4. Sewing material</li> </ol>	<p>Agriculture farm and training place</p>

<b>LU3:Maintain farm/labor accounts</b>	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li>• Enlist and categorize the labor according to their skill</li> <li>• Prepare labor accounts and other expenditures of farm</li> <li>• Costing of farm production for profit and loss</li> </ul>	<ul style="list-style-type: none"> <li>• Wage rates</li> <li>• Types of labor</li> <li>• Labor trends</li> <li>• Basic accountancy</li> <li>• Basic labor laws</li> </ul>	<p>Theory hrs: 08  Practical hrs: 24  Total hrs: 32</p>	<ol style="list-style-type: none"> <li>1. File cover</li> <li>2. Cupboard</li> <li>3. Stationary</li> </ol>	<p>Agriculture farm and training place</p>
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### 3.3 Module3: Perform Market Survey

**Overview of the Module:** This Module provide the trainee with the necessary skills and knowledge to conduct survey for cost effective farm inputs, Identify the potential market for farm produce and Select the suitable market for purchase and sale of products. After completing this module (training level- III) trainee will gain the necessary knowledge to know the latest trends for better marketing of his product through market survey.

**Duration: Total:** 73hours      **Theory:** 13      **Practice:** 60 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Sensitize the product marketing	<b><i>Trainee will be able to:</i></b> <ul style="list-style-type: none"> <li>Identify the relevant market for purchase of farm inputs</li> <li>Perform comparative cost analysis of farm inputs available in market</li> <li>Purchase cost effective quality farm inputs</li> </ul>	<ul style="list-style-type: none"> <li>Price list of inputs and farm produce</li> <li>Latest brands of inputs</li> <li>Comparative cost analysis of farm inputs</li> <li>Quality of inputs</li> <li>Government policies for subsidies and support price</li> <li>Loan facility</li> <li>Crop insurance</li> </ul>	Theory hrs:08  Practical hrs: 40  Total hrs: 48	1.Stationery	Market & Training place
<b>LU2:</b> Manage farm sales	<b><i>Trainee will be able to:</i></b> <ul style="list-style-type: none"> <li>Identify the potential market</li> <li>Select the appropriate buyers according to farm produce</li> </ul>	<ul style="list-style-type: none"> <li>Fluctuation of market price of farm produce</li> <li>Market buyers</li> <li>Basic knowledge of agreement writing</li> <li>Cost effective modes of</li> </ul>	Theory hrs:05  Practical hrs: 20  Total hrs: 25	1.Stationery	Market & Training place

	<ul style="list-style-type: none"><li>• Assist in preparing selling agreements</li><li>• Arrange safe and cost effective transportation of farm produce</li></ul>	transportation available in the vicinity			
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### 3.4 Module 4: Conduct farm operations

**Overview of the Module:** This Module will provide necessary skills and knowledge to design crop scheme and schedule different cultural practices at pre-harvest level. This will also strengthen the knowledge of plant protection and to plan crop inputs including fertilizer, irrigation etc. After completing this module trainee will gain the necessary skill and knowledge to carry out effective farm operations for his/her level of training (level III)

