

**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**SUSTAINABLE AGRICULTURE FOR RURAL DEVELOPMENT PRACTITIONER**

**LEVEL 5**



TVET CDACC

P.O. BOX 15745-00100

NAIROBI

First published 2019

© 2019, TVET CDACC

All rights reserved. No part of this Occupational Standards may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods without the prior written permission of the TVET CDACC, except in the case of brief quotations embodied in critical reviews and certain other non-commercial uses permitted by copyright law. For permission requests, write to the Council Secretary/CEO, at the address below:

**Council Secretary/CEO**

**TVET Curriculum Development, Assessment and Certification Council**

**P.O. Box 15745–00100**

**Nairobi, Kenya**

**Email: info@tvetcdacc.go.ke**

# FOREWORD

The provision of quality education and training is fundamental to the Government’s overall strategy for social economic development. Quality education and training will contribute to achievement of Kenya’s development blueprint and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution and this resulted to the formulation of the Policy Framework for Reforming Education and Training. A key feature of this policy is the radical change in the design and delivery of TVET training. This policy document requires that training in TVET be competency based, curriculum development be industry led, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these occupational standards have been developed for developing a competency-based curriculum for Sustainable Agriculture for Rural Development level 5. These Occupational Standards will also be the basis for assessment of an individual for competence certification

It is my conviction that these occupational standards will play a great role towards development of competent human resource for the Agriculture Sector’s growth and development.

**PRINCIPAL SECRETARY**

**VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

Kenya Vision 2030 aims to transform the country into a newly industrializing, “middle-income country providing a high-quality life to all its citizens by the year 2030”. Kenya intends to create a globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy through life-long education and training. TVET has a responsibility of facilitating the process of inculcating knowledge, skills and attitudes necessary for catapulting the nation to a globally competitive country, hence the paradigm shift to embrace Competency Based Education and Training (CBET).

The Technical and Vocational Education and Training Act No. 29 of 2013 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labor force.

TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) in conjunction with Agriculture Sector Skills Advisory Committee (SSAC) have developed these Occupational Standards for sustainable agriculture for rural development practitioner. These standards will be the basis for development of competency-based curriculum for Sustainable Agriculture For Rural Development Practitioner Level 5.

The Occupational Standards are designed and organized with clear Performance Criteria for each element of a Unit of Competency. These standards also outline the required knowledge and skills as well as evidence guide.

I am grateful to the Council Members, Council Secretariat, Agriculture SSAC, expert workers and all those who participated in the development of this occupational standards.

**CHAIRMAN**

**TVET CDACC**

# ACKNOWLEDGMENT

These Occupational Standards were developed through combined effort of various stakeholders from private and public organizations. I am thankful to the management of these organizations for allowing their staff to participate in this course. I wish to acknowledge the invaluable contribution of industry players who provided inputs towards the development of these Standards.

I thank TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) for providing guidance on the development of these Standards. My gratitude goes to Agriculture Sector Skills Advisory Committee (SSAC) members for their contribution to the development of these Standards.

My gratitude and appreciation goes to all the individuals and organizations who participated in the development of these Standards.

**CHAIRMAN**

**AGRICULTURE SECTOR SKILLS ADVISORY COMMITTE**

Contents

[FOREWORD ii](#_Toc12283774)

[PREFACE iii](#_Toc12283775)

[ACKNOWLEDGMENT iv](#_Toc12283776)

[ACRONYMS iv](#_Toc12283777)

[KEY TO UNIT CODE 1](#_Toc12283778)

[OVERVIEW 2](#_Toc12283779)

[BASIC UNITS OF COMPETENCY 3](#_Toc12283780)

[DEMONSTRATE COMMUNICATION SKILLS **Error! Bookmark not defined.**](#_Toc12283781)

[DEMONSTRATE NUMERACY SKILLS **Error! Bookmark not defined.**](#_Toc12283782)

[DEMONSTRATE DIGITAL LITERACY **Error! Bookmark not defined.**](#_Toc12283783)

[DEMONSTRATE ENTREPRENEURIAL SKILLS **Error! Bookmark not defined.**](#_Toc12283784)

[DEMONSTRATE EMPLOYABILITY SKILLS **Error! Bookmark not defined.**](#_Toc12283785)

[DEMONSTRATE ENVIRONMENTAL LITERACY **Error! Bookmark not defined.**](#_Toc12283786)

[DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES **Error! Bookmark not defined.**](#_Toc12283787)

[COMMON UNITS OF COMPETENCY 50](#_Toc12283788)

[DEMONSTRATE UNDERSTANDING OF SCIENCE FOR SARD 52](#_Toc12283789)

[APPLY SARD PRINCIPLES 58](#_Toc12283790)

[APPLY AGRICULTURAL ENGINEERING PRINCIPLES 64](#_Toc12283791)

[MANAGE FARM BUSINESS 71](#_Toc12283792)

[PRACTICE CLIMATE CHANGE RESILIENCE 76](#_Toc12283793)

[MANAGE FARM CHEMICAL USE FOR SARD 80](#_Toc12283794)

[CORE UNITS OF COMPETENCY 85](#_Toc12283795)

[MANAGE CROP PRODUCTION 85](#_Toc12283796)

[MANAGE ANIMAL PRODUCTION 99](#_Toc12283797)

[DEMONSTRATE KNOWLEDGE OF ORGANIC FARMING 129](#_Toc12283798)

[MANAGE AGROFORESTRY ACTIVITIES 140](#_Toc12283799)

[PROCESS FARM PRODUCE 147](#_Toc12283800)

[CONDUCT SARD COMMUNITY DEVELOPMENT 157](#_Toc12283801)

[MANAGE SARD PROJECTS 164](#_Toc12283802)

# **ABBREVIATIONS AND ACRONYMS**

BC Basic Competency

CC Core Competency

CDACC Curriculum Development Assessment and Certification Council

CO Common Units

CU Curriculum

KCSE Kenya Certificate of Secondary Education

KNQA Kenya National Qualifications Authority

OSHA Occupation Safety and Health Act

PPE Personal Protective Equipment

SARD Sustainable agriculture for rural development

SSAC Sector Skills Advisory Committee

TVET Technical and Vocational Education and Training

# KEY TO UNIT CODE

# AGR/ OS/SARD/ BC/ /01/ 5/A

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competence level

Control version

# OVERVIEW

The Sustainable Agriculture for Rural Development level 5 qualification consists of competencies that a trainee must achieve to manage crop production, manage animal production, demonstrate knowledge of organic farming, manage agroforestry activities, process farm produce and conduct SARD community development

Manage SARD projects.

The Units of Competency comprising Sustainable Agriculture and Rural Development Practitioner level 5 qualification~~s~~ include the following:

**BASIC COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| AGR/OS/SARD/BC/01/5/A | Demonstrate Communication Skills |
| AGR/OS/SARD/BC/02/5/A | Demonstrate Numeracy Skills |
| AGR/OS/SARD/BC/03/5/A | Demonstrate Digital Literacy |
| AGR/OS/SARD/BC/04/5/A | Demonstrate Entrepreneurial Skills |
| AGR/OS/SARD/BC/05/5/A | Demonstrate Employability Skills |
| AGR/OS/SARD/BC/06/5/A | Demonstrate Environmental Literacy |
| AGR/OS/SARD/BC/07/5/A | Demonstrate Occupational Safety and Health Practices |

**COMMON COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| AGR/OS/SARD/CC/01/5/A | Demonstrate Understanding of Science For SARD |
| AGR/OS/SARD/CC/02/5/A | Apply SARD Principles |
| AGR/OS/SARD/CC/03/5/A | Apply Agricultural Engineering Principles |
| AGR/OS/SARD/CC/04/5/A | Manage Farm Business |
| AGR/OS/SARD/CC/05/5/A | Practice Climate Change Resilience |
| AGR/OS/SARD/CC/06/5/A | Manage Farm Chemical Use For SARD |

**CORE COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| AGR/OS/SARD/CR/01/5/A | Manage Crop Production |
| AGR/OS/SARD/CR/02/5/A | Manage Animal Production |
| AGR/OS/SARD/CR/03/5/A | Demonstrate Knowledge of Organic Farming |
| AGR/OS/SARD/CR/04/5/A | Manage Agroforestry Activities |
| AGR/OS/SARD/CR/05/5/A | Process Farm Produce |
| AGR/OS/SARD/CR/06/5/A | Conduct SARD Community Development |
| AGR/OS/SARD/CR/07/5/A | Manage SARD Projects |

# 

# BASIC UNITS OF COMPETENCY

# DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE:** AGR/OS/SARD/BC/01/5/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate communication skills. It involves meeting communication needs of clients and colleagues, contributing to the development of communication strategies, conducting workplace interviews, facilitating group discussions and representing the organisation

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Meet communication needs of clients and colleagues | 1. Specific communication needs of clients and colleagues are identified and met based on workplace requirements 2. Different communication approaches are identified and applied according to clients’ needs 3. Conflict is identified and addressed as per the standards of the organization |
| 1. Contribute to the development of communication strategies | 1. Strategies for internal and external dissemination of information are developed, promoted, implemented and reviewed as per organizations’ strategic plan 2. Channels of communication are established and reviewed based on the workplace needs 3. Communication training needs are identified and provided according to SOPs 4. Work related network and relationship are maintained based on workplace requirements 5. Negotiation and conflict resolution strategies are maintained as per the workplace procedures |
| 1. Conduct workplace interviews | 1. ***Communication strategies*** are identified and employed in ***interview situations*** based on workplace requirements 2. Records of interviews are made and maintained in accordance with organizational procedures 3. Effective questioning, listening and nonverbal communication techniques are used based on needs |
| 1. Facilitate group discussions | 1. Mechanisms to enhance ***effective group interaction*** are identified and implemented according to workplace requirements 2. Strategies to encourage group participation are identified and used as per organizations’ procedures 3. Meetings objectives and agenda are set and followed based on workplace requirements 4. Relevant information is provided and feedback obtained according to set protocols 5. Evaluation of group communication strategies is undertaken in accordance with workplace guidelines 6. Specific communication needs of individuals are identified and addressed as per individual needs |
| 1. Represent the organization | 1. Relevant presentation are researched and presented based on internal or external communication forums requirements Presentation is delivered in a clear and sequential manner as per the predetermined time 2. Presentation is made as per appropriate media 3. Difference views are respected based on workplace procedures 4. Written communication is done as per organizational standards 5. Inquiries are responded according to organizational standard |

**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** |
| 1. Communication strategies may include but not limited to: | 1. Language switch 2. Comprehension check 3. Repetition 4. Asking confirmation 5. Paraphrase 6. Clarification request 7. Translation 8. Restructuring 9. Approximation 10. Generalization |
| 1. Effective group interaction may include but not limited to: | 1. Identifying and evaluating what is occurring within an interaction in a non-judgmental way 2. Using active listening 3. Making decision about appropriate words, behavior 4. Putting together response which is culturally appropriate 5. Expressing an individual perspective 6. Expressing own philosophy, ideology and background and exploring impact with relevance to communication 7. Openness and flexibility in communication |
| 1. Interview situations may include but not limited to: | 1. Establishing rapport 2. Eliciting facts and information 3. Facilitating resolution of issues 4. Developing action plans 5. Diffusing potentially difficult situations |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Active listening
* Giving/receiving feedback
* Interpretation of information
* Role boundaries setting
* Negotiation
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Communication process
* Dynamics of groups and different styles of group leadership
* Communication skills relevant to client groups
* Flexibility in communication

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   1. Met communication needs of clients and colleagues 2. Contributed to the development of communication strategies 3. Conducted interviews 4. Facilitated group discussions 5. Represented the organization |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation 2. Oral questioning 3. Written test 4. Portfolio of Evidence 5. Interview 6. Third party report |
| 1. Context of Assessment | Competency may be assessed   1. On the job 2. Off the job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**DEMONSTRATE NUMERACY SKILLS**

**UNIT CODE:** **AGR/OS/SARD/BC/02/5/A**

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate numeracy skills. it involves calculating with whole numbers and familiar fractions, decimals, and percentages for work estimating, measuring, and calculating with routine metric measurements for work, using routine maps and plans for work, interpreting, drawing and constructing 2D and 3D shapes for work, interpreting routine tables, graphs and charts for work, collecting data and constructing routine tables and graphs for work and using basic functions of calculator.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range.*** |
| 1. Calculate with whole numbers and familiar fractions, decimals and percentages for work | 1. Mathematical information that may be partly embedded in routine workplace tasks and texts is selected and interpreted as per SOPs 2. Whole numbers and routine or familiar fractions, decimals and percentages including familiar rates are interpreted and comprehended as per SOPs 3. Calculations which may involve a number of steps are performed as per SOPs 4. Calculations done with whole numbers and routine or familiar fractions, decimals and percentages as per SOPs 5. Conversion between equivalent forms of fractions, decimals and percentages is done as per SOPs 6. Order of operations is applied to solve multi-step calculations as per SOPs 7. Problem solving strategies are appropriately applied as per SOPs 8. Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task as per SOPs 9. Formal and informal mathematical language and symbolism are used to communicate the result of the task as per SOPs. |
| 2. Estimate, measure, and calculate with routine metric measurements for work | 1. Measurement information in workplace tasks and texts are selected and interpreted in accordance with workplace requirements 2. Appropriate routine measuring equipment are identified and selected in accordance with workplace requirements 3. Measurements are estimated and made using correct units as per measurement manuals. 4. Estimations and calculations done as per routine measurements 5. Conversions performed routinely as per metric units 6. Problem solving processes are used to undertake the tasks as per workplace procedures. 7. Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task as per workplace procedures 8. Information is recorded using mathematical language and symbols appropriate to discuss the task as per workplace procedures. |
| 3. Use routine maps and plans for work | 1. Features are identified in routine maps and plans as per SOPs 2. Symbols and keys in routine maps and plans are clearly explained as per SOPs 3. Orientation of map to North is identified and interpreted as per SOPs 4. Understanding of direction and location is clearly demonstrated as per SOPs 5. Simple scale is applied to estimate length of objects, or distance to location or object as per SOPs 6. Directions are given and received using both formal and informal language as per SOPs |
| 4. Interpret, draw and construct 2D and 3D shapes for work | 1. Two dimensional shapes and routine three dimensional shapes identified in everyday objects and in different orientations in accordance with job specifications 2. The use and application of shapes elaborately explained as per SOPs 3. Formal and informal mathematical language and symbols used to describe and compare the features of two dimensional shapes and routine three dimensional shapes as per workplace procedures. 4. Common angles identified in accordance with SOPs 5. Common angles in everyday objects are appropriately estimated as per SOPs 6. Formal and informal mathematical language are used to describe and compare common angles as per workplace procedures. 7. Common geometric instruments used to draw two dimensional shapes as per SOPs 8. Routine three dimensional objects constructed from given nets as per SOPs. |
| 5. Interpret routine tables, graphs and charts for work | 1. Routine tables, graphs and charts identified in predominately familiar texts and contexts as per tables and graph manuals 2. Common types of graphs and their different uses identified as per SOPs 3. Features of tables, graphs and charts identified as per workplace procedures 4. Information in routine tables, graphs and charts located and interpreted as per workplace procedures 5. Calculations are perform to interpret information as per SOPs 6. How statistics can inform and persuade interpretations is explained as per SOPs 7. Misleading statistical information is identified as per workplace procedures. 8. Information relevant to the workplace is discussed as per workplace procedures. |
| 6. Collect data and construct routine tables and graphs for work | 1. Features of common tables and graphs identified as per SOPs 2. Uses of ***different tables and graphs*** identified as per job specifications 3. Data and variables to be collected are determined as per workplace procedures. 4. The audience is determined as per the workplace procedures 5. Method of data collection is select as per job requirement 6. Data is collected as per SOPs 7. Information is collated in a table as per SOPs 8. Suitable scale and axes determined as per job specifications 9. Graph to present information is drafted and drawn as per SOPs 10. Data checked to ensure that it meets the expected results and context as per workplace procedures 11. Information is reported or discussed using formal and informal mathematical language as per workplace procedures |
| 7. Use basic functions of calculator | * 1. Keys are identified and used for ***basic functions on a calculator*** as per SOPs   2. Calculation is done using whole numbers, money and routine decimals and percentages as per SOPs   3. Calculation done with routine fractions and percentages as per SOPs   4. Order of operations is applied to solve multi-step calculations as per SOPs   5. Results are interpreted, displayed and recorded as per workplace procedures   6. Estimations are made to check reasonableness of problem solving process, outcome and its appropriateness to the context and task as per workplace procedures   7. Formal and informal mathematical language and appropriate symbolism and conventions used to communicate the result of the task as per workplace procedures. |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Use basic functions of calculator may include but not limited to: | * Addition * Multiplication * Calculate ratios * Conversion of ratios into percentages |
| 1. Different tables and graphs may include but not limited to: | * Bar Graphs * Flow Charts * Pie Charts * Pictograph * Line Graphs * Time Series Graphs * Stem and Leaf Plot * Histogram * Dot Plot * Scatter plot |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Measuring
* Logical thinking
* Computing
* Drawing of graphs
* Applying mathematical formulas
* Analytical

