



**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**AGRICULTURAL ENGINEERING TECHNICIAN**

**LEVEL 6**

**PROGRAMME ISCED CODE: 0716 454 A**



TVET CDACC  
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## OPERATE FARM MACHINERY AND EQUIPMENT

**UNIT CODE:** 0716 451 07A

**TVET CDACC CODE:** ENG/OS/AGR/CR/02/5/MA

### UNIT DESCRIPTION

This unit specifies the competencies required by an Agricultural Engineering Technologist Level 6 to operate farm machinery and equipment. It involves operating tillage, planting, crop protection, harvesting and agro-processing equipment and machinery.

### ELEMENTS AND PERFORMANCE CRITERIA

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
These describe the key outcomes which make up workplace function.	These are assessable statements which specify the required level of performance for each of the elements. <i><b>Bold and italicized terms are elaborated in the Range.</b></i>
1. Operate tillage equipment and machinery	1.1 Personal protective equipment are worn based on OSHA 1.2 <i><b>Farm tillage equipment and machinery</b></i> are assembled as per work requirement. 1.3 Farm tillage equipment and machinery are operated as per work requirement 1.4 Farm tillage equipment and machinery are maintained as per operator's manuals
2. Operate planting equipment and machinery	2.1 Personal protective equipment are worn based on OSHA 2.2 <i><b>Planting equipment and machinery</b></i> are assembled as per work requirement. 2.3 Planting equipment and machinery are calibrated as per operator's manual. 2.4 Planting equipment and machinery are operated as per work requirement. 2.5 Planting equipment and machinery are maintained as per operator's manuals
3. Operate crop protection equipment and machinery	3.1 Personal protective equipment are worn based on OSHA 3.2 <i><b>Crop protection equipment and machinery</b></i> are assembled as per work requirement.

	<p>3.3 Crop protection equipment and machinery are calibrated as per operator's manual.</p> <p>3.4 Crop protection equipment and machinery are operated as per work requirement.</p> <p>3.5 Crop protection equipment and machinery are maintained as per operator's manuals</p>
4. Operate harvesting machinery and equipment	<p>4.1 Personal protective equipment are worn based on OSHA</p> <p>4.2 <b><i>Crop harvesting equipment and machinery</i></b> are assembled as per work requirement.</p> <p>4.3 Crop harvesting equipment and machinery are calibrated as per operator's manual.</p> <p>4.4 Crop harvesting equipment and machinery are operated as per work requirement.</p> <p>4.5 Crop harvesting equipment and machinery are maintained as per operator's manuals</p>
5. Operate Agro-processing machinery and equipment	<p>5.1 Personal protective equipment are worn based on OSHA</p> <p>5.2 <b><i>Agro-processing equipment and machinery</i></b> are assembled as per work requirement.</p> <p>5.3 Agro-processing equipment and machinery are calibrated as per operator's manual.</p> <p>5.4 Agro-processing equipment and machinery are operated as per work requirement.</p> <p>5.5 Agro-processing equipment and machinery are maintained as per operator's manuals</p>

## RANGE

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variable	Range
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1. Farm tillage equipment and machinery may include but are not limited to:	<ul style="list-style-type: none"> <li>• Disc plough</li> <li>• Mouldboard plough</li> <li>• Subsoiler</li> <li>• Chisel plough</li> <li>• Cultivators</li> <li>• Rotavator</li> <li>• Power plough</li> <li>• Disc harrow</li> </ul>
2. Planting Equipment and Machinery may include but are not limited to:	<ul style="list-style-type: none"> <li>• Broadcaster</li> <li>• Seed Drills</li> <li>• Row crop planter</li> <li>• Pneumatic planter</li> <li>• Potato planter</li> </ul>
3. Crop protection machinery and equipment may include but are not limited to:	<ul style="list-style-type: none"> <li>• Knapsack sprayer</li> <li>• Boom sprayer</li> <li>• Dusters</li> <li>• Aerial sprayers</li> <li>• Motorised sprayers</li> </ul>
4. Harvesting machinery and equipment may include but are not limited to:	<ul style="list-style-type: none"> <li>• Mowers</li> <li>• Balers</li> <li>• Conditioners</li> <li>• Forage harvesters</li> <li>• Combine harvesters</li> </ul>
5. Agro-processing machinery and equipment may include but are not limited to:	<ul style="list-style-type: none"> <li>• Milking machines</li> <li>• Shellers</li> <li>• Threshers</li> <li>• Winnowers</li> <li>• Mills</li> <li>• Pasteurizers</li> </ul>

## REQUIRED KNOWLEDGE AND SKILLS

This section describes the knowledge and skills required for this unit of competency.

### Required knowledge

The individual needs to demonstrate knowledge of:

- Field assessment procedures
- Different land condition
- Procedure of checking and adjusting agricultural machinery, tools and equipment
- Different agricultural machinery, tools and equipment
- Calibration of agricultural machines
- Service and maintenance of agricultural machinery, tools and equipment
- Occupational safety and health procedures

### Required Skills

The individual needs to demonstrate the following skills:

- Logical thinking
- Problem solving
- Communication
- Analytical

## EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Worn personal protective equipment based on OSHA 1.2 Operated farm tillage equipment and machinery as per work requirement 1.3 Maintained tillage equipment and machinery as per manufacturer's manual 1.4 Calibrated planting equipment and machinery as per manufacturer's manual. 1.5 Operated and utilized planting equipment and machinery as per work requirement.
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	<p>1.6 Maintained planting equipment and machinery as per manufacturer's manual</p> <p>1.7 Calibrated crop protection equipment and machinery as per manufacturer's manual.</p> <p>1.8 Operated and utilized crop protection equipment and machinery as per work requirement.</p> <p>1.9 Maintained crop protection equipment and machinery are as per manufacturer's manual</p> <p>1.10 Calibrated harvesting equipment and machinery are as per manufacturer's manual.</p> <p>1.11 Operated and utilized harvesting equipment and machinery as per work requirement.</p> <p>1.12 Maintained harvesting equipment and machinery as per manufacturer's manual</p> <p>1.13 Calibrated agro-processing machinery and equipment as per manufacturer's manual.</p> <p>1.14 Operated and utilized agro-processing machinery and equipment as per work requirement.</p> <p>1.15 Maintained agro-processing machinery and equipment as per manufacturer's manual</p>
2. Resource implications	<p>The following resources should be provided:</p> <p>2.1 Appropriately simulated environment where assessment can take place</p> <p>2.2 Access to relevant work environment</p> <p>2.3 Resources relevant to the proposed activity or tasks</p>
3. Methods of assessment	<p>Competency in this unit may be assessed through:</p> <p>3.1 Practical's</p> <p>3.2 Projects</p> <p>3.3 Portfolio of Evidence</p> <p>3.4 Third Party Reports</p> <p>3.5 Written tests</p>

	3.6 Oral assessment
4. Context of assessment	Competency may be assessed: 4.1 Workplace 4.2 Simulated work environment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.