**Duration: Total:** 502 hrs

Theory: 112hours

**Practice:** 390 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Supervise Farm Labour	<b><i>Trainee will be able to:</i></b> <ul style="list-style-type: none"> <li>Assign daily duties for the completion of farm task</li> <li>Monitor performance for improvement and better utilization of time/ staff</li> <li>Create conducive environment for efficient output</li> </ul>	<ul style="list-style-type: none"> <li>Operations of farms</li> <li>Basic welfare and rights of farm labor</li> <li>Basic farm management tools</li> <li>Security protocols</li> </ul>	Theory hrs:12 Practical hrs: 48 Total hrs: 60	<ol style="list-style-type: none"> <li>Stationery</li> <li>Calculator</li> </ol>	Agriculture farm and training place
<b>LU2:</b> prepare the crop production schedule	<b><i>Trainee must be able to:</i></b> <ul style="list-style-type: none"> <li>Identify the market demand for farm produce</li> <li>Prepare cropping scheme for target crops</li> <li>Plan crop sowing according to cropping season</li> </ul>	<ul style="list-style-type: none"> <li>Market demand/trends</li> <li>High/ low value crops</li> <li>Availability of resources</li> <li>Weather conditions</li> <li>Sowing and harvesting times</li> </ul>	Theory hrs: 10 Practical hrs: 42 Total hrs: 52	<b>1.</b> All kinds of primary and secondary tools and equipment	Agriculture farm and training place
<b>LU3:</b> Carryout farm cultural	<b><i>Trainee will be able to:</i></b>	<ul style="list-style-type: none"> <li>Different farm tools</li> </ul>	Theory	<ol style="list-style-type: none"> <li>Spray</li> </ol>	Agriculture farm and training



Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
practices	<ul style="list-style-type: none"> <li>• Arrange the appropriate tools as per requirement</li> <li>• Prepare soil for targeted crop</li> <li>• Adopt suitable sowing method for better crop</li> <li>• Adopt suitable practices to deal with climatic and other adverse stresses</li> <li>• Deal with the biological and social threats</li> </ul>	<ul style="list-style-type: none"> <li>• Sowing times of crops</li> <li>• Precautionary measures based on Flood information</li> <li>• Weather forecasting</li> <li>• Biological and social invasions</li> <li>• Pest, diseases and weeds</li> <li>• Communal perception and attitude</li> <li>• Different farming practices</li> </ul>	hrs:20  Practical hrs: 100  Total hrs: 120	machines  2. Mixer machine  3. Gloves  4. Goggles  5. Apron  6. Seed drill machines  7. Seed planter	place
<b>LU4:</b> Supervise farm inputs	<b><i>Trainee will be able to:</i></b> <ul style="list-style-type: none"> <li>• Prepare calendar for different inputs as per crop requirement</li> <li>• Carryout purchase of different inputs as per calendar</li> <li>• Apply prescribed chemical for seed treatment</li> <li>• Apply the farm inputs as per crop requirement</li> </ul>	<ul style="list-style-type: none"> <li>• Market rates of inputs</li> <li>• Manufacturing and expiry dates of required inputs</li> <li>• Formulation techniques for application of inputs</li> <li>• Different techniques of application</li> <li>• Safety measures</li> </ul>	Theory hrs: 20  Practical hrs: 80  Total hrs: 100	1. Spray machines  2. Gloves  3. Goggles  4. Apron  5. Magnifying glass  6. Insect	

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<ul style="list-style-type: none"> <li>Adopt safety measures while applying inputs</li> <li>Apply organic sources at the farm to alleviate the fertility level of soil</li> </ul>	<ul style="list-style-type: none"> <li>during storage and application of inputs</li> <li>Pest scouting for economic use of chemicals</li> <li>Biological control of pests</li> <li>Seed borne diseases and their treatment</li> <li>Organic and inorganic sources of fertilizers</li> </ul>		collecting hand nets	
<b>LU5:</b> . Carryout plant protection measures	<b>Trainee will be able to:</b> <ul style="list-style-type: none"> <li>Undertake pest scouting for proper spray</li> <li>Apply chemical against crop pests and weeds</li> <li>Apply disease control practices</li> </ul>	<ul style="list-style-type: none"> <li>Pest scouting procedure</li> <li>Difference between insect and pests</li> <li>Attack and damage by different pests</li> <li>Appropriate chemicals and their dosage</li> <li>Biological control measures for pests and diseases</li> </ul>	Theory hrs: 30 hrs.  Practical hrs: 80hrs  Total : 110hrs	<ol style="list-style-type: none"> <li>Fogers</li> <li>Sprinklers</li> <li>Sprayers</li> <li>Pesticides</li> <li>Insecticides</li> <li>Weedicides</li> </ol>	Agriculture farm and training place
<b>LU6:</b> supervise	<b>Trainee will be able to:</b> <ul style="list-style-type: none"> <li>Manage sources of irrigation</li> </ul>	<ul style="list-style-type: none"> <li>Water quality</li> <li>Irrigational</li> </ul>	Theory hrs: 20 hrs.	<ul style="list-style-type: none"> <li>Tube well</li> </ul>	