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Types of common shapes
* Differentiation between two dimensional shapes / objects
* Formulae for calculating area and volume
* Types and purpose of measuring instruments
* Units of measurement and abbreviations
* Fundamental operations (addition, subtraction, division, multiplication)
* Rounding techniques
* Types of fractions
* Different types of tables and graphs
* Meaning of graphs, such as increasing, decreasing, and constant value
* Preparation of basic data, tables & graphs

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   1. Calculated correctly with whole numbers and routine or familiar fractions, decimals and percentages 2. Estimated, measured and calculated with routine metric measurements 3. Applied simple scale to estimate length of objects or distance to location or object 4. Used formal and informal mathematical language to describe and compare common angles 5. Used common geometric instruments to draw two dimensional shapes 6. Collected data and constructed routine tables and graphs 7. Used basic functions of calculator correctly |
| 1. Resource Implications | The following resources should be provided:   1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   1. Observation 2. Oral questioning 3. Written test 4. Portfolio of Evidence 5. Interview 6. Third party report |
| 1. Context of Assessment | Competency may be assessed in:   1. On the job 2. Off the job 3. Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**DEMONSTRATE DIGITAL LITERACY**

**UNIT CODE:** AGR/OS/SARD/BC/03/5/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate digital literacy. It involves identifying appropriate computer software and hardware, applying security measures to data, hardware, software in automated environment, applying computer software in solving tasks, applying internet and email in communication at workplace, applying desktop publishing in official assignment and preparing presentation packages**.**

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Identify appropriate computer software and hardware | 1. Concepts of ICT are determined in accordance with computer equipment 2. Classifications of computers are determined in accordance with manufacturers specification 3. ***Appropriate computer software*** is identified according to manufacturer’s specification 4. ***Appropriate computer hardware*** is identified according to manufacturer’s specification 5. Functions and commands ofoperating system are determined in accordance withmanufacturer’s specification |
| 1. Apply security measures to data, hardware, software in automated environment | 1. ***Data security and privacy are classified*** in accordance with the prevailing technology 2. ***Security threats*** areidentified, **and *control measures*** are applied in accordance with laws governing protection of ICT 3. Computer threats and crimes are detected in accordance with Information security management guidelines 4. Protection against computer crimes is undertaken in accordance with laws governing protection of ICT |
| 1. Apply computer software in solving tasks | 1. ***Word processing concepts***are applied in resolving workplace tasks, report writing and documentation as per job requirements 2. ***Word processing utilities*** are applied in accordance with workplace procedures 3. Worksheet layout is prepared in accordance with work procedures 4. Worksheet is build and data manipulated in the worksheet in accordance with workplace procedures 5. Continuous data manipulated on worksheet is undertaken in accordance with work requirements 6. Database design and manipulation is undertaken in accordance with office procedures 7. Data sorting, indexing, storage, retrieval and security is provided in accordance with workplace procedures |
| 1. Apply internet and email in communication at workplace | 1. Electronic mail addresses are opened and applied in workplace communication in accordance with office policy 2. Office internet functions are defined and executed in accordance with office procedures 3. ***Network configuration*** is determined in accordance with office operations procedures 4. Official World Wide Web is installed and managed according to workplace procedures |
| 1. Apply desktop publishing in official assignments | 1. Desktop publishing functions and tools are identified in accordance with manufactures specifications 2. Desktop publishing tools are developed in accordance with work requirements 3. Desktop publishing tools are applied in accordance with workplace requirements 4. Typeset work is enhanced in accordance with workplace standards |
| 1. Prepare presentation packages | 1. Types of presentation packages are identified in accordance with office requirements 2. Slides are created and formulated in accordance with workplace procedures 3. Slides are edited and run in accordance with work procedures 4. Slides and handouts are printed according to work requirements |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Appropriate computer hardware may include but not limited to: | * Computer case * Monitor * keyboard * mouse |
| 1. Data security and privacy may include but not limited to: | * Confidentiality of data * Cloud computing * Integrity -but-curious data surfing |
| 1. Security and control measures may include but not limited to: | * Counter measures against cyber terrorism * Risk reduction * Cyber threat issues * Risk management * Pass wording |
| 1. Security threats may include but not limited to: | * Cyber terrorism * Hacking |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Analytical skills
* Interpretation
* Typing
* Communication
* Basic ICT skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Software concept
* Functions of computer software and hardware
* Data security and privacy
* Computer security threats and control measures
* Technology underlying cyber-attacks and networks
* Cyber terrorism
* Computer crimes
* Detection and protection of computer crimes
* Laws governing protection of ICT
* Microsoft suite

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identified and controlled security threats 2. Detected and protected computer crimes 3. Applied word processing in office tasks 4. Designed, prepared work sheet and applied data to the cells in accordance to workplace procedures 5. Opened electronic mail for office communication as per workplace procedure 6. Installed internet and World Wide Web for office tasks in accordance with office procedures 7. Integrated emerging issues in computer ICT applications 8. Applied laws governing protection of ICT |
| 1. Resource Implications | The following resources should be provided:   1. Tablets 2. Laptops 3. Desktop computers 4. Calculators 5. Internet 6. Smart phones 7. Operation Manuals |
| 1. Methods of Assessment | Competency may be assessed through:   1. Written Test 2. Observation 3. Practical assignment 4. Interview/Oral Questioning |
| 1. Context of Assessment | Competency may be assessed in:   1. Off the job 2. On the job setting 3. Industrial attachment |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**DEMONSTRATE ENTREPRENEURIAL SKILLS**

**UNIT CODE :** AGR/OS/SARD/BC/04/5/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate understanding of entrepreneurship. It involves demonstrating understanding of an entrepreneur, entrepreneurship, and self-employment, identifying entrepreneurship opportunities, creating entrepreneurial awareness, applying entrepreneurial motivation, developing business innovative strategies and developing business plan.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Demonstrate understanding of an Entrepreneur | 1. Entrepreneurs and Businesspersons are distinguished as per principles of entrepreneurship 2. ***Types of entrepreneurs*** are identified as per principles of entrepreneurship 3. Ways of becoming an Entrepreneur are identified as per principles of Entrepreneurship 4. ***Characteristics of Entrepreneurs*** are identified as per principles of Entrepreneurship 5. Factors affecting Entrepreneurship development are explored as per principles of Entrepreneurship |
| 1. Demonstrate understanding of Entrepreneurship and self-employment | 1. Entrepreneurship and self-employment are distinguished as per principles of entrepreneurship 2. Importance of self-employment is analysed based on business procedures and strategies 3. ***Requirements for entry into self-employment*** are identified according to business procedures and strategies 4. Role of an Entrepreneur in business is determined according to business procedures and strategies 5. Contributions of Entrepreneurs to National development are identified as per business procedures and strategies 6. Entrepreneurship culture in Kenya is explored as per business procedures and strategies 7. Born or made Entrepreneurs are distinguished as per entrepreneurial traits |
| 1. Identify Entrepreneurship opportunities | 1. Sources of business ideas are identified as per business procedures and strategies 2. Business ideas and opportunities are generated as per business procedures and strategies 3. Business life cycle is analysed as per business procedures and strategies 4. Legal aspects of business are identified as per procedures and strategies 5. Product demand is assessed as per market strategies 6. Types of ***business environment*** are identified and evaluated as per business procedures 7. Factors to consider when evaluating business environment are explored based on business procedure and strategies 8. Technology in business is incorporated as per best practice |
| 1. Create entrepreneurial awareness | 1. ***Forms of businesses*** are explored as per business procedures and strategies 2. Sources of business finance are identified as per business procedures and strategies 3. Factors in selecting source of business finance are identified as per business procedures and strategies 4. ***Governing policies*** on Small Scale Enterprises (SSEs) are determined as per business procedures and strategies 5. Problems of starting and operating SSEs are explored as per business procedures and strategies |
| 1. Apply entrepreneurial motivation | 1. ***Internal and external motivation*** factors are determined in accordance with motivational theories 2. Self-assessment is carried out as per entrepreneurial orientation 3. Effective communications are carried out in accordance with communication principles 4. Entrepreneurial motivation is applied as per motivational theories |
| 1. Develop innovative business strategies | 1. Business innovation strategies are determined in accordance with the organization strategies 2. Creativity in business development is demonstrated in accordance with business strategies 3. ***Innovative business strategies*** are developed as per business principles 4. Linkages with other entrepreneurs are created as per best practice 5. ICT is incorporated in business growth and development as per best practice |
| 1. Develop Business Plan | 1. Identified Business is described as per business procedures and strategies 2. Marketing plan is developed as per business plan format 3. Organizational/Management plan is prepared in accordance with business plan format 4. Production/operation plan in accordance with business plan format 5. Financial plan is prepared in accordance with the business plan format 6. Executive summary is prepared in accordance with business plan format 7. Business plan is presented as per best practice |

**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.

|  |  |
| --- | --- |
| 1. Variable | Range |
| 1. Types of entrepreneurs may include but not limited to: | * Innovators * Imitators * Craft * Opportunistic * Speculators |
| 1. Characteristics of Entrepreneurs may include but not limited to: | * Creative * Innovative * Planner * Risk taker * Networker * Confident * Flexible * Persistent * Patient * Independent * Future oriented * Goal oriented |
| 1. Requirements for entry into self-employment may include but not limited to | * Technical skills * Management skills * Entrepreneurial skills * Resources * Infrastructure |
| 1. Internal and external motivation may include but not limited to: | * Interest * Passion * Freedom * Prestige * Rewards * Punishment * Enabling environment * Government policies |
| 1. Business environment may include but not limited to: | * External * Internal * Intermediate |
| 1. Forms of businesses may include but not limited to: | * Sole proprietorship * Partnership * Limited companies * Cooperatives |
| 1. Governing policies may include but not limited to: | * Increasing scope for finance * Promoting cooperation between entrepreneurs and private sector * Reducing regulatory burden on entrepreneurs * Developing IT tools for entrepreneurs |
| 1. Innovative business strategies may include but not limited to: | * New products * New methods of production * New markets * New sources of supplies * Change in industrialization |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Analytical
* Management
* Problem-solving
* Root-cause analysis
* Communication

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Decision making
* Business communication
* Change management
* Competition
* Risk
* Net working
* Time management
* Leadership
* Factors affecting entrepreneurship development
* Principles of Entrepreneurship
* Features and benefits of common operational practices, e. g., continuous improvement (kaizen), waste elimination,
* Conflict resolution
* Health, safety and environment (HSE) principles and requirements
* Customer care strategies
* Basic financial management
* Business strategic planning
* Impact of change on individuals, groups and industries
* Government and regulatory processes
* Local and international market trends
* Product promotion strategies
* Market and feasibility studies
* Government and regulatory processes
* Local and international business environment
* Relevant developments in other industries
* Regional/ County business expansion strategies

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Distinguished entrepreneurs and business persons correctly 2. Identified ways of becoming an entrepreneur appropriately 3. Explored factors affecting entrepreneurship development appropriately 4. Analysed importance of self-employment accurately 5. Identified requirements for entry into self-employment correctly 6. Identified sources of business ideas correctly 7. GeneratedBusiness ideas and opportunities correctly 8. Analysed business life cycle accurately 9. Identified legal aspects of business correctly 10. Assessed product demand accurately 11. Determined Internal and external motivation factors appropriately 12. Carried out communications effectively 13. Identified sources of business finance correctly 14. Determined Governing policy on small scale enterprise appropriately 15. Explored problems of starting and operating SSEs effectively 16. Developed Marketing, Organizational/Management, Production/Operation and Financial plans correctly 17. Prepared executive summary correctly 18. Determined business innovative strategies appropriately 19. Presented business plan effectively |
| 1. Resource Implications | The following resources should be provided:   1. The following resources should be provided: 2. Access to relevant workplace where assessment can take place 3. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | Competency may be assessed through:   1. Written tests 2. Oral questions 3. Third party report 4. Interviews 5. Portfolio |
| 1. Context of Assessment | Competency may be assessed   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**DEMONSTRATE EMPLOYABILITY SKILLS**

