

CALIBRATION OF FIELD EQUIPMENT

UNIT CODE: ENG/CU/AME/CR/02/4

Relationship to Occupational Standards

This unit addresses the unit of competency: Calibrate Field Equipment

Duration of Unit: 100 hours

Unit Description:

This unit specifies competencies required to assess the condition of field equipment.

It also involves, operating selected farm machines and equipment and maintenance of selected agricultural equipment. Additionally, learners will engage in the calibration of selected farm equipment and testing the operation of field equipment and carrying out final adjustments.

Summary of Learning Outcomes:

1. Assess the condition of field equipment
2. Operate selected farm machines and equipment
3. Maintain selected agricultural equipment
4. Calibrate selected farm equipment
5. Test the operation of field equipment and carry out final adjustments

Learning Outcomes, Content and Suggested Assessment Methods

Learning outcome	Content	Suggested assessment methods
1. Assess the condition of field equipment	<ul style="list-style-type: none">• The observance of Kenyan regulations concerned with health, safety and the environment;• The use of personal protective equipment and clothing (PPE) used throughout work activities;• Potential safety hazards in the work environment• Pre-operation checks on;<ul style="list-style-type: none">○ Tillage implements○ Planting equipment○ Spraying equipment○ Harvesting equipment• Processing equipment	<ul style="list-style-type: none">• Observation• Practical exercises• Oral• Written• Third party report

<p>2. Operate selected farm machines and equipment</p>	<ul style="list-style-type: none"> • Identification of farm machines and equipment <ul style="list-style-type: none"> ○ Tillage implements ○ Planting equipment ○ Spraying equipment ○ Harvesting equipment • Processing equipment • Functions of the farm machines and equipment • Components of farm machines and equipment • Operate farm implements and equipment • Hooking up and unhooking of farm implements 	<ul style="list-style-type: none"> • Observation • Practical exercises • Oral • Written • Third party report
<p>3. Maintain selected agricultural equipment</p>	<ul style="list-style-type: none"> • The importance of using appropriate technical information as a guide for maintenance; • Cleaning of components to facilitate inspection and assessment of components; • Selection of appropriate tools and equipment • Diagnosis and servicing of; <ul style="list-style-type: none"> ○ Tillage implements ○ Planting equipment ○ Spraying equipment ○ Harvesting equipment • Processing equipment • Correct methods and procedures for dismantling farm machines and equipment; • Using visual and measurement methods and procedures for inspecting and assessing components for: <ul style="list-style-type: none"> ○ Damage ○ Wear ○ Corrosion ○ Fracture ○ Distortion 	<ul style="list-style-type: none"> • Observation • Practical exercises • Oral • Written • Third party report

<p>4. Calibrate selected farm equipment</p>	<ul style="list-style-type: none"> • Calibration methods • Identification of farm equipment; <ul style="list-style-type: none"> ○ Planting equipment <ul style="list-style-type: none"> ▪ Precision planter ▪ Seed drill ○ Spraying equipment <ul style="list-style-type: none"> ▪ Boom sprayer ▪ Knap sack sprayer ○ Harvesting equipment <ul style="list-style-type: none"> ▪ Pick-up hay baler ○ Processing equipment <ul style="list-style-type: none"> ▪ Hammer mill • Selection of desired application or operation rates • Selection of appropriate measurement tool • Application of the appropriate mathematical units • Application of the required mathematical principles to calculate the application or operation rate • Performing adjustment to the required rate of application or operation. 	<ul style="list-style-type: none"> • Observation • Practical exercises • Oral • Written • Third party report
<p>5. Test the operation of field equipment and carry out final adjustments</p>	<ul style="list-style-type: none"> • Performing field test of the adjustment to the application or operation rate • Comparing the actual application or operation rate to the desired application or operation rate • Evaluating whether further • Adjustment is needed and making recommendations 	<ul style="list-style-type: none"> • Observation • Practical exercises • Oral • Written • Third party report

Suggested Methods of Delivery

- Presentations and practical demonstrations by trainer;
- Guided learner activities and research to develop underpinning knowledge;
- Supervised activities and projects in a workshop;

The delivery may also be supplemented and enhanced by the following, if the opportunity allows:

- Visiting lecturer/trainer from the Agricultural Machinery service and repair sector;
- Industrial visits.

Recommended Resources

Tools Comprehensive set of hand tools for agricultural machinery and equipment maintenance and repair.
Equipment <ul style="list-style-type: none">● A fully equipped agricultural machinery and equipment maintenance workshop;● Tillage implements● Planting equipment● Spraying equipment● Harvesting equipment● Fully operational tractor● Internet access to manufacturers' technical information;● Personal protective equipment (PPE) and suitable coverings to protect vehicles;● Facilities for the disposal of waste oil and used parts;● Customer database and systems for recording maintenance records.
Materials and supplies Consumables for maintaining agricultural machinery and equipment including: <ul style="list-style-type: none">● Lubricants;● Fluids● Replacement parts;● Cleaning materials;
Reference materials <ul style="list-style-type: none">● Manufacturers service manuals for tractors and agricultural machines and equipment that are being serviced;● Appropriate agricultural engineering text books available on numerous websites