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
irrigation schedule	to fulfill water requirements of crops <ul style="list-style-type: none"> <li>• Ensure de-silting of water channels to enhance delivery of water</li> <li>• Monitor Irrigation schedule</li> </ul>	requirements of crops <ul style="list-style-type: none"> <li>• Cleanliness/ de-choking of water channels</li> <li>• Critical stages of crops regarding water requirement</li> <li>• Closure schedule of canals</li> <li>• Proper storage and usage of rain water</li> </ul>	Practical hrs: 40 hrs  Total : 60 hrs		

### 3.5 Module 5:Ensure the soil conservation and its sustainability

**Overview of the Module:**This Module will enable the trainee to understand soil analysis to enhance and manage soil fertility through application of balanced fertilizers. It will also enhance the capacity and knowledge to perform the crop rotation and reclaim/ improve problematic soil and irrigation water. After completing this module trainee will gain the necessary knowledge to perform soil conservation and its sustainability for his/her level of training (level III)

**Duration: Total:** 248 hrs                      120 hours    **Theory:** 128 hours    **Practice:**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1:Manage soil fertility analysis	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li>• Collect proper soil samples for soil analysis as per standard procedures</li> <li>• Arrange soil analysis from relevant laboratory</li> </ul>	<ul style="list-style-type: none"> <li>• Sample techniques and tagging</li> <li>• Sample size</li> <li>• Analysis facility</li> <li>• Parameters or attributes of analysis report e.g. <ul style="list-style-type: none"> <li>✓ Soil types</li> <li>✓ Soil pH</li> <li>✓ Organic matter</li> <li>✓ Available and non-available plant nutrients</li> </ul> </li> <li>• Macro and micro-nutrients</li> <li>• Electrical conductivity</li> </ul>	<p>Theory hrs: 30</p> <p>Practical hrs: 50</p> <p>Total hrs: 80</p>	<ol style="list-style-type: none"> <li>1. Auger</li> <li>2. Tags</li> <li>3. Packaging material I</li> </ol>	Agriculture farm and training place

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU2:</b> Apply balanced fertilizer (Organic and inorganic)	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>• Select required fertilizer as per soil analysis to enhance fertility</li> <li>• Apply fertilizer as per crop requirement</li> <li>• Apply available manures and compost to sustain soil fertility</li> </ul>	<ul style="list-style-type: none"> <li>• Different sources and forms of fertilizers</li> <li>• Importance of micronutrients</li> <li>• Per acre dose of fertilizer for different crops</li> <li>• Proper time of application of fertilizer</li> <li>• Methods of fertilizer/ manures application</li> </ul>	<p>Theory hrs: 50</p> <p>Practical hrs: 50</p> <p>Total hrs: 100</p>	<ol style="list-style-type: none"> <li>1. Fertilizer spreaders</li> <li>2. Sprinklers</li> <li>3. Fertilizer application drums</li> <li>4. Spray machines</li> </ol>	
<b>LU3:</b> Schedule crop rotation	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>• Prepare crop rotation scheme to sustain the fertility</li> <li>• Supervise cultivation of crop as per cropping calendar</li> </ul>	<ul style="list-style-type: none"> <li>• Importance of crop rotation</li> <li>• Restorative and exhaustive crops</li> <li>• Cultivation process</li> <li>• Cropping calendar</li> </ul>	<p>Theory hrs: 20</p> <p>Practical hrs: 10</p> <p>Total hrs: 30</p>	All primary and secondary tools	
<b>LU4:</b> Ensure reclamation of soil and water	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>• Identify the soil and water issues to improve the soil status</li> <li>• Apply the</li> </ul>	<ul style="list-style-type: none"> <li>• Categories of soil and water problems</li> <li>• Accurate amendments like gypsum and sulfuric acid</li> </ul>	<p>Theory hrs: 20</p> <p>Practical hrs: 18</p> <p>Total hrs: 38</p>		