**UNIT CODE:** AGR/OS/SARD/BC/05/5/A

**Unit Description**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating interpersonal communication, critical safe work habits, leading small teams, planning and organizing work, maintaining professional growth and development, demonstrating workplace learning, problem solving skills and managing workplace ethics.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Conduct self-management | 1. Personal vision, mission and goals are formulated based on potential and in relation to organization objectives 2. Emotional intelligence is demonstrated as per workplace requirements. 3. Individual performance is evaluated and monitored according to the agreed targets. 4. Assertiveness is developed and maintained based on the requirements of the job. 5. Accountability and responsibility for own actions are demonstrated based on workplace instructions. 6. Self-esteem and a positive self-image are developed and maintained based on values. 7. Time management, attendance and punctuality are observed as per the organization policy. 8. Goals are managed as per the organization’s objective 9. Self-strengths and weaknesses are identified based on personal objectives |
| 1. Demonstrate interpersonal communication | 1. Writing skills are demonstrated as per communication policy 2. Negotiation and persuasion skills are demonstrated as per communication policy 3. Internal and external stakeholders’ needs are identified and interpreted as per the communication policy 4. Communication networks are established based on workplace policy 5. Information is shared as per communication policy |
| 1. Demonstrate critical safe work habits | 1. Stress is managed in accordance with workplace policy. 2. Punctuality and time consciousness is demonstrated in line with workplace policy. 3. Personal objectives are integrated with organization goals based on organization’s strategic plan. 4. ***Resources*** are utilized in accordance with workplace policy. 5. Work priorities are set in accordance to workplace goals and objectives. 6. Leisure time is recognized and utilized in line with personal objectives. 7. ***Drugs and substances of abuse*** are identified and avoided based on workplace policy. 8. HIV and AIDS prevention awareness is demonstrated in line with workplace policy. 9. Safety consciousness is demonstrated in the workplace based on organization safety policy. 10. ***Emerging issues*** are identified and dealt with in accordance with organization policy. |
| 1. Lead small teams | 1. Performance targets for the ***team*** are set based on organization’s objectives 2. Duties are assigned in accordance with the organization policy. 3. ***Forms of communication*** in a team are established according to organization’s policy. 4. Team performance is evaluated based on set targets as per workplace policy. 5. Conflicts are resolved between team members in line with organization policy. 6. Gender related issues are identified and mainstreamed in accordance workplace policy. 7. Human rights and fundamental freedoms are identified and respected as Constitution of Kenya 2010. 8. Healthy relationships are developed and maintained in line with workplace. |
| 1. Plan and organize work | 1. Task requirements are identified as per the workplace objectives 2. Task is interpreted in accordance with safety (OHS ), environmental requirements and quality requirements 3. Work activity is organized with other involved personnel as per the SOPs 4. Resources are mobilized, allocated and utilized to meet project goals and deliverables. 5. Work activities are monitored and evaluated in line with organization procedures. 6. Job planning is documented in accordance with workplace requirements. 7. Time is managed achieve workplace set goals and objectives. |
| 1. Maintain professional growth and development | 1. Personal training needs are identified and assessed in line with the requirements of the job. 2. ***Training and career opportunities*** are identified and utilized based on job requirements. 3. Resources for training are mobilized and allocated based organizations and individual skills needs. 4. Licensees and certifications relevant to job and career are obtained and renewed as per policy. 5. Work priorities and personal commitments are balanced and managed based on requirements of the job and personal objectives. 6. Recognitions are sought as proof of career advancement in line with professional requirements. |
| 1. Demonstrate workplace learning | 1. Learning opportunities are sought and managed based on job requirement and organization policy. 2. Improvement in performance is demonstrated based on courses attended. 3. Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job 4. Time and effort is invested in learning new skills based on job requirements 5. Initiative is taken to create more effective and efficient processes and procedures in line with workplace policy. 6. New systems are developed and maintained in accordance with the requirements of the job. 7. Awareness of personal role in workplace ***innovation*** is demonstrated based on requirements of the job. |
| 1. Demonstrate problem solving skills | 1. Creative, innovative and practical solutions are developed based on the problem 2. Independence and initiative in identifying and solving problems is demonstrated based on requirements of the job. 3. Team problems are solved as per the workplace guidelines 4. Problem solving strategies are applied as per the workplace guidelines 5. Problems are analyzed and assumptions tested as per the context of data and circumstances |
| 1. Demonstrate workplace ethics | 1. Policies and guidelines are observed as per the workplace requirements 2. Self-worth and professionalism is exercised in line with personal goals and organizational policies 3. Code of conduct is observed as per the workplace requirements 4. Integrity is demonstrated as per legal requirement |

**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.

|  |  |
| --- | --- |
| **Range** | **Variable** |
| 1. Drug and substance abuse may include but not limited to: | Commonly abused   1. Alcohol 2. Tobacco 3. Miraa 4. Over-the-counter drugs 5. Cocaine 6. Bhang 7. Glue |
| 1. Feedback may include but not limited to: | 1. Verbal 2. Written 3. Informal 4. Formal |
| 1. Relationships may include but not limited to: | 1. Man/Woman 2. Trainer/trainee 3. Employee/employer 4. Client/service provider 5. Husband/wife 6. Boy/girl 7. Parent/child 8. Sibling relationships |
| 1. Forms of communication may include but not limited to: | 1. Written 2. Visual 3. Verbal 4. Non verbal 5. Formal and informal |
| 1. Team may include but not limited to: | 1. Small work group 2. Staff in a section/department 3. Inter-agency group |
| 1. Personal growth may include but not limited to: | |  | | --- | | 1. Growth in the job 2. Career mobility 3. Gains and exposure the job gives 4. Net workings 5. Benefits that accrue to the individual as a result of noteworthy performance | |
| 1. Personal objectives may include but not limited to: | 1. Long term 2. Short term 3. Broad 4. Specific |
| 1. Trainings and career opportunities may include but not limited to | 1. Participation in training programs 2. Technical 3. Supervisory 4. Managerial 5. Continuing Education 6. Serving as Resource Persons in conferences and workshops |
| 1. Resource may include but not limited to: | 1. Human 2. Financial 3. Hardware 4. Software |
| 1. Innovation may include but not limited to: | 1. New ideas 2. Original ideas 3. Different ideas 4. Methods/procedures 5. Processes 6. New tools |
| 1. Emerging issues may include but not limited to: | 1. Terrorism 2. Social media 3. National cohesion 4. Open offices |
| 1. Range of media for learning may include but not limited to: | 1. Mentoring 2. peer support and networking 3. IT and courses |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Critical thinking
* Observation
* Organizing
* Negotiation
* Monitoring
* Evaluation
* Record keeping
* Problem solving
* Decision Making
* Resource utilization
* Resource mobilization

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Work values and ethics
* Company policies
* Company operations, procedures and standards
* Occupational Health and safety procedures
* Fundamental rights at work
* Personal hygiene practices
* Workplace communication
* Concept of time
* Time management
* Decision making
* Types of resources
* Work planning
* Resources and allocating resources
* Organizing work
* Monitoring and evaluation
* Record keeping
* Workplace problems and how to deal with them
* Gender mainstreaming
* HIV and AIDS
* Drug and substance abuse
* Leadership
* Safe work habits
* Professional growth and development
* Technology in the workplace
* Emerging issues
* Social media
* Terrorism
* National cohesion

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   1. Conducted self-management 2. Demonstrated interpersonal communication 3. Demonstrated critical safe work habits 4. Led small teams 5. Planned and organized work 6. Maintained professional growth and development 7. Demonstrated workplace learning 8. Demonstrated problem solving skills 9. Demonstrated workplace ethics |
| 1. Resource Implications | |  | | --- | | The following resources should be provided:   1. Access to relevant workplace where assessment can take place 2. Appropriately simulated environment where assessment can take place | |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Oral questioning 2. Portfolio of evidence 3. Third Party Reports 4. Written tests |
| 1. Context of Assessment | Competency may be assessed   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**DEMONSTRATE ENVIRONMENTAL LITERACY**

**UNIT CODE:** AGR/OS/SARD/BC/06/5/A

**UNIT DESCRIPTION**

This unit describes the competencies required to demonstrate understanding of environmental literacy. It involves controlling environmental hazard, controlling control environmental pollution, complying with workplace sustainable resource use, evaluating current practices in relation to resource usage, identifying environmental legislations/conventions for environmental concerns, implementing specific environmental programs and monitoring activities on environmental protection/programs.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Control environmental hazard | 1. ***Storage methods*** for environmentally***hazardous*** materials are strictly followed according to environmental regulations and OSHS. 2. ***Disposal methods*** of hazardous wastes are followed always according to environmental regulations and OSHS. 3. ***PPE*** is used according to OSHS. |
| 1. Control environmental Pollution control | 1. Environmental pollution ***control measures*** are compiled following standard protocol. 2. Procedures for solid waste management are observed according to Environmental Management and Coordination Act 1999 3. Methods for minimizing ***noise pollution*** is complied with based on *Noise* and Excessive Vibration *Pollution and*  *Control Regulations*, 2009 |
| 1. Demonstrate sustainable resource use | 1. Methods for minimizing wastage are complied with. 2. Waste management procedures are employed following principles of 3Rs (Reduce, Reuse, Recycle) 3. Methods for economizing and reducing resource consumption are practiced as per the Environmental Management and Coordination Act 1999 |
| 1. Evaluate current practices in relation to resource usage | 1. Information on resource efficiency **systems and procedures** are collected and provided to the work group where appropriate. 2. Current resource usage is measured and recorded by members of the work group. 3. Current purchasing strategies are analyzed and recorded according to industry procedures. 4. Current work processes to access information and data is analyzed following enterprise protocol. |
| 1. Identify Environmental legislations/conventions for environmental concerns | 1. Environmental ***legislations/conventions*** and local ordinances are identified according to the different ***environmental aspects/impact*** 2. ***Industrial standard/environmental practices*** are described according to the different environmental concerns |
| 1. Implement specific environmental programs | 1. Programs/Activities are identified according to organizations policies and guidelines. 2. Individual roles/responsibilities are determined and performed based on the activities identified. 3. Problems/constraints encountered are resolved in accordance with organizations’ policies and guidelines 4. Stakeholders are consulted based on company guidelines |
| 1. Monitor activities on Environmental protection/Programs | 1. Activities are periodically monitored and evaluated according to the objectives of the environmental Program 2. Feedback from stakeholders are gathered and considered in proposing enhancements to the program based on consultations 3. Data gathered are analyzed based on evaluation requirements 4. Recommendations are submitted based on the findings 5. Management support systems are set/established to sustain and enhance the program 6. Environmental incidents are monitored and reported to concerned/proper authorities |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. PPE may include but not limited to: | 1. Mask 2. Gloves 3. Goggles 4. Safety hat 5. Overall 6. Hearing protector 7. Safety boots |
| 1. Environmental pollution control measures may include but not limited to: | 1. Methods for minimizing or stopping spread and ingestion of airborne particles 2. Methods for minimizing or stopping spread and ingestion of gases and fumes 3. Methods for minimizing or stopping spread and ingestion of liquid wastes |
| 1. Waste management procedures may include but not limited to: | 1. Sorting 2. Storing of items 3. Recycling of items 4. Disposal of items |
| 1. Resources may include but not limited to: | 1. Electric 2. Water 3. Fuel 4. Telecommunications 5. Supplies 6. Materials |
| 1. Workplace environmental hazards may include but not limited to: | 1. Biological hazards 2. Chemical and dust hazards 3. Physical hazards |
| 1. Organizational systems and procedures may include but not limited to: | 1. Supply chain, procurement and purchasing 2. Quality assurance 3. Making recommendations and seeking approvals |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Observation
* Measuring
* Writing
* Communication
* Analytical
* Monitoring
* Evaluation

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Storage methods of environmentally hazardous materials
* Disposal methods of hazardous wastes
* Usage of PPE Environmental regulations
* OSHS
* Types of pollution
* Environmental pollution control measures
* Different solid wastes
* Solid waste management
* Different noise pollution
* Methods of minimizing noise pollution
* Solid Waste Act
* Methods of minimizing wastage
* Waste management procedures
* Economizing of resource consumption
* 3Rs principle
* Types of resources
* Techniques in measuring current usage of resources
* Calculating current usage of resources
* Types of workplace environmental hazards
* Environmental regulations
* Environmental regulations applying to the enterprise.
* Measurement and recording of current resource usage
* Analysis current work processes to access information and data Analysis of data and information
* Identification of areas for improvement
* Resource consuming processes
* Determination of quantity and nature of resource consumed
* Analysis of resource flow of different parts of the resource flow process
* Use/conversion of resources
* Causes of low efficiency of use
* Increasing the efficiency of resource use
* Inspection of resource use plans
* Regulations/licensing requirements
* Determine benefit/cost for alternative resource sources
* Benefit/costs for different alternatives
* Components of proposals
* Criteria on ranking proposals
* Regulatory requirements
* Proposals for improving resource efficiency
* Implementation of resource efficiency plans
* Procedures in monitor implementation
* Adjustments of implementation plan
* Inspection of new resource usage

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Controlled environmental hazard 2. Controlled environmental pollution 3. Demonstrated sustainable resource use 4. Evaluated current practices in relation to resource usage 5. Demonstrated knowledge of environmental legislations and local ordinances according to the different environmental issues /concerns. 6. Described industrial standard environmental practices according to the different environmental issues/concerns. 7. Resolved problems/ constraints encountered based on management standard procedures 8. Implemented and monitored environmental practices on a periodic basis as per company guidelines 9. Recommended solutions for the improvement of the Program 10. Monitored and reported to proper authorities any environmental incidents |
| 1. Resource Implications | The following resources should be provided:   1. Workplace with storage facilities 2. Tools, materials and equipment relevant to the tasks (ex. Cleaning tools, cleaning materials, trash bags, etc.) 3. PPE 4. Manuals and references 5. Legislation, policies, procedures, protocols and local ordinances relating to environmental protection 6. Case studies/scenarios relating to environmental Protection |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation 2. Oral questioning 3. Written test 4. Interview/Third Party Reports 5. Portfolio of evidence |
| 1. Context of Assessment | Competency may be assessed   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

**DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES**

**UNIT CODE:** AGR/OS/SARD/BC/07/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to identify workplace hazards and risk, identify and implement appropriate control measures and implement OSH programs, procedures and policies/ guidelines

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace function. | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Identify workplace hazards and risk | 1.1 ***Hazards*** in the workplace are identified ***based their indicators***  1.2 Risks and hazards are evaluated based on legal requirements.  1.3 ***OSH concerns*** raised by workers are addressed as per legal requirements. |
| 1. Control OSH hazards | 2.1 Hazard prevention ***and control measures*** are implemented as per legal requirement.  2.2 Risk assessment is conductedand a risk matrix developed based on likely impact.  2.3 ***Contingency measures***, including ***emergency procedures*** during workplace ***incidents and emergencies*** are recognized and established in accordance with organization procedures. |
| 1. Implement OSH programs | 3.1 Company OSH program are identified, evaluated and reviewed based on legal requirements.  3.2 Company OSH programs are implemented as per legal requirements.  3.3 Workers are capacity built on OSH standards and procedures as per legal requirements  3.4 ***OSH-related records*** are maintained as per legal requirements. |

**RANGE**

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

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Hazards may include but are not limited to: | 1. Physical hazards 2. Biological hazards 3. Chemical hazards 4. Ergonomics 5. Psychological factors 6. Physiological factors 7. Safety hazards 8. Unsafe workers’ act |
| 1. Indicators may include but are not limited to: | 1. Increased of incidents of accidents, injuries 2. Increased occurrence of sickness or health complaints/ symptoms 3. Common complaints of workers related to OSH 4. High absenteeism for work-related reasons |
| 1. Evaluation and/or work environment measurements may include but are not limited to: | 1. Health Audit 2. Safety Audit 3. Work Safety and Health Evaluation 4. Work Environment Measurements of Physical and Chemical Hazards |
| 1. OSH issues and/or concerns may include but are not limited to: | 1. Workers’ experience/observance on presence of work hazards 2. Unsafe/unhealthy administrative arrangements (prolonged work hours, no break time, constant overtime, scheduling of tasks) 3. Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/guidelines |
| 1. Prevention and control measures may include but are not limited to: | 1. Eliminate the hazard 2. Isolate the hazard 3. Substitute the hazard with a safer alternative 4. Use administrative controls to reduce the risk 5. Use engineering controls to reduce the risk 6. Use personal protective equipment 7. Safety, Health and Work Environment Evaluation 8. Periodic and/or special medical examinations of workers |
| 1. Safety gears /PPE (Personal Protective Equipment’s) may include but are not limited to: | 1. Arm/Hand guard, gloves 2. Eye protection (goggles, shield) 3. Hearing protection (ear muffs, ear plugs) 4. Hair Net/cap/bonnet 5. Hard hat 6. Face protection (mask, shield) 7. Apron/Gown/coverall/jump suit 8. Anti-static suits 9. High-visibility reflective vest |
| 1. Appropriate risk controls | 1. Eliminate the hazard altogether 2. Isolate the hazard from anyone who could be harmed 3. Substitute the hazard with a safer alternative 4. Use administrative controls to reduce the risk 5. Use engineering controls to reduce the risk 6. Use personal protective equipment |
| 1. Contingency measures may include but are not limited to: | 1. Evacuation 2. Isolation 3. Decontamination 4. Emergency personnel |
| 1. Emergency procedures may include but are not limited to: | 1. Fire drill 2. Earthquake drill 3. Basic life support/CPR 4. First aid 5. Spillage control 6. Decontamination of chemical and toxic 7. Disaster preparedness/management 8. Set of fire-extinguisher |
| 1. Incidents and emergencies may include but are not limited to: | 1. Chemical spills 2. Equipment/vehicle accidents 3. Explosion 4. Fire 5. Gas leak 6. Injury to personnel 7. Structural collapse 8. Toxic and/or flammable vapors emission. |
| 1. OSH-related Records may include but are not limited to: | 1. Medical/Health records 2. Incident/accident reports 3. Sickness notifications/sick leave application 4. OSH-related trainings obtained |

**REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this Unit of Competency.

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Interpersonal
* Presentation
* Risk assessment
* Evaluation
* Critical thinking
* Problem solving
* Negotiation

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* General OSH Principles
* Occupational hazards/risks recognition
* OSH organizations providing services on OSH evaluation and/or work environment measurements (WEM)
* National OSH regulations; company OSH policies and protocols
* Systematic gathering of OSH issues and concerns
* General OSH principles
* National OSH regulations
* Company OSH and recording protocols, procedures and policies/guidelines
* Training and/or counseling methodologies and strategies

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identified hazards in the workplace based their indicators 2. Evaluated workplace hazards based on legal requirements. 3. Addressed OSH concerns raised by workers as per legal requirements. 4. Implemented hazard prevention and control measures as per legal requirement. 5. Conducted risk assessment as per legal requirement. 6. Developed risk matrix based on likely impact. 7. Recognized and established contingency measures in accordance with organization procedures. 8. Identified, evaluated and reviewed company OSH program based on legal requirements. 9. Implemented company OSH programs as per legal requirements. 10. Capacity built workers on OSH standards and procedures as per legal requirements 11. Maintained OSH-related records as per legal requirements. |
| 1. Resource Implications | 1. The following resources should be provided: 2. Access to relevant workplace where assessment can take place 3. Appropriately simulated environment where assessment can take place |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   1. Observation 2. Oral questioning 3. Written test 4. Portfolio of Evidence 5. Interview 6. Third party report |
| 1. Context of Assessment | Competency may be assessed:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# 

# COMMON UNITS OF COMPETENCY

# DEMONSTRATE UNDERSTANDING OF SCIENCE FOR SARD

**UNIT CODE:** AGR/OS/SARD/CC/01/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate understanding of cell biology and physiology, movement of materials in the cell, taxonomy and phylogeny, enzymes and selective analysis, genetics photosynthesis, properties of matter and chemistry of water and soil.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Demonstrate understanding of cell biology and physiology | 1. ***Branches of biology*** are identified according to the biology manual. 2. Characteristics of living things are described according to the biology manual. 3. The cell is identified as per the Biology manual 4. Cell organelles are identified according to the biology manual 5. Functions of each cell organelle are described as per the biology manual. 6. ***Laboratory Equipment and reagents*** are identified and gathered based on practical Activity 7. Plant and animal cells are observed based on the biology laboratory manual. |
| 1. Demonstrate understanding of movement of materials in the cell | 1. Diffusion, osmosis and active transport is described based on the biology manual. 2. Laboratory Equipment are identified and gathered based on practical Activity 3. ***Movements of materials*** in the cell are demonstrated based on the procedures laid down in the biology laboratory manual. 4. Osmosis and Diffusion is applied to plants and animals based on the biology laboratory manual. 5. ***PPE***s are used based on the lab safety regulations 6. Disposal of wastes are carried out as per the ***Environmental Protection regulations*** |
| 1. Demonstrate understanding of taxonomy and phylogeny. | 1. Plants and animals are classified and categorized based on binomial classification 2. Plants and animals are classified based on artificial and natural classification. 3. Plants and animals are classified based on standard taxonomic keys. |
| 1. Demonstrate understanding of enzymes and selective analysis | 1. Enzymes are defined based on Biology manual 2. Molecular structures of enzymes are described as per the biology manual 3. Functions of each enzyme are described as per the biology manual. 4. Factors affecting enzyme reactions are identified based on biology manuals. 5. Laboratory Equipment and reagents are identified and gathered based on practical activity 6. Demonstration on enzyme activities are carried out based on the procedures laid down in biology lab manual 7. PPEs are used based on the lab safety regulations 8. Disposal of wastes are carried out as per the EMCA policies (1999). |
| 1. Demonstrate understanding of genetics | 1. Knowledge on genetics is explained according to Mendel’s law 2. Pearson’s square and test cross methods are used to demonstrate genetic inheritance based on the biology manual. 3. Demonstration of knowledge on the role of genetics in agriculture is carried out as per the procedures in agriculture manual |
| 1. Demonstrate understanding of photosynthesis | 1. Photosynthesis stages are described as per the biology manual. 2. Factors influencing photosynthesis are described as per the biology manual. 3. Adenosine triphosphate formation is described based on the biology manual. |
| 1. Demonstrate understanding of properties of matter | 1. Properties of matter are described as per physics manual 2. PPEs are used based on the lab safety rules regulations 3. Disposal of wastes are carried out as per the EMCA policies (1999). |
| 1. Demonstrate the understanding of chemistry of water and soil | 1. ***Chemical elements*** are identified as per the periodic table. 2. ***Chemical reactions*** in relation to Agriculture are demonstrated as per the chemistry manual. |

**RANGE**

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

|  |  |
| --- | --- |
| **Variables** | **Range**  ***includes but not limited to:*** |
| 1. Branches of Biology may include but not limited to: | * Botany * Zoology |
| 1. Movement of materials may include but not limited to: | * Osmosis * Diffusion * Active Transport |
| 1. Laboratory Equipment and reagents may include but not limited to: | * Microscope * Slides * Petri dishes * Scalpels * Scissors * Cotton wool * Droppers * Staining reagents * Hydrogen peroxide * Visking tubing * Specimens * Litmus paper * pH kit * Test tubes * Magnifying lens * Source of heat * Source of power * Beakers |
| 1. Personal Protective Equipment may include but not limited to: | * Lab coat * Gloves * Closed shoes * Eye wear * Masks |
| 1. Taxonomy may include but not limited to: | * Binomial Classification * Artificial Classification * Standard Taxonomic key |
| 1. Environmental Protection Regulations may include but not limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 |
| 1. Chemical Elements may include but not limited to: | * Metals * Non metals |
| 1. Chemical reactions may include but not limited to: | * Ion exchange * Soil Ph. * Sorption and Precipitation * Organic matter interactions * Oxidation and reduction reactions |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Basic laboratory skills
* Laboratory safety
* First aid
* Analytical

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Types of animals
* Types of plants
* Types of microorganisms
* Use of microscope
* Use of laboratory reagents
* Lab equipment’s
* Biological principles
* Botany
* Zoology
* Biological principles
* Enzymes concept
* Lab safety
* Cell
* Genes
* Plant and animal breeding
* Cell organelles
* Movement of materials in the cell
* The living processes
* Basic chemistry concepts.
* Laboratory equipment.
* Laboratory reagents.
* Laboratory safety
* Chemical properties of soil
* Properties of matter

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified the cell   2. Identified cell organelles and their functions   3. Identified differences between animal and plant cells   4. Described movement of materials in the cell   5. Classified plants and animals   6. Described functions of the enzyme   7. Described factors affecting enzyme reactions   8. Determined genetic inheritance   9. Explained the role of genetics in agriculture   10. Described photosynthetic processes   11. Described factors influencing photosynthesis   12. Described properties of matter   13. Identified metals and non-metals   14. Described chemical reactions in relation to Agriculture |
| 1. Resource Implications | The following resources must be provided:   * 1. Personal Protective Equipment and Apparel   2. Laboratory   3. Laboratory Equipment and reagents |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# APPLY SARD PRINCIPLES

**UNIT CODE:** AGR/OS/SARD/CC/02/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate understanding of approaches to sustainable development, soil fertility, and appropriate sustainable agriculture technologies and integration of farm enterprises, practice crop rotation, manage beneficial external associations and manage farming resources.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Demonstrate understanding of approaches to sustainable development | 1. ***Approaches to sustainable development*** are identified as per SDGs, AGENDA 21 “and OUR COMMON FUTURE”(laudato si) handbook, SUSTAINABLE LIVELIHOOD framework, RBA, PAR framework 2. Approaches to sustainable development are applied as per SDGs, AGENDA 21 “and OUR COMMON FUTURE”(laudato si) handbook, SUSTAINABLE LIVELIHOOD framework, HRBA, PAR framework |
| 1. Demonstrate understanding of soil fertility | 1. The field for soil sampling is selected as per the farm plan 2. ***Soil mapping*** is carried out as per the farm plan 3. Samples for soil testing are collected as per the soil sampling procedure 4. ***Soil samples analysis*** is carried out as per the macro and micro nutrient availability 5. Soils are classified as per agro ecological zones manual 6. Soil analysis recommendations are applied as per the soil analysis report |
| 1. Demonstrate understanding of appropriate sustainable agriculture technologies | 1. ***Sustainable agriculture******technologies*** are identified as per sustainable agriculture manuals 2. Appropriate sustainable agriculture technologies are selected as per existing credited manuals e.g. sustainable agriculture manual for east Africa manual, sustainable agriculture extension for east and central Africa, training manual for organic agriculture by FAO, organic farming in Kenya, agroforestry systems for sustainable land use 3. Appropriate sustainable agriculture technologies are implemented as per the suitability and affordability 4. Appropriate sustainable agriculture technologies are maintained and enhanced as per the future trends and ***emerging needs*** |
| 1. Demonstrate understanding of integration of farm enterprises | 1. The farm enterprises are identified as per detailed farm plans 2. Identified farm enterprises are integrated as per the farm plan 3. ***Integrated farm enterprises*** are maintained as per the farm plan |
| 1. Practice crop rotation | 1. ***Suitable crops*** are selected as per crop rotation guidelines 2. Crop rotation program/calendar is formulated as per the selected crops 3. Crop rotation is practiced out as per farm plan |
| 1. Manage beneficial external associations | 1. ***External beneficial associates*** are identified as per laid out institutional policies 2. Plan for engagement of the beneficial associates as per laid out institutional policies |
| 1. Manage farming resources | 1. ***Farming resources*** are identified as per farm plans 2. Farming resources are sourced as per the workplace procedures 3. Identified farming resources are utilized as per the workplace procedures 4. Farming resources are maintained and conserved as per the manufacturers guidelines and EMCA policies 5. Waste are management as per EMCA POLICIES |

**RANGE**

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

|  |  |
| --- | --- |
| **Variables** | **Range** |
| 1. Approaches sustainable development may include but not limited to: | * Economic * Society * environment |
| 1. Soil samples analysis may include but not limited to: | * Micro and macro nutrients * Pests and diseases |
| 1. Sustainable agriculture technologies may include but not limited to: | * Sunken beds * The raised beds * Double dug beds * Multi-storey gardens * Mandala gardens * Mulching * Moist beds * Zai pits * Fertility trenches * Terracing * Conservation agriculture |
| 1. Emerging needs may include but not limited to: | * Pertinent issues   + Climate change effects   + Pests and diseases   + Urbanization   + Land fragmentation   + Political stability   + Change in technology   + Policies |
| 1. Integrated farm enterprises may include but not limited to: | * Crops and livestock * Trees and crops * Crops with symbiotic relation * Trees and livestock |
| 1. Suitable crops may include but not limited to: | * Crop families * Ago ecological zones * Types of pests and diseases |
| 1. External beneficial associates may include but not limited to: | * Farm input suppliers * Market/ associations * Research institutions * Training institutions * Financial institutions |
| 1. Farming resources may include but not limited to: | * Soil * Water * Farm machinery * Tools and equipment * Farm Structures * Farm power * Labor |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Planning skills
* Public relations

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Common trends on global development,
* Development agenda
* Local and international Development agenda
* Sustainable development,
* Kenya Vision 2030
* SDGs
* Pillars of sustainable agriculture
* Concept of sustainable agriculture
* Dimensions of sustainable agriculture
* Soil sampling techniques
* General knowledge of agro ecological zones
* Interpretation and soil analysis
* Appropriate SARD technology
* Existing Farming technologies,
* Existing trends in global food production
* Farm management
* Farm Planning
* Crops and livestock husbandry
* Agro-Ecological zones
* Labour relations
* House hold food, nutrition and income sources
* General agronomic practices
* Soil fertility
* Market dynamics
* House hold food, nutrition and income sources
* Use of ICT
* Public relations
* Communication skills
* Interpersonal relations
* Record keeping
* Sustainable livelihood farming
* Farm management
* ICT
* Agro-ecological zones
* Resource mobilization
* Farm family and the youth
* Agro-pastoralism
* Sound enterprise management
* Crop families

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Demonstated knowledge of approaches of sustainable development   2. Conducted soil mapping   3. Carried out Soil sampling   4. Interpreted of soils analysis results   5. Conducted Soil classification   6. Identified, implemented and maintained sustainable agriculture technologies   7. Carried out integration of different enterprises   8. Carried out farm planning   9. Categorized crops into crop families   10. Prepared crop rotation calendar/program   11. Planned for engagement with beneficial associates   12. Identified farm resources   13. Managed farm resources   14. Management farm waste |
| 1. Resource Implications | The following resources must be provided:   * 1. Farm   2. Farm structures   3. Crops and livestock   4. Water   5. Farm machinery   6. Tools and equipment   7. Writing materials   8. Simple laboratory   9. Farm power |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation   6. Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with related units in the sector |

# APPLY AGRICULTURAL ENGINEERING PRINCIPLES

**UNIT CODE:** AGR/OS/SARD/CC/03/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage farm soil, water resources, farm power, farm structures, farm machinery and farm irrigation systems.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Manage farm soil | 1. Land to be assessed is selected as per the crop requirement 2. ***Tools and equipment for soil sample collection*** are assembled as per the work place procedures 3. Soil samples are collected as per soil analysis procedure 4. Soil samples are tested as per the soil testing manual 5. Sample are analyzed as per soil assessment requirements 6. Results are interpreted as per the soil analysis results interpretation manual 7. Findings are documented as per the soil analysis results interpretation manual 8. Recommendation are implemented as per the crop requirement |
| 1. Manage water resources | 1. ***Sources of water*** are identified as per farm needs 2. Water quality is determined based on KEBS and International standards 3. Water quantity is determined as per the farm needs 4. ***Water storage structures*** are identified based on the water quantity 5. ***Water distribution channels*** are identified as per farm needs |
| 1. Manage farm power | 1. ***Farm power requirements*** are determined as per farm power demand 2. ***Sources of power*** are identified as per the farm demands 3. Selected power is sourced as per availability and affordability 4. Farm power is maintained as per the design and manufacturers manuals |
| 1. Manage farm Structures. | 1. A farmstead plan is developed as per farm size 2. ***Types of farm structures*** aredetermined as per farm requirements 3. Farm structures are designed as per construction standards 4. Construction materials are procured as per procurement procedure 5. Farm structures are constructed as per the approved construction designs 6. Farm structures are maintained as per designs 7. Farm workshop site is selected as per the farm layout 8. Farm workshop layout is designed as per the workshop standards 9. Farm workshop is constructed as per the design 10. ***Workshop tools and equipment*** are identified as per the farm needs 11. Workshop tools and equipment are procured as per the workplace procedures 12. Farm workshop is equipped as per the identified farm needs 13. Farm tools and equipment are maintained as per the tools standards |
| 1. Manage farm machinery | 1. Farm machinery requirementsare determined as per farm needs 2. farm machinery is sourced as per farm needs / affordability 3. farm machinery is maintained as per the manufacturers manuals |
| 1. Manage farm irrigation systems | 1. Feasibility study is carried out as per farm requirements 2. Crop water requirement is determined as per the crop to be irrigated 3. ***Irrigation system*** is selected per nature of land, crop type and affordability 4. Irrigation system is designed as per farm needs 5. Irrigation system is installed as per the designs 6. Irrigation system is maintained as per designs |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| 1. Tools and equipment for soil sample collection may include but not limited to: | * Soil auger * Plastic bucket * packaging bags * polythene sheet |
| 1. Sources of water may include but not limited to: | * Roof water * Surface run-off * Public water supply * Underground water * Soil moisture |
| 1. Water storage structures may include but not limited to: | * Tanks * Pans * Dams |
| 1. Water distribution channels may include but not limited to: | * Closed(piped) * Open water channels |
| 1. Farm power requirements may include but not limited to: | * Processing * Production * Distribution * Environmental conservation |
| 1. Sources of power may include but not limited to: | * Animal power * Tractor power * Wind power * Human power * Solar power * Biogas * Hydro-electric power * Geothermal * Tidal power |
| 1. Types of farm structures | * Livestock * Crop * Human dwelling * Machinery * Utilities * Miscellaneous |
| 1. Workshop tools and equipment | * Fixing tools and equipment * Measuring tools and equipment * Holding tools and equipment * Smoothening tools and equipment * Cutting tools and equipment * Sharpening tools and equipment |
| 1. Irrigation system | * Overhead irrigation systems * Surface irrigation systems * Sub-surface irrigation systems |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Evaluation skills
* Problem solving
* Critical thinking
* Drawing
* Manipulative skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Soil properties
* Soil testing
* Soil constituents
* Soil profile
* Types of soil
* Characteristics of fertile soil
* Maintaining soil fertility
* Soil conservation
* Types of soil water
* Water sources & storage
* Water purification
* Desirable water characteristics
* Water demand estimates
* Water harvesting
* Water quality
* Causes of water pollution
* Types of farm power
* Power maintenances
* Classification of farm machinery
* Maintenance of farm machinery
* Operation of farm machinery
* Prevailing weather conditions
* Type of crop
* Water availability and quality
* Crop water demand
* Requirement
* Types of irrigation system
* Irrigation economics
* Types of soils
* Farm plan
* Classification of farm structures
* Homestead planning
* Farm tools & equipment
* Workshop safety
* Uses of farm tool