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	amendments to solve soil and water problems as per recommendations				

### 3.6 Module 6: Perform harvesting and post-harvest operations

**Overview of the Module:** This Module will enable the trainee to plan and carry out the effective harvesting to handle the losses and quality. It will also strengthen the knowledge of post-harvest processing including sorting, grading and packaging to maintain the quality of farm produce. This module will also enhance the expertise of product management after processing. After completing this module trainee will gain the necessary knowledge to carry out post-harvest farm operations for his/her level of training (level III)

**Duration:** 51 hours      **Theory:** 192 hours      **Practice:** Total: 243 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Ensure crop harvesting at right time	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li>Identify physiological maturity of crop for harvesting</li> <li>Adopt appropriate method of harvesting according to crop</li> </ul>	<ul style="list-style-type: none"> <li>Crop ripening indicators</li> <li>Observe impact of ripening indicator on yield</li> <li>Types of machinery for crop harvest</li> <li>Different techniques of harvesting</li> </ul>	<p>Theory hrs: 15</p> <p>Practical hrs: 60</p> <p>Total hrs: 75</p>	<ol style="list-style-type: none"> <li>Combine harvester</li> <li>Thresher</li> <li>Reaper</li> <li>Sickles</li> </ol>	Class room, computer lab, design studio
<b>LU2:</b> Manage post-harvest operations	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li>Perform weighing and filling in suitable packing of farm produce</li> <li>Arrange transport for farm produce at proper place within farm</li> </ul>	<ul style="list-style-type: none"> <li>Calibration of weighing balance ‘</li> <li>Suitable packing sources</li> <li>Importance of proper working of transport vehicle</li> <li>Post harvest handling</li> </ul>	<p>Theory hrs:12</p> <p>Practical 72 hrs</p> <p>Total: 84 hrs.</p>	<ol style="list-style-type: none"> <li>Weighing machine</li> <li>Bags</li> <li>Sealing materials</li> <li>Transport</li> </ol>	

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
	<ul style="list-style-type: none"> <li>Carryout post-harvest treatment for safety of farm produce</li> </ul>				
<b>LU3:</b> Manage safe storage after effective sorting, grading and packing of farm produce	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li>Perform sorting and grading of farm produce to ensure quality</li> <li>Carryout grade wise packing of farm produce</li> <li>Spray recommended chemical in the store before storage of farm produce</li> <li>Stack/ store the produce packing in proper way in store to ensure the quality of farm produce</li> <li>Maintain temperature and moisture as per requirement in store</li> </ul>	<ul style="list-style-type: none"> <li>Importance of grade wise quality of farm produce</li> <li>Sorting of farm produce and its importance</li> <li>Quality material for packaging</li> <li>Requirement of ventilation in stores</li> <li>Requirement of temperature and moisture levels in stores</li> <li>Sprays/ chemicals required for storage</li> </ul>	<p>Theory hrs: 24</p> <p>Practical hrs: 60</p> <p>Total hrs: 84</p>	<ol style="list-style-type: none"> <li>1. Thermometer</li> <li>2. Moisture detector</li> <li>3. Temperature controlling devices</li> <li>4. Racks and baskets</li> </ol>	



### 3.7 Module 7: Perform Health, safety and security measures

**Overview of the Module:** This Module will provide the trainee with the necessary skills and knowledge to prepare personal safety plan in order to deal with any emergency and hazardous condition at farm through effective first aid strategy. This module will also provide necessary knowledge to the trainee for maintaining safe and clear working environment so that the losses of any kind can be minimized. After completing this module trainee will gain the necessary knowledge and skill to work in a safe and secure working environment for his/her level of training (level III)