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Collected soil samples as per soil analysis procedure   2. Conducted simple soil testing as per the soil testing manual   3. Interpreted results as per the soil analysis results interpretation manual   4. Implemented recommendation as per the crop requirement   5. Identified sources of water as per farm needs.   6. Determined water quantity as per the farm needs   7. Identified water storage structures based on the water quantity   8. Identified water distribution channels as per farm needs   9. Identified sources of power as per the farm demands   10. Maintained farm power as per the design and manufacturers manuals   11. Developed a farmstead plan as per farm size   12. Determined types of farm structure as per farm requirements   13. Designed farm structures as per construction standards   14. Constructed farm structures as per the approved construction designs   15. Maintained farm structures as per designs   16. Designed farm workshop layout as per design standards   17. Constructed farm workshop as per the design   18. Maintained farm workshop as per the design   19. Identified workshop tools and equipment as per the farm needs   20. Maintained farm tools and equipment as per the tools maintenance standards   21. Determined farm machinery requirements as per farm needs   22. Maintained farm machinery as per the manufacturers manuals   23. Carried out feasibility study as per farm irrigation requirements   24. Determined crop water requirement as per the crop to be irrigated   25. Selected Irrigation system per nature of land, crop type and affordability   26. Designed Irrigation system as per farm needs   27. Installed Irrigation system as per the designs   28. Maintained irrigation system as per designs |
| 1. Resource Implications | The following resources must be provided:   * 1. Land   2. Equipped farm workshop   3. Irrigation system,   4. Equipped classroom   5. Water supply   6. Power supply   7. Farm machinery   8. Farm structures   9. Soil sampling kit   10. Soil testing kit |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation   6. Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended |

# MANAGE FARM BUSINESS

**UNIT CODE:** AGR/OS/SARD/CC/04/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to draw farm plan, start own farm business, run farm business, market agricultural produce and Keep farm records.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Draw farm plan | 1. Farm land potential is determined based on ecological zoning 2. Farm business survey is carried out as per land potential 3. Potential farm enterprises are identified as per the ecological zones 4. Farm physical characteristics are assessed as per type of enterprise 5. Farm enterprises are allocated space based on size of the farm 6. Farm plan is developed based on size of the farm 7. Farm layout is implemented as per the farm plan |
| 1. Start own farm business | 1. Farm business opportunities are identified based on market survey 2. Farm businesses opportunities are analyzed based on start-up requirements 3. Farm business opportunity is selected based on market survey 4. Business plan is developed according to Business plan (BP) guide 5. Farm business resources are identified based on farm business selected 6. Farm resources are allocated based on enterprise requirements 7. Farm business resources are procured based on farm business plan 8. ***Farm business records*** are documented as per work place procedure |
| 1. Run farm business | 1. Organization and management plans are implemented as per the business plan 2. Marketing plan is implemented as per the business plan 3. Operational and production plans are implemented as per the business plan 4. Financial plan is implemented as per the business plan 5. Farm business performance is documented as per work place procedure |
| 1. Market agricultural produce | 1. Target market is identified as per the market survey 2. ***Marketing channels*** are identified as per the market survey 3. Marketing channel / tool is selected as per market survey 4. Promotion message is packaged as per the target segment 5. Promotion message is relayed to the target market as per market survey 6. Agricultural products are distributed as per farm business plan 7. Agricultural product sale ***feedback mechanism*** is developed as per the operational procedure 8. Sales feedbacks are implemented as per the findings |
| 1. Keep farm records | 1. Type of farm business records are identified as per selected business 2. Farm business records are kept as per workplace procedures 3. Farm business records are analyzed as per accounting principles 4. Farm business record findings are interpreted as per accounting principles 5. Farm business records are documented as per the workplace procedures |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| 1. Farm business records may include but not limited to: | * Production records * Financial records * Inventory records |
| 1. Marketing channels may include but not limited to: | * Sales promotion * Publicity and public relations * Advertising * Personal selling * Multilevel marketing |
| 1. Feedback mechanism may include but not limited to: | * Questionnaires * Word of mouth * Interviews * Sales analysis * Emails * Telephone |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing skills
* Interpersonal skills
* Communication skills
* Evaluation skills
* Problem solving
* Critical thinking
* Analytical skills
* Marketing skills
* Record keeping skills
* Numerous skills
* Negotiation skills
* Interpersonal skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Agro ecological zones
* Basic geometry
* Market survey
* Evaluation of Business opportunities
* Record keeping
* Sources Business finance
* Business plan development
* Basic calculations
* Types of farm records
* Record keeping
* Farm accounts
* Basic accounting
* Marketing

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Determined farm land potential based on ecological zoning   2. Assessed farm physical characteristics as per type of enterprise   3. Drew farm plan based on size of the farm   4. Identified farm business opportunities based on market survey   5. Analyzed farm businesses opportunities based on start-up requirements   6. Selected farm business opportunity based on market survey   7. Developed business plan according to Business plan (BP) guide   8. Identified farm business requirements based on farm business selected   9. Implemented farm business plan as per the plan   10. Identified target market as per the market survey   11. Identified marketing channels as per the market survey   12. Packaged promotion message as per the target segment   13. Distributed agricultural product as per farm business plan   14. Implemented sales feedbacks as per the findings   15. Identified type of farm business records as per selected business   16. Kept farm business records as per workplace procedures   17. Analyzed farm business records as per accounting principles   18. Interpreted farm business record finding as per accounting principles   19. Documented farm business records as per the workplace procedures |
| 1. Resource Implications | * 1. Land   2. Financial capital   3. Farm structures   4. Farm machinery   5. Tools & equipment |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation   6. Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# PRACTICE CLIMATE CHANGE RESILIENCE

**UNIT CODE:** AGR/OS/SARD/CC/05/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage climate change preparedness, climate change adaptations and climate change mitigations.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Manage climate change preparedness | 1. ***Climate change preparedness strategies*** are identified as per National climate Change Framework Policy 2. Climate change preparedness strategies are identified as per local conditions 3. Climate change preparedness strategies are implemented as per National Climate Change Framework Policy |
| 1. Manage climate change adaptations | 1. ***Climate change adaptation measures*** are identified as per National Climate Change Framework Policy 2. Climate change adaptation measures are implemented as per National climate change Framework policy 3. Climate change adaptation measures are maintained as per National Climate Change Framework Policy |
| 1. Manage climate change mitigations | 1. ***Climate change mitigation measures*** are identified as per National Climate Change Framework Policy 2. Climate change mitigation measures are implemented as per National Climate Change Framework Policy 3. Climate change mitigation measures are maintained as per National Climate Change Framework Policy |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| 1. Climate change preparedness strategies may include but not limited to: | * Enhance physical spaces and services * Create awareness on climate change effect * Putting in place early warning systems * Mobilize resource to manage anticipated climate change effects * Carryout impact monitoring |
| 1. Climate change adaptation measures may include but not limited to: | * Water harvesting * Use of drought tolerant crops * Planting early maturing crops * Use Green energy i.e. solar, wind etc. * Provision of localized weather information * Develop crop and livestock insurance * Breed animals that adapt well * Balance stocking rate * Use a structure that is climate proof to the prevailing climatic conditions e.g. strong winds high temperatures etc. |
| 1. Climate change mitigation measures may include but not limited to: | * Tree planting * Soil and water management * Sustainable use of natural resources * Waste management i.e. recycling, reduce pollution |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking
* Risk management
* Planning
* Decision making
* Mobilization

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Climate change
* Environment/ Natural resources
* Environmental pollution
* Environmental degradation
* Disaster and risk management
* National Climate change response strategy
* International conventions on climate change

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified national and local climate change preparedness strategies   2. Implemented climate change preparedness strategies.   3. Maintained climate change preparedness strategies   4. Identified climate change adaptation measures   5. Implemented climate change adaptation measures   6. Maintained climate change adaptation measures   7. Identified climate change mitigation measures   8. Implemented climate change mitigation measures   9. Maintained climate change mitigation measures |
| 1. Resource Implications | The following resources must be provided:   * 1. Drought tolerant planting materials   2. Land   3. Hardy animals   4. Farm structures   5. Water   6. Community   7. Weather station |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation   6. Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# MANAGE FARM CHEMICAL USE FOR SARD

**UNIT CODE:** AGR/OS/SARD/CC/06/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to develop a farm chemical use risk management strategy, farm chemical use risk management measures, implement procedures for chemical management and use for SARD, and Evaluate implementation of a farm chemical use strategy for SARD.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Develop a farm chemical use risk management strategy | 1. The need for **chemical** use is identified as per farm assessment report 2. Appropriate chemical use is identified as per farm assessment report 3. The relevance of the identified chemicals is assessed as per farm chemical catalogue and farm assessment report 4. Available chemicals and their methods of application are identified and reviewed as per farm chemical catalogue and farm assessment report 5. External factors that influence the chemical use are incorporated as per workplace conditions, legislation and codes of practice 6. Requirements for farm chemical use are documented as per workplace requirements, legislation and codes of practice 7. **Health and safety** in the workplace, and hazards in the handling, transportation and storage of chemicals are identified as per local farm chemical handling and transportation guidelines 8. control measures for health and safety in the workplace, hazards and risks are identified according to regulatory requirements |
| 1. Develop a farm chemical use risk management measure | 1. ***Risk factors*** ***associated with the use of farm chemicals*** are identified and documented as per workplace procedures 2. ***Risk management strategies*** for farm chemical are put in place according to legislation and workplace principles 3. Procedures for management and use of farm chemicals are implemented according to ***environmental protection regulations*** and workplace guidelines |
| 1. Implement procedures for chemical management and use for SARD | 1. Procedures for risk control measures are implemented as per farm guidelines 2. Procedures for communicating with stakeholders are documented as per workplace communication policy 3. Information on procedures for farm chemical management and use is implemented as per workplace guidelines 4. Implementation of the farm chemical use strategy is monitored according to regulatory requirements and workplace procedure 5. Implementation of the farm chemical use strategies are documented as per gaps and lessons learned |
| 1. Evaluate implementation of a farm chemical use strategy for SARD | 1. Effectiveness of the farm chemical use strategy is identified as per monitoring report 2. Evaluation of the effectiveness of farm chemical use report is documented 3. Underperformances in implementation of the farm chemical use are rectified as per the monitoring and evaluation report 4. Effectiveness of the farm chemical use strategy is identified as per monitoring report |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| 1. Chemical may include but not limited to: | * Herbicide * Fungicides * Pesticides * Insecticides * Acaricide * Dewormers. * Soil fumigants * Nematicides * Chemical fertilizers * Chlorine * Iodine |
| 1. Healthy and safety may include but not limited to: | * Handling farm chemicals * Transporting farm chemicals * Storage farm chemicals * Usage farm chemicals |
| 1. Risk factors associated with the use of farm chemicals may include but not limited to: | * Spillage * Wind * Surface runoff * Lack of Personal Protective Equipment * Faulty tools and equipment * Improper storage and transport * Improper disposal * Unskilled labor * Inappropriate chemical usage. |
| 1. Risk management strategies may include but not limited to: | * Proper Handling * Proper Storage * Maintenance of tools and equipment * Correct use of PPEs * Chemical labelling * Reading and following manufacturer’s instruction * Safe disposal of chemical remains and containers |
| 1. Environmental protection regulations may include but not limited to: | * Public Health Act * EMCA 1999 * OSH Act 2007 |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking
* Analytical
* Chemical handling
* Farm Safety
* First Aid

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* First aid
* Use of PPE
* Safe disposal
* Agro chemical use
* Disclaimer rights
* Potential harm of the chemical
* Principles of a chemical control strategies
* First aid
* Calibration of chemical
* Application calendar and times
* Workplace and regulatory requirements
* Relevant legislation, codes of practice and industry requirements covering health and safety in the workplace, hazardous substances, environment and food safety
* Safety procedures including the maintenance, use, fit and decontamination of personal protective equipment (PPE)
* Pest control strategies and their benefits in terms of risk management
* External factors that affect chemical use
* Communication and negotiation
* Monitoring methods and procedures

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified different chemicals and their use   2. Developed and documented a risk management strategy   3. Used Personal Protective Equipment appropriately   4. Prepared chemical for use in the farm   5. Applied farm chemicals appropriately   6. Disposed chemical waste properly   7. Cleaned and maintained tools and equipment used.   8. Documented chemical use and its effectiveness. |
| 1. Resource Implications | The following resources must be provided:   * 1. Farm with crops and animals   2. Water   3. Farm Chemicals   4. Storage facility   5. Disposal facility   6. Tools and equipment for application   7. PPEs   8. workplace guidelines   9. Environmental protection regulations   10. Farm assessment report   11. Chemical catalogue |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Oral questioning   3. Interview   4. Observation |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# CORE UNITS OF COMPETENCY