**Duration:** 46 hours      **Theory:** 128 hours      **Practice:** Total: 174 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
<b>LU1:</b> Ensure personnel safety	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li>• Execute pictorial guidelines and instruction of personal safety in working premises.</li> <li>• Ensure proper clothing for safe working</li> <li>• Use safety kit during farm operations as per requirement</li> </ul>	<ul style="list-style-type: none"> <li>• Safety manuals</li> <li>• Importance of safety standards</li> <li>• Usage of safety Tools</li> <li>• Proper placement of tools</li> </ul>	<p>Theory hrs: 16</p> <p>Practical hrs: 28</p> <p>Total hrs: 44</p>	<ol style="list-style-type: none"> <li>1.Mask</li> <li>2.Helmet</li> <li>3. Belt</li> <li>5.Safety shoes</li> <li>6.Gum shoes</li> <li>7.Safety gloves</li> <li>8.Goggles</li> <li>9.Waders</li> <li>10. Rope</li> <li>11. Lock &amp; tie devices</li> </ol>	
<b>LU2:</b> Perform first aid	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li>• Arrange first aid kit</li> <li>• Deal with different injuries and hazards</li> </ul>	<p>Hazards of work place</p> <p>First aid treatment for;</p> <ul style="list-style-type: none"> <li>• Chemical injury</li> <li>• Mechanical injury</li> <li>• Biological injury</li> <li>• Manufacturing</li> </ul>	<p>Theory hrs: 12</p> <p>Practical hrs: 52</p> <p>Total hrs: 64</p>	<ol style="list-style-type: none"> <li>1.First aid kit</li> </ol>	

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
		and expiry dates of first aid medicines			
<b>LU3:</b> Ensure safe working environment	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>• Execute guidelines and instruction for safe working environment.</li> <li>• Ensure that relevant protective clothing and equipment is cleaned and stored in proper place</li> <li>• Deal with the potential threats (biological, chemical and physical)</li> <li>• Mark the specific working area for specific operations</li> <li>• Implement anti-theft measures and secure farm valuables</li> </ul>	<ul style="list-style-type: none"> <li>• Safety standards</li> <li>• Safe working components</li> <li>• Storage and stacking of safety components</li> <li>• Potential threats</li> <li>• Specific working areas</li> <li>• Information of local emergency services, hospitals and law enforcement agencies</li> </ul>	<p>Theory hrs: 18</p> <p>Practical hrs: 48</p> <p>Total hrs: 66</p>	<ol style="list-style-type: none"> <li>1. Fire extinguishers</li> <li>2. Smoke alarm</li> <li>3. First aid box</li> <li>4. Wheel chair</li> <li>5. Stretcher</li> <li>6. Safety helmet</li> <li>7. Bins</li> <li>8. Safety covers</li> </ol>	

## 4. Assessment Guidelines

Competency-based assessment is the process of gathering evidence to confirm the candidate's ability to perform according to specified outcomes articulated in the competency standard(s).

### 4.1 Types of assessment

#### a) Sessional assessment

The goal of sessional assessment is to monitor student progress in order to provide constant feedback. This feedback can be used by the trainers to improve their teaching and by learners to improve their learning.

More specifically, sessional assessments help learners to identify their strengths and weaknesses and help trainers to recognize where learners are struggling and address problems immediately

Examples of sessional assessments include:

- Observations
- Presentations
- Activity sheets
- Project work
- Oral questions

#### b) Summative (final) assessment

The goal of summative (final) assessment is to evaluate learning progress at the end of a training program by comparing it against e.g. set of competency standards.

Examples of summative assessments include:

- Direct observation of work activities
- Final project
- Written questions

## **4.2 Principles of assessment**

When conducting assessment or developing assessment tools, trainers/assessors need to ensure that the following principles of assessment are met:

### **Validity**

- Indicates if the assessment outcome is supported by evidence. The assessment outcome is valid if the assessment methods and materials reflect the critical aspects of evidence required by the competency standards (Competency units, performance criteria, knowledge and Learn).