# MANAGE CROP PRODUCTION

**UNIT CODE:** AGR/OS/SARD/CR/01/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to produce annual crops, perennial crops, fruit crops and indigenous plants, conduct greenhouse management and other emerging technologies, produce vegetables crops, conduct floriculture crop production and dry land farming and manage crop health.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Produce annual crops | 1. ***Annual crops*** are identified as per agro-ecological zone and uses according to the field crops technical handbook 2. ***Household needs*** assessment and market survey are carried out to determine annual crops to be cultivated as per household requirements and the target market 3. Annual crops are selected as per agro-ecological zone and uses according to the field crops technical handbook 4. ***Crop husbandry practices*** of the selected annual crops are carried out as per the field crops technical handbook 5. ***Post-harvest handling and storage*** are carried out as per the annual field crops technical handbook 6. Harvested annual crops are used by the household as per household needs 7. The selected annual crop enterprises records are kept as per business principles 8. Gross margin of the selected annual crops is carried out based on records 9. Gross margin of the selected annual crops is calculated based on farm business records 10. Selected annual crops are marketed as per market survey |
| 1. Produce perennial crops | 1. ***Perennial crops*** are identified as per agro-ecological zone and uses according to the field crops technical handbook 2. Household needs assessment and market survey are carried out to determine perennial crops to be cultivated as per household requirements and the target market 3. Perennial crops are selected as per agro-ecological zone and uses according to the field crops technical handbook 4. Crop husbandry practices of the selected perennial crops are carried out as per the field crops technical handbook 5. Post-harvest handling and storage practices are carried out as per the requirements of the industry 6. The selected perennial crop enterprises records are kept as per business principles 7. Gross margin of the selected perennial crops is calculated based on farm business records 8. Harvested perennial crops are marketed as per market survey |
| 1. Produce fruit crops | 1. ***Fruit crops*** are identified as per agro ecological zones and household needs 2. Market survey is carried out as per household requirements 3. Identified fruit crops are classified as per agro ecological zones 4. Fruit crops are selected as per household needs and market requirements 5. Nursery for fruit crops is established as per the tree nursery manual 6. ***Nursery management practices*** are carried out as per tree nursery manual 7. Orchard of the selected fruit crops is established in the field as per farm plan 8. ***Orchard management practices*** are carried out as per fruit and vegetable crop technical handbook 9. Harvest and post-harvest handling practices are carried out as per fruit and vegetable technical handbook 10. Harvested fruit crops are used by the household as per household needs 11. The selected fruit crop enterprises records are kept as per business principles 12. Gross margin of the selected fruit crop is calculated as per farm business records 13. Post harvested fruit crops are marketed as per market survey |
| 1. Produce indigenous plants | 1. ***Indigenous plants*** are identified as per agro ecological zones and use according traditional food plants of Kenya 2. Market survey is carried out as per household food, income and health 3. Indigenous plants are selected as per the market survey and use 4. Indigenous plants are classified as per use and agro-ecological zones 5. Selected indigenous plants are established as per farm plan 6. Management practices of the established indigenous plants are carried out as per traditional food plants of Kenya 7. Post-harvest handling and storage of the selected indigenous plants are carried out as per household and market needs 8. Harvested indigenous plants records are kept as per business principles 9. Gross margin of the harvested indigenous plants is carried out as per records 10. Selected indigenous plants are marketed as per market survey |
| 1. Conduct greenhouse management and other emerging technologies | 1. Crops to be established in green house are identified as per the farm plan 2. ***Green house technologies*** are identified as per the crop requirements 3. Crops to be established in the greenhouse are selected as per the crops manual 4. Technologies to be used in the greenhouse are selected as per crop requirements and farm plan 5. ***Planting materials and inputs*** to be used in the greenhouse are sourced as per the farm plan 6. Crop nursery for greenhouse crops is established as per MoALF crops manual 7. Nursery for greenhouse crops is managed as MoALF nursery management manual 8. Selected greenhouse crops are established as per MoALF crop manual 9. Management of the selected greenhouse crops is carried out as per the MoALF crop manual 10. Green house tools and equipment are maintained as per SOPS 11. Green house produce is harvested as per MoALF crop manual 12. Post-harvest handling practices of greenhouse produce are conducted as per the MoALF crop manual 13. Green house practices and technology are documented as per the workplace procedure |
| 1. Produce vegetables crops | 1. **Vegetable crops** are identified as per agro-ecological zone and uses according to the fruit and vegetable technical handbook 2. Household needs assessment and market survey are carried out to determine vegetables crops to be grown as per household requirements and market 3. Vegetable crops are selected as per agro-ecological zone and uses according to the fruit and vegetable technical handbook 4. Vegetable nursery is established as per nursery management manual 5. Nursery management practices are carried out as per nursery management manual 6. Selected vegetable crops are established in the seed bed as per farm plan 7. Vegetable crop management practices are carried out as per fruit and vegetable technical handbook 8. Harvesting and post-harvest handling and storage activities are carried out as per household use and MoALF production manual and HCDA 9. Harvested vegetable crops are used by the household as per household needs 10. Harvested vegetable crops enterprises records are kept as per business principles 11. Gross margin of the harvested vegetable crops is carried out as per records 12. Selected vegetable crops are marketed as per market survey |
| 1. Conduct floriculture crop production | 1. Market survey is carried as per the industry needs 2. Floriculture crops are identified as per market survey and use 3. Floriculture crops are classified according to the use 4. Floriculture crops are selected as per market survey and use 5. Selected floriculture crops are established in the nursery as nursery management manual 6. Nursery management practices for the selected floriculture crops are carried out as tree nursery training manual 7. Selected floriculture crops are established in the seedbed as per farm plan 8. Management practices of the selected ***floriculture and other ornamental*** ***crops*** are carried out as per floriculture handbook 9. The floriculture crops for marketing are harvested as per floriculture handbook 10. Post-harvest handling and storage of floriculture and other ornamental crops practices are carried out as per industry requirements 11. Floriculture crop records are kept as per the business principles 12. Gross margin of the floriculture crop are carried out as per the records 13. The selected floriculture crops are used/marketed as per market survey |
| 1. Conduct dry land farming | 1. Identification of **dry land crops** is carried out as per agro-ecological zones 2. Market survey is carried out as per household needs and market 3. Challenges and opportunities for dry land crop farming are identified as per the agro ecological zones, household needs 4. Dry land crops are selected as per the agro ecological zones 5. ***Dry land farming technologies*** are selected as per the type of dryland crops 6. Selected dry crops are established as per the farm plan and agro ecological zones 7. Established dry land crops are managed as per managing dry land resources manual for eastern and southern Africa 8. Established dry land crops are harvested as per dry land resource manual for Eastern and Southern Africa 9. Post-harvest handling and storage practices are carried out as per market requirements and household needs 10. Dry land ***crops records*** are kept as per business principles 11. Gross margin of the harvested dry land crops is carried out as per records 12. Selected dry land crops are used and marketed as per market survey |
| 1. Manage crop health | 1. ***Crop health issues*** are identified as per crop protection handbook 2. Crop health issues are classified as per crop protection handbook 3. Crop health issues are selected as per agro ecological zones and according to crop protection handbook 4. ***Crop health protection management practices*** are carried out according to crop protection handbook 5. ***Emerging crop health issues*** are identified and managed as per the good agricultural practices |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| 1. Annual crops may include but not limited to: | * Cereals * legumes * Roots and tubers * Drug crops |
| 1. Household needs may include but not limited to: | * Food * Shelter * clothing * Health needs * Energy * Education |
| 1. Crop husbandry practices may include but not limited to: | * Selection of planting materials * Nursery establishment * Nursery management * Land preparation * Crop establishment * Crop management * Disease and pest management * Harvesting |
| 1. Post-harvest handling and storage may include but not limited to: | * Drying * Sorting * Cleaning * Grading * Transportation * Treatment * Packaging * Storage * Processing |
| 1. Perennial crops may include but not limited to: | * Roots and tubers * Beverages * Sugar crops * Fibre crops * Drug crops |
| 1. Fruit crops may include but not limited to: | * Tropical * Temperate |
| 1. Nursery management practices may include but not limited to: | * Site selection * Nursery establishment * Seed sowing * Vegetative propagation * Pricking out * potting * Root pruning * Shading * Mulching * Watering * Pest and disease management * Hardening off |
| 1. Orchard management practices may include but not limited to: | * Site selection * Land preparation * Preparation of planting materials * Orchard establishment * Staking * Pruning * Training * Pest and disease management * Weed management * Fertilization * Disbudding and deflowering * Harvesting * Post-harvest handling and storage |
| 1. Indigenous plants may include but not limited to: | * Herbs * Spices * Vegetables * Medicinal plants |
| 1. Green house technologies may include but not limited to: | * Soil management * Fertigation * Irrigation * Aeration * Mulching * Preparation of planting media * Crop establishment * Crop management * Pest and disease management * Hydroponics |
| 1. Planting materials and inputs | * Cuttings * Vines * Scion * Buds * Root stalk * Seeds * Tubers * Roots * Suckers * Seedlings * Spores * Fertilizers * Pesticides * Fungicides * Rooting hormones * Planting media * Slips and splits |
| 1. Vegetable crops | * Leafy vegetables * Stem * Fruit * Flower * Buds * Pods * Roots and tubers |
| 1. Floriculture crops and other ornamentals | * Cut flowers * Trees and shrubs * Herbs * Climbers * Creepers * Lawn |
| 1. Dry land crops | * Green grams * Dolicos * Pigeon peas * Cow peas * Bonavist beans * Cassava * Sweet potatoes * Millet * Sorghum * Dry land maize varieties * Dry land forage crops * Lentils * Dates |
| 1. Dry land farming technologies | * Water pans * Roof water harvesting * Zai pits * Sunken beds * Moist beds * Multi storey * Cover crops * Minimum tillage * Irrigation * Mulching * Terracing * Fertility trench |
| 1. Crop health issues | * Diseases * Pests * Crop genome * Weeds * Water * Nutrition * Climatic factors * Poor crop management |
| 1. Emerging crop health issues | * New pests * New diseases * Climate change * Environmental pollution * New technologies * Market standards |
| 1. Crop health protection management practices | * Early land preparation * Timely planting * Weed control * Disease and pest control * Certified/clean planting material * Proper handling and storage * Crop rotation * Soil fertility improvement |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking
* Decision making
* Farm management

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Classes of fruits, vegetables, flowers and other ornamentals, annuals and perennials
* Growth conditions for fruits
* Crop irrigation
* Pest and disease scouting
* Weed management
* Plant health clinic
* Plant nutrition
* Crop water management
* Soil management
* Soil sampling and testing
* Inspection and certification protocols in Kenya
* Climate change
* Green house management practices
* Landscaping
* Plant propagation
* Greenhouse management
* Agronomic

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | 1. Identified annual crops as per agro-ecological zone and uses 2. Carried out crop husbandry practices of the selected annual crops as per the field crops technical handbook 3. Carried out post-harvest handling and storage 4. Kept the selected annual crop enterprises records 5. Calculated gross margin of the selected annual crops 6. Identified perennial crops as per agro-ecological zone and uses 7. Carried out crop husbandry practices of the selected perennial crops 8. Carried out Post-harvest handling and storage practices 9. Identified fruit crops as per agro ecological zones and household needs 10. Carried out Market survey 11. Carried out Nursery management practices 12. Carried out orchard management practices 13. Carried out harvest and post-harvest handling practices 14. Identified indigenous plants as per agro ecological zones and use 15. Carried out management practices of the established indigenous plants 16. Carried out post-harvest handling and storage of the selected indigenous plants 17. Identified crops to be established in green house 18. Identified greenhouse technologies 19. Carried out the management of the selected greenhouse crops 20. Maintained greenhouse tools and equipment 21. Identified vegetable crops 22. Carried out nursery management practices 23. Established selected vegetable crops in the seed bed 24. Carried out vegetable crop management practices 25. Carried out harvesting and post-harvest handling and storage of vegetables 26. Identified floriculture crops as per market survey and use 27. Carried out nursery management practices for the selected floriculture crops 28. Carried out management practices of the selected floriculture crops and other ornamentals 29. Carried out post-harvest handling and storage of floriculture crops and other ornamentals practices 30. Carried out identification of dry land crops 31. Selected dry land farming technologies as per the type of crop 32. Established selected dry land crops as per the farm plan and agro ecological zones 33. Identified crop health issues 34. Identified emerging crop health issues and managed as per the good agricultural practices |
| 1. Resource Implications | The following resources must be provided:   * 1. Weather station   2. Farming tools and equipment   3. Farm structures   4. Farm machinery   5. Green houses   6. Seed trays   7. Farm   8. Agrochemicals   9. Irrigation kits   10. Water storage   11. Planting materials   12. Nursery tools and equipment   13. Orchard tools and equipment   14. Greenhouse tools and equipment   15. PPEs   16. Soil sampling kit   17. Simple soil testing kit   18. Water supply   19. Farm power   20. Training facilities   21. Planting media   22. Fertilizers   23. Manure   24. Waste management site |
| 1. Methods of Assessment | Competency may be assessed through:  3.1 Written tests  3.2 Third party reports  3.3 Oral questioning  3.4 Interview  3.5 Observation  3.6 Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# MANAGE ANIMAL PRODUCTION

**UNIT CODE:** AGR/OS/SARD/CR/02/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage ruminant production, non-ruminants production, animal nutrition, forage production, animal health, bee keeping practices, fish production and Agro-pastoral livestock production.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Manage ruminant production | 1. ***Ruminant animals*** are identified based on livestock production manuals. 2. Ruminant animals are categorized based on their anatomy and physiology. 3. Appropriate ***production systems*** for specific ruminant enterprises are identified and selected based on the agro ecological zone. 4. ***Ruminant breeds*** are identified as per the livestock production manual. 5. A ***breeding program*** for different ruminant animals is developed as per the livestock production manual. 6. A farm layout is prepared based on enterprise specifications and Farm Management Handbook. 7. Housing for ruminants is established as per their housing specifications in the livestock production manual. 8. Ruminant animals are selected and sourced based on the Agro ecological zone, economic importance and workplace procedures. 9. Different ***classes of ruminant animals*** are fed based on the nutritional requirements. 10. ***Routine management practices*** for ruminants are implemented as per livestock production manual. 11. Occupational safety and health procedures in ruminant production processes are adhered to according to workplace procedures. 12. Environmental protection measures are observed in ruminant production processes as per environment protection regulations and workplace procedures. 13. Appropriate ruminan***t production records*** are developed as per the livestock production manual. 14. Gross margin analysis of the selected ruminant ***animal enterprise*** is calculated based on farm management handbook and records. 15. Markets for ruminant animals and their products are identified based on household’s needs and market survey. 16. Monitoring and evaluation of individual ruminant animal enterprise is demonstrated based on performance indicators in livestock production manual. |
| 1. Manage non-ruminants production | 1. ***Non-Ruminant animals*** are identified based on livestock production manuals. 2. Appropriate production systems for specific non-ruminant enterprises are identified and selected based on the agro ecological zone. 3. ***Non-ruminant breeds*** are identified as per the livestock production manual. 4. A non-ruminant animal breeding program is developed as per the livestock production manual. 5. A farm layout is prepared based on enterprise specifications and Farm Management Handbook. 6. ***Housing for non-ruminants*** is established as per their housing specifications in the livestock production manual. 7. Non-Ruminant animals are selected and sourced based on the Agro ecological zone, economic importance and workplace procedures. 8. ***Classes of non-ruminant animals*** are fed based on the nutritional requirements. 9. Routine management practices for non-ruminants are implemented as per livestock production manual. 10. Occupational safety and health procedures in non-ruminant production processes are adhered to according to workplace procedures. 11. Environmental protection measures are observed in non-ruminant production processes as per environment protection regulations and workplace procedures. 12. Non-ruminant production records are developed as per the livestock production manual. 13. Gross margin analysis of the selected ***non-ruminant*** ***animal enterprise*** is calculated based on farm management handbook. 14. Markets for ruminant animals and their products are identified based on house hold needs and market survey. 15. Monitoring and evaluation of individual non-ruminant animal enterprise is demonstrated based on performance indicators in livestock production manual. |
| 1. Manage animal nutrition | 1. Food and ***nutrients*** are identified based on livestock production manual. 2. Sources of nutrients are identified based on livestock production manual. 3. ***Feedstuffs*** are classified based on the livestock production manual. 4. ***Nutritional values*** of different feedstuffs are determined according to nutritional tables (national academy of sciences 2001) 5. Daily nutritional requirements of different livestock classes are identified as per the nutritional requirement tables and digestive systems in the livestock production manual. 6. Rations of different classes of livestock are formulated based on nutrient requirements of selected livestock enterprises. 7. ***Feed*** is prepared and packaged based on the procedures in the livestock production manual. 8. Feeds are stored safely based on health and hygiene standards. 9. Feeds and feeding records are prepared and maintained according to farm management handbook. 10. ***Nutritional problems and deficiencies*** in livestock are identified based on the livestock production manual. |
| 1. Manage forage production | 1. ***Forage*** to be established is identified based on the Agro Ecological Zones, farm plan and market demand 2. Land for forage establishment is identified as per the farm plan 3. Planting land is prepared using correct ***farm tools, implements and machinery*** in accordance with the planting material. 4. Soil for analysis is sampled as per sampling procedure 5. Amount of planting material and fertilizer is determined based on the acreage to be established and soil analysis report 6. ***Planting materials*** are sourced as per nutritional value, availability and affordability. 7. Forage materials are planted as per Good Agricultural Practices (GAP) manual and livestock production manual 8. Planted materials are gapped as per spacing requirements 9. ***Weeds*** in forage are controlled as per GAP 10. ***Pests and diseases in forage*** are controlled following GAP 11. Planted forage is fertilized and irrigated according to ***soil conditions*** and livestock production manual 12. Forage is harvested in accordance with the livestock production manual 13. ***Forage*** is conserved as per livestock production manual and forage type 14. Forage is stored based on type of conserved forage and space available. 15. Quality of forage is assessed based on livestock production manual. 16. ***Forage production activities*** are documented based on the forage established and workplace procedures. |
| 1. Manage animal Health | 1. ***Biosecurity measures*** are designed according to regulations of NEMA, KVB and work place policy 2. ***Animal health management tools, equipment and materials*** and supplies are identified and assembled based on livestock species in accordance with the livestock production manual 3. ***Structures for herd health management*** are identified and prepared in accordance with the livestock production manual 4. ***Personal Protection Equipment and apparel*** are identified and gathered based on job requirements 5. Occupational safety and health procedures are adhered to according to work place procedures 6. Environmental protectionmeasure***s*** are observed according to environment protection regulations and work place procedures 7. Biosecurity measures are implemented in accordance with public health regulations 8. ***Internal and external parasites*** are controlled in livestock herds in accordance with the livestock production manual (LPM) 9. Livestock herd vaccination schedule is implemented in accordance with permitted animal health procedures and practices 10. Animals showing signs of ill health are identified and attended to according to animal health care procedures and Kenya Veterinary Board (KVB) regulations 11. Overgrown hooves are trimmed as per the LPM and animal welfare regulations 12. Overgrown beaks in poultry are trimmed as per the LPM and animal welfare regulations 13. Overgrown animal horns cut as per the LPM and animal welfare regulations 14. Animals are groomed according to the LPM and work place policy. 15. Prevalence of dairy herd parasites and diseases is reviewed as per work place policy. 16. Parasite and disease control measures are redesigned based on review reports. 17. ***Animal health management practices*** are documented in accordance with work place policy |
| 1. Manage bee keeping practices | 1. ***Apiary*** is established based on procedures in the Bee Production Manual. 2. ***Bee hives*** and ***bee equipment*** are constructed based on standard specifications in the bee production manual. 3. Bee facilities, equipment and tools are routinely inspected, and maintained based on workplace procedures. 4. ***Bee forage*** are identified, established and managed based on the available manuals. 5. Bee swarms are caught/trapped using the procedures in the Bee Production Manual. 6. Honey bee colony manipulation schedule is prepared based on apiary records. 7. ***Bee and hive products*** are harvested as per the workplace procedures. 8. Bee and hive products are extracted as per the workplace procedures. 9. Bee and hive products are processed based on the workplace procedures. 10. Food safety and quality systems of bee products are established as per the work place quality manual and as per the regulatory standards. 11. Bee and hive product value addition are performed as per workplace procedures. 12. ***Predators, pest and diseases*** in a bee colony are controlled based on bee health guidelines. 13. Gross margin analysis of bee enterprise is calculated based on the farm management handbook 14. Markets for bee and hive products are identified based on a market survey. |
| 1. Manage Fish production | * 1. ***Requirements for fish farming*** are identified based fish production manual.   2. ***Common breeds of fish*** in east Africa are identified based on the fish production manual.   3. Breeds and breeding stocks are selected based on the market survey report.   4. ***Materials for fish farming*** are selected based on fish production manual.   5. Site for a fishpond is selected based on the requirements in the fish production manual.   6. Fishpond is designed based on the requirements in the fish production manual.   7. Fishpond is constructed based on the procedures in the fish production manual.   8. Fish is sourced based on the selected fish breeds.   9. ***Breeding techniques*** in fish farming are identified based on the fish production manual.   10. Fishpond is stocked based on the fish production manual.   11. Fish are fed appropriately based on the nutritional requirements of the fish breed.   12. Water and temperature in the fishpond is regulated based on the climatic conditions of the area.   13. ***Common weeds*** in a pond are identified based on the type of water and agro ecological zone.   14. Weeds in a fishpond are managed based on the fish production manual.   15. Fishpond is repaired and maintained based on its type.   16. ***Fish predators*** in a pond are identified based on the fish production manual.   17. Predators in a fishpond are controlled based on procedures in the fish production manual.   18. ***Fish diseases*** are identified based on the fish production manual.   19. ***Disease prevention and control measures*** are implemented as per the fish production manual.   20. ***Routine fish management practices*** are implemented based on the fish production manual.   21. ***Fish harvesting methods*** are identified based on the fish production manual.   22. Fish are harvested based on procedures in the fish production manual.   23. ***Methods of preserving fish*** are identified based on the fish production manual   24. Fish is preserved based on the selected preservation method.   25. ***Fish products*** are identified based on the fish production manual.   26. Fish is processed based on procedures in the fish production manual   27. Fish products are marketed based on market requirements and structures.   28. ***Fish records*** are identified based on the fish production manual.   29. Fish records are maintained based on the fish production manual.   30. Gross margin for a fish enterprise is calculated based on fish production manual. |
| 1. Manage Agro pastoral livestock production | 1. ***Agro-pastoralist production systems*** are identified based on the rangeland management manual and agro ecological zones 2. Grazing systems used in rangelands are identified and selected based on the rangeland management manual. 3. Resource utilization strategies used by agro pastoral livestock producers are identified based on legal, policy, and political frameworks in rangelands. 4. Technologies for increasing livestock production and maintaining long term productivity in ASALs are identified based on rangeland management manual. 5. ***Water harvesting technologies*** for livestock and forage are identified and implemented as per the procedures in the dryland farming manual. 6. Rangeland resources are identified and managed as per rangeland management manual. |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| 1. Ruminant animals may include but not limited to: | * Cattle * Sheep * Goats * Camels |
| 1. Production systems may include but not limited to: | * Intensive * Semi-intensive * Extensive |
| 1. Ruminant breeds may include but not limited to: | * Cattle breeds   + Freshian   + Aryshire   + Guernsey   + Jersey   + Flechvieh   + Sahiwal   + Boran   + Zebu   + Hereford   + Charolais   + Aberdeen-angus   + Red-poll * Sheep breeds   + Merino   + Hamshire-down   + Corriaedale   + Romney marsh   + Persian Black-head   + Doper   + Red-maasai * Goat breeds   + Toggen-berg   + Sannen   + Alpines   + Jamnapari   + Galla goat   + East African Goat * Camel breeds   + Turkana-camel   + Bactrian   + Dromedary |
| 1. Breeding program may include but not limited to: | * Breeding system * Selection system * Selection criteria for different non-ruminant * Mating system |
| 1. Classes of ruminant animals may include but not limited to: | * Cattle   + Calves   + heifers   + lactating cows   + dry cows   + fatteners   + bulls and oxen * Sheep   + lambs   + dry ewes   + lactating ewes   + rams   + fatteners * Goats   + kids   + dry does   + lactating does   + bucks   + fatteners * Camels   + Lactating camels   + Calves   + Bulls |
| 1. Routine management practices may include but not limited to: | * Housing * Feeding * Deworming * Spraying * Dipping * Hooves trimming * Dehorning * Identification practices * Docking for sheep * Castration * Grooming * Clean Milking * Egg collection |
| 1. Production records may include but not limited to: | * Inventory records * Sales records * Feeding records * Health records * Breeding records |
| 1. Animal enterprise may include but not limited to: | * Dairy enterprise * Beef enterprise * Sheep enterprise * Camel enterprise * Goat enterprise * Pig enterprise * Fish * Poultry * Rabbit * Bee |
| 1. Non-Ruminant animals may include but not limited to: | * Pigs * Rabbits * Poultry * Fish |
| 1. Non-ruminant breeds may include but not limited to: | * Pig breeds   + Large white   + Land race   + Duroc   + Hamshire   + Wesex   + Essex * Poultry   + Leghorn   + Minorca   + Sussex   + Issa brown   + Hampshire   + Frizzled feather   + Naked neck   + Dwarf   + Improved KARI kienyeji   + Kenbro   + Rainbow rooster   + Kuroiler   + Sasso   + Black-turkey   + Blue slate   + Broad breasted white turkey   + Black east Indian   + Ayslebury duck * Fish breeds   + Catfish   + Nile perch   + Tilapia   + Trout * Rabbit breeds   + Chinchilla   + New Zealand white   + Flemish Giant   + California white   + Martensable   + Kenya white |
| 1. Housing for non-ruminants may include but not limited to: | * Deep litter * Raised slated * Battery cage * Out-door hatch * In-door cages * Lined ponds * Raised ponds * Earthen ponds * Improved free rage for pigs |
| 1. classes of non-ruminant animals may include but not limited to: | * Pigs – piglets, weaner, guilt’s, sows, boars, fatteners * Poultry- chicks, layers, growers, broilers, cockerels, ducklings, toms, jenny * Fish – fingerlings * Rabbit –Kits, bucks, does |
| 1. Non-ruminant animal enterprise may include but not limited to: | * Poultry enterprise * Pig * Fish * Rabbit |
| 1. Nutrients may include but not limited to: | * Proteins * Carbohydrates * Vitamins * Minerals |
| 1. Feedstuffs may include but not limited to: | * Roughages * Concentrates |
| 1. Nutritional values may include but not limited to: | * Crude protein * Crude Fiber * Dry matter * Mineral * Moisture * Amino-acid |
| 1. Feed may include but not limited to: | * Calf pellets * Dairy meal * Creep feed * Sow & weaner * Chick-mash * Growers mash * Layer mash * Broiler starter * Broiler finisher * Pig finisher * Pig starter |
| 1. Nutritional problems and deficiencies may include but not limited to: | * Ketosis * Vitamin-deficiencies * Mineral deficiencies * Bloat * Milk fever |
| 1. Forage may include but not limited to: | * Pasture * Fodder |
| 1. Farm tools, implements and machinery may include but not limited to: | * Ploughs * Sprayers * Bailers * Forage harvesters * Combine harvesters * Farm transport machineries * Planters * Chaff cutter * Hammer mills * Feed mixer * Pelletizers |
| 1. Planting materials may include but not limited to: | * Seeds * Seedlings * Rhizomes * Suckers * Cuttings |
| 1. Weed may include but not limited to: | * Broad-leaves * Narrow-leaves weeds |
| 1. Pests and diseases in forage may include but not limited to: | * Cut-worms * Moles * Termites * Aphids * Leaf miners * Army worm * Stalk-borer * Parasites * Smut disease * Maize streak * Stem and leaf Rust * Nematode |
| 1. Soil conditions may include but not limited to: | * Soil PH * Soil fertility |
| 1. Forage may include but not limited to: | * Hay * Standing forage * Silage |
| 1. Forage production activities may include but not limited to: | * Land preparation * Planting * Weeding * Gapping * Pest, parasite & disease control * Watering * Fertilization * Harvesting * Transportation * Post-harvest handling * Storage |
| 1. Biosecurity measures may include but not limited to: | * Quarantine * Isolation * Foot-baths * Disinfection * Restricted movement * Hygiene |
| 1. Animal health management tools, equipment and materials may include but not limited to: | * Thermometers * Mastitis test kits * Drenching guns * Bolus gun * Weighing band * Needle and syringes * Animal handling equipment’s * PPEs * Sprayers * Dehorning wire * Disbudding iron * Burddizo * Trocar and canula |
| 1. Structures for herd health management may include but not limited to: | * Crush * Dip * Spray race |
| 1. Personal Protection Equipment and apparel may include but not limited to: | * Masks * Eye wear * Nose masks * Gumboots * Gloves * Overall * Dust-coats |
| 1. Animal health management practices may include but not limited to: | * Deworming * Spraying * Dehorning * De-beaking * Curlling * Tooth-clipping * Castration * Hoof trimming * Dusting |
| 1. Internal and external parasites may include but not limited to: | * Worms * Ticks * Lies * Mice * Flies * Tsetse fly * Mites |
| 1. Apiary may include but not limited to: | * Indoor apiary * Outdoor apiary |
| 1. Bee and hive products may include but not limited to: | * Crude honey * Propolis * Wax * Bee venom * Royal jelly * Brood |
| 1. Bee hives and bee equipment may include but not limited to: | * Log hive * KTBH * Langstroth * Basket Hive * Smoker * Hive tool * Centrifuge * Comb starter * Catcher boxes * Bee suits * Honey press * Swarm net * Jars * Bottling tanks * Settling tanks * Warming tanks * Sealing machine * Buckets * Weighing scale |
| 1. Bee forage may include but not limited to: | * Annual flowers * Perennial flowers |
| 1. Predators, pest and diseases may include but not limited to: | * Honey badger * Ants * Veroa Mites * Fowl brood disease * Spiders * Wax moth * Birds and beetles * Bee lice |
| 1. Requirements for fish farming may include but not limited to: | * Land * Water quantity and quality * Soil type * Climate * Topography * Security * Market * infrastructure |
| 1. Common breeds of fish may include but not limited to: | * Nile tilapia * African catfish * Rainbow trout * Common carp |
| 1. Materials for fish farming may include but not limited to: | * Seine net * Lift net * Cash net * Traps * Woven baskets * Dam liners |
| 1. Fish breeding techniques may include but not limited to: | * Pairing breeding in tilapia * Artificial propagation in trout and catfish |
| 1. Routine fish management practices may include but not limited to: | * Fish feeding * Water and temperature control * Weed control * Fertilization * Repair and maintenance * Disease prevention and control * Liming * Predator control |
| 1. Common weeds may include but not limited to: | * Algae * Flowering plants * Floating plants * Submersed plants * Rooted floating plants * Emergent plants |
| 1. Fish predators may include but not limited to: | * Insects and insect larvae * Frogs and toads * Fish * Snakes * Crocodiles, alligators and large lizards * Turtles * Birds * Otters * Man (theft) |
| 1. Fish diseases may include but not limited to: | * Bacterial diseases. * Fungal infections * Ectoparasites - causing black spot, white spot, fish louse and Nematode. * Endoparasites – like the Contraceacum, and the Ligula intestinalis. * Nutritional diseases |
| 1. Disease prevention and control measures may include but not limited to: | * Ensuring good water quality * Maintaining clean pond environment * Keeping the fish in stress free * Preventing the entry of disease organisms * Preventing the spread of disease within the farm |
| 1. Fish harvesting methods may include but not limited to: | * Complete harvesting * Partial harvesting |
| 1. Methods of preserving fish may include but not limited to: | * Drying * Salting * Smoking * Freezing |
| 1. Fish products may include but not limited to: | * Fillets * Fish cake * Fish fingers * Fish samosas * Fish bone cakes |
| 1. Fish records may include but not limited to: | * Pond management records * Stocking records * Harvesting records * Cash flow records * Salary records * Inventory of equipment * Records on payment of rents and hire of equipment, machinery, services etc * Pond sampling records |
| 1. Agro-pastoralist production systems may include but not limited to: | * Nomadism * Range * Trans-humans |
| 1. Water harvesting technologies may include but not limited to: | * Roof water harvesting * Surface runoff harvesting * Water pans * Earth dams |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking
* Management
* Marketing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Livestock production systems
* Importance of ruminant production
* Animal anatomy and physiology
* Effect of climate on ruminant production
* Relationship between ruminant production and SARD principles
* Animal breeding
* Breeding systems
* Mating systems
* Importance of routine livestock production practices
* Types of animal records
* Feeding requirements of different classes of animals
* Market structures and linkages
* Animal welfare
* Livestock production systems
* Importance of non-ruminant production
* Animal anatomy and physiology
* Effect of climate on non-ruminant production
* Relationship between ruminant production and SARD principles
* Animal breeding and its importance
* Importance of routine livestock production practices
* Types of animal records
* Feeding requirements of different classes of animals
* Market structures and linkages
* Animal welfare
* Agriculture and food authorities
* Species of livestock
* Animal gross anatomy and basic physiology (Digestion and digestive systems)
* Animal nutrient requirements
* Animal behavior
* Types of nutrients
* Feed classification
* Nutrient content of feedstuff
* Methods of feed formulation
* Animal feed processing procedures
* Feed mixing methods
* Guidelines of feed manufacturing.
* Environmental conservation.
* Types of forage crop identification and characteristics.
* Ecological requirements of forage
* Forage planting materials.
* Pest and disease control.
* Good Agricultural Practices.
* Forage Conservation structures and facilities.
* Utilization of forage crops.
* Forage crop nutritional composition.
* Natural pastures
* Types of hives
* Types of baits
* Importance of baiting
* Materials used for baiting
* Factors considered while establishing an apiary.
* Hive placement methods.
* Types and use of equipment, tools and accessories.
* Record keeping
* Personal Protective Equipment
* Equipment standards
* Equipment maintenance techniques
* Pest control methods
* Personal & Environmental safety.
* Store keeping.
* Bee botany
* Flowering cycles
* Pollen plants and nectar plants
* Bee forage resources conservations
* Transportation of live bees
* Honey bee behavior
* Colony management
* Breeding techniques
* Feeding of bees
* Types of bee and hive products
* Equipment and techniques in bee product harvesting and extraction.
* Types of PPES
* Safe use of tools and equipment
* Processing equipment
* Honey processing methods
* Wax processing
* Work storage materials
* Different forms of honey
* Food grade materials.
* Public health.
* Quality and safety management systems.
* Recipes for value added bee products
* Consumer behavior
* Brood pest and diseases.
* Types of animal diseases and parasites
* Mode of disease and parasite spread
* Animal Immunology
* Animal gross anatomy and basic physiology
* Animal welfare
* Methods of hoof trimming and dehorning
* Animal health care
* Grooming procedures
* Disposal of dead animals
* Record keeping
* Grazing systems
* Rangeland ecology
* Animal nutrition
* Forage production
* Forage conservation
* Alley cropping
* Forage gardens
* Current and emerging issues affecting pastoral groups.
* Controlled grazing
* Rangeland management
* Common parasites, pests and diseases
* Resource conflict resolution
* Nature/forest-based products
* Ethno veterinary medicine