### **Reliability**

- Indicates the level of consistency and accuracy of the assessment outcomes. The assessment is reliable if the assessment outcome will produce the same result for learners with equal competence at different times or places, regardless of the trainer or assessor conducting the assessment.

### **Flexibility**

- Indicates the opportunity for learners to discuss certain aspects of their assessment with their trainer or assessor, such as scheduling the assessment. All learners should be made aware of the purpose of assessment, the assessment criteria, the methods and tools used, and the context and proposed timing of the assessment well in advance. This can be achieved by drawing up a plan for assessment.

### **Fair assessment**

- Fair assessment does not advantage or disadvantage particular learners because of status, race, beliefs, culture and/or gender. This also means that assessment methods may need to be adjusted for learners with disabilities or cultural differences. An assessment should not place unnecessary demands on learners that may prevent them from demonstrating competence.

### **Assessment context:**

This unit has to be assessed on the job, off the job, or a combination of on and off the job demonstrated by an individual work.

### **Assessment condition:-**

- Each unit should be assessed separately.
- The candidate will have to access all the related tools, equipment, material and demonstrations required.
- The candidate will be required orally or by other methods of communication to answer questions asked by the assessor.
- Present evidence related to the skills
- Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by criteria and that he possesses the required knowledge and skill.

#### **4.3 Resources required for assessment:-**

It includes all tools, equipment and related material, listed in the curriculum

## 5. List of Tools, Machinery & Equipment

Total number of students: 20

Name of Trade		Agriculture Farm Supervisor
Duration		1 year
Sr. No.	Name of Item/ Equipment / Tools	Quantity
1.	Computer	10
2.	Printer	05
3.	Calculator	20
4.	Scale	20
5.	Compass	5
6.	Different seed treaters	05
7.	Hand tools	5 boxes
8.	Sickles	5
9.	Hand Hoe (Ramba)	20
10.	Spade	20
11.	Pruners	05
12.	Magnifiers	20
13.	Measuring tap	5 boxes
14.	Hoe (kasola)	20
15.	Tractors of different horse powers	02
16.	Primary Tilage implements	20
17.	Disc plough	02
18.	Mold bold plough	02
19.	Chisel plough	02
20.	Disc harrow	02
21.	Cultivators	02
22.	Rota weighters	02

23.	Precision Land levelers	02
24.	Puddler	02
25.	Front blade	02
26.	Rear blade	02
27.	Sewing machines	02
28.	Different planters	05
29.	Seed drills	03
30.	Ridger cum bed shaper	02
31.	Boarder disc	02
32.	Inter cultural machinery	02
33.	Hoeing machines	05
34.	Rotary weeders	02
35.	Chemical application machinery	02
36.	Sprayers	05
37.	Harvesting machinery	01
38.	Reaper –wind rowers	02
39.	Wheat straw chopper	01
40.	Cutter binder	01
41.	Threshers	01
42.	Combine harvester	01
43.	Irrigation equipment/machinery	01
44.	Centrifugal pumps	01
45.	Diesel engines	01
46.	Trickle irrigation system	01
47.	Sprinkler irrigation system	01
48.	Grader Line	01
49.	Dryers	01
50.	Cleaners	01
51.	Pruning machinery	01
52.	Trolley	01
53.	Weighing machines	01

54.	Fertilizer spreader	02
55.	Fodder chopper machine	01
56.	Knives	05



**List of Consumable Supplies (for a class of 20 students)**

<b>Name of Trade</b>		<b>Certificate in Agriculture Farm Supervisor</b>
<b>Duration</b>		<b>1 year</b>
<b>Sr. No.</b>	<b>Name of Consumable Supplies</b>	<b>Quantity</b>
1.	Pencil	100
2.	Note Books	100
3.	Stock Registers	20
4.	Log Books	20
5.	Seeds of different types	100 samples
6.	Charts	200
7.	Markers	100
8.	White Boards	05
9.	Chemicals	100 samples
10.	Face Masks	100
11.	Gloves	100
12.	Bags	40
13.	Rubber Long Shoes	20
14.	Field Uniform/ Dangri	20