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified ruminant animals based on livestock production manuals.   2. Identified and selected appropriate production systems for specific ruminant enterprises based on the agro ecological zone.   3. Identified ruminant breeds as per the livestock production manual.   4. Developed breeding program for different ruminant animals as per the livestock production manual.   5. Established housing for ruminants as per their housing specifications in the livestock production manual.   6. Fed different classes of ruminant animals based on the nutritional requirements.   7. Implemented routine management practices for ruminants as per livestock production manual.   8. Adhered to occupational safety and health procedures in ruminant production processes to according to workplace procedures.   9. Observed environmental protection measures in ruminant production processes as per environment protection regulations and workplace procedures.   10. Developed appropriate ruminant production as per the livestock production manual.   11. Calculated gross margin analysis of the selected ruminant animal enterprise based on farm management handbook and records.   12. Identified markets for ruminant animals and their products based on household’s needs and market survey.   13. Demonstrated monitoring and evaluation of individual ruminant animal enterprise based on performance indicators in livestock production manual.   14. Identified non ruminant animals based on livestock production manuals   15. Identified and selected appropriate production systems for specific non-ruminant enterprises on the agro ecological zone.   16. Identified non-ruminant breeds as per the livestock production manual.   17. Developed a non-ruminant animal breeding program as per the livestock production manual.   18. Established Housing for non-ruminants as per their housing specifications in the livestock production manual.   19. Fed different classes of non-ruminant animals based on the nutritional requirements.   20. Implemented routine management practices for non-ruminants as per livestock production manual.   21. Adhered to occupational safety and health procedures in non-ruminant production processes according to workplace procedures.   22. Observed environmental protection measures in non-ruminant production processes as per environment protection regulations and workplace procedures.   23. Developed appropriate non-ruminant production records as per the livestock production manual.   24. Calculated gross margin analysis of the selected non-ruminant animal enterprise based on farm management handbook.   25. Identified food and nutrients in livestock production manual.   26. Identified sources of nutrients based on livestock production manual.   27. Classified feedstuffs based on the livestock production manual.   28. Formulated rations of different classes of livestock based on nutrient requirements of selected livestock enterprises.   29. Prepared and packaged Feed based on the procedures in the livestock production manual.   30. Stored feeds based on health and hygiene standards.   31. Prepared feeds and feeding records and maintained according to farm management handbook.   32. Identified forage to be established based on the Agro Ecological Zones, farm plan and market demand   33. Prepared planting land using correct farm tools, implements and machinery in accordance with the planting material.   34. Sampled soil for analysis as per sampling procedure   35. Determined amount of planting material and fertilizer based on the acreage to be established and soil analysis report   36. Planted forage materials as per Good Agricultural Practices (GAP) manual and livestock production manual   37. Controlled weeds in forage as per GAP   38. Controlled pests and diseases in forage following GAP   39. Fertilized and irrigated planted forage according to soil conditions and livestock production manual   40. Harvested forage in accordance with the livestock production manual   41. Conserved forage as per livestock production manual and forage type   42. Stored forage based on type of conserved forage and space available.   43. Documented forage production activities based on the forage established and workplace procedures.   44. Designed biosecurity measures according to regulations of NEMA, KVB and work place policy   45. Identified and assembled animal health management tools, equipment, materials and supplies based on livestock species in accordance with the livestock production manual   46. Identified and prepared structures for herd health management in accordance with the livestock production manual   47. Identified and gathered personal Protection Equipment and apparel based on job requirements   48. Adhered occupational safety and health procedures to according to work place procedures   49. Observed environmental protection measures according to environment protection regulations and work place procedures   50. Implemented biosecurity measures based on design in accordance with public health regulations   51. Controlled internal and external parasites in livestock herds in accordance with the livestock production manual (LPM)   52. Identified and attended to animals showing signs of ill health to according to animal health care procedures and Kenya Veterinary Board (KVB) regulations   53. Trimmed overgrown hooves as per the LPM and animal welfare regulations   54. De-beaked overgrown beaks in poultry as per the LPM and animal welfare regulations   55. Dehorned overgrown animal horns per the LPM and animal welfare regulations   56. Groomed animals according to the LPM and work place policy.   57. Documented animal health management practices in accordance with work place policy   58. Established apiary based on procedures in the Bee Production Manual.   59. Routinely inspected bee facilities, equipment and tools and maintained based on workplace procedures.   60. Identified, established and managed bee forage based on the available manuals.   61. Harvested bee and hive products as per the workplace procedures.   62. Extracted bee and hive products as per the workplace procedures.   63. Processed bee and hive products based on the workplace procedures.   64. Performed bee and hive product value addition as per workplace procedures.   65. Controlled pest and diseases in a bee colony based on bee health guidelines.   66. Identified agro-pastoralist production systems based on the rangeland management manual and agro ecological zones   67. Identified and selected appropriate grazing systems used in rangelands based on the rangeland management manual in a simulated environment   68. Identified technologies for increasing livestock production and maintaining long term productivity in ASALs based on rangeland management manual.   69. Identified and implemented water harvesting technologies for livestock and forage as per the procedures in the dryland farming manual.   70. Identified rangeland resources as per rangeland management manual   71. Selected appropriate breeds and breeding based on the market survey report.   72. Selected appropriate materials for fish farming based on fish production manual.   73. Selected an appropriate site for a fishpond based on the requirements in the fish production manual.   74. Designed a fishpond based on the requirements in the fish production manual.   75. Constructed a fishpond based on the procedures in the fish production manual.   76. Sourced fish based on the selected fish breeds.   77. Stocked a fishpond based on the fish production manual.   78. Fed fish appropriately based on the nutritional requirements of the fish breed.   79. Implemented routine fish management practices based on the fish production manual.   80. Regulated water and temperature in the fishpond based on the climatic conditions of the area.   81. Managed weeds in the fishpond based on the fish production manual.   82. Repaired and maintained the fishpond based on its type.   83. Controlled predators in the fishpond based on procedures in the fish production manual.   84. Implemented disease prevention and control measures as per the fish production manual.   85. Harvested fish based on procedures in the fish production manual.   86. Preserved fish based on the selected preservation method.   87. Processed fish based on procedures in the fish production manual.   88. Marketed fish based on market requirements and structures.   89. Maintained fish records based on the fish production manual.   90. Calculated gross margin for the fish enterprise based on fish production manual |
| 1. Resource Implications | The following resources must be provided:   * 1. Land   2. Farm structures   3. Fodder crops   4. Livestock   5. Farm machinery   6. Pasture   7. Veterinary drugs   8. Fertilizers   9. Planting materials   10. PPEs   11. Farm tools and equipment   12. Pesticides   13. Fungicides   14. Nematicides   15. Herbicides   16. Apiary   17. Bee house |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation   6. Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# DEMONSTRATE KNOWLEDGE OF ORGANIC FARMING

**UNIT CODE:** AGR/OS/SARD/CR/03/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate knowledge of principles of organic farming, pest and disease control, organic farming technologies, intensive kitchen gardening, organic crop enterprises, livestock enterprises, organic farming standards and economics of organic farming.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Demonstrate knowledge of principles of organic farming | 1. ***Principles of organic farming*** are identified based on International and local ***Organic*** ***Agriculture networks*** guidelines.IFOAM (International Federation of Organic Agriculture Movement) &KOAN (Kenya Organic Agriculture Network) 2. Principles of organic farming are applied as per international and local organic Agriculture network guidelines |
| 1. Demonstrate knowledge of Pest and disease control | 1. ***Pest & diseases*** are identified based on integrated Pest Management Manual. 2. ***Factors that lead to the emergence of pest and diseases*** are identified based on the Agro ecological zone. 3. ***Bio-pesticides, and bio-fungicides for pests and disease*** control are prepared as per the organic farming manuals and standards. |
| 1. Demonstrate knowledge of Organic farming technologies | 1. ***Organic farming technologies*** are identified based on Organic farming manuals. 2. Organic farming technologies are selected as per the farm plan. 3. Organic farming technologies are applied as per the farm plan. |
| 1. Demonstrate knowledge of Intensive kitchen gardening | 1. Kitchen gardens are identified based on organic farming manuals. 2. ***Intensive kitchen gardens*** are selected as per farm plans and household needs. 3. Intensive kitchen gardens are implemented based on organic farming manuals. 4. Intensive kitchen gardening activities are documented based on the on organic farming manual. |
| 1. Demonstrate knowledge of organic crop enterprises | 1. ***Organic crop enterprises*** are identified as per Agro ecological zones. 2. Organic crop enterprises are selected based on farm plan, and market survey. 3. Organic crop enterprises are established as per ***organic cropping systems*.** 4. Organic crops are managed based on ***organic farming standards and procedures.*** 5. ***Organic crop farming* *practices*** are documented based on organic farming manuals |
| 1. Demonstrate the knowledge of livestock enterprises | 1. ***Organic livestock enterprises*** are identified as per Agro ecological zones. 2. Organic livestock enterprises are selected based on farm plan, and market survey. 3. Organic livestock enterprises are established as per organic livestock farming principles. 4. Organic livestock enterprises are managed based on IFOAM ***organic livestock farming principles*** 5. ***Organic livestock farming* *practices*** are documented based on organic farming manuals |
| 1. Demonstrate the knowledge of organic farming standards | 1. ***Organic farming standards*** are identified according to IFOAM. 2. Organic farming standards are selected based on the selected enterprise. 3. Organic farming standards are applied as per the selected farm enterprise. 4. Organic farming standards are documented based on the selected farm enterprise. |
| 1. Demonstrate the knowledge of economics of organic farming | 1. ***Organic farm records*** are identified as per the selected organic farm enterprise. 2. Gross margins are calculated as per the selected organic farm enterprise. 3. Organic farm enterprise is selected based on the gross margin analysis. 4. Economic performance of organic farming enterprises are documented based on the records and gross margin analysis |

**RANGE**

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

|  |  |
| --- | --- |
| **Variables** | **Range** |
| 1. Principles of organic farming may include but not limited to: | * Health of soil, plants, livestock and human being * Biodiversity * Fairness to common environment and life processes * Sustainability |
| 1. Organic Agriculture networks may include but not limited to: | * IFOAM (international federation of organic agriculture movement) * KOAN (Kenya organic agriculture Network) * KIOF (Kenya institute of organic farming) * Bio vision Africa * Sustainet * PELUM(Participatory ecological land use management) |
| 1. Pest & diseases may include but not limited to: | * Pests   + Aphids   + White flies   + Green flies   + Leaf minors   + Stalk borer   + Cut worms   + Moths   + Caterpillars   + Spider mite   + Thrips   + Boll worms   + Nematodes |
|  | * Diseases   + Blight   + Rust   + Damping off   + Bacterial wilts   + Fusarium wilt   + Powdery mildew   + Downy mildew   + Anthracnose   + Scald   + Canker   + Leaf spots   + Soft rots |
| 1. Factors that lead to the emergence of pest and diseases may include but not limited to: | * Temperatures * Humidity * Wind direction * Soils * Water * Nutrient deficiencies * Planting materials * Improper farming systems. * Inappropriate use of organic pesticides and fungicides. |
| 1. Bio-pesticides, and bio-fungicides for pests and diseases may include but not limited to: | * Bio- pesticides   + Pyrethrum tea and powder   + Hot pepper tea and powder   + Mexican marigold tea   + Tithonia tea   + Apichi   + Lantana camara tea   + Stinging nettle tea.   + Ash brew.   + Garlic powder. |
|  | * Bio- fungicide   + Bourdex mix   + Lime- sulphur   + Milk   + Rice wash   + Stinging nettle leaves   + Rabbit urine |
| 1. Organic farming technologies may include but not limited to: | * Composting * Mulching * Hydroponics * Multi storey gardening * Mandala gardening * Cone garden * Fertility trench * Vertical gardening * Hanging gardening * Companion planting * Raised beds * Sunken beds * Green manuring * Crop rotation * Biological pest control * Double digging * Moist beds * Succession planting * Vermiculture * Agrisilviculture * Sericulture * Minimum tillage |
| 1. Intensive kitchen gardens may include but not limited to: | * Multi storey gardening * Mandala gardening * Cone garden * Fertility trench * Vertical gardening |
|  | * Hanging gardening * Raised beds * Sunken beds * Double digging * Moist beds |
| 1. Organic crop enterprises may include but not limited to: | * Vegetables * Fruit crops * Roots and tuber crops * Stem crops * Flower crops * Indigenous crops * Oil crops * Cereals * Pulses * Medicinal crops * Herbs and spices |
| 1. Organic cropping systems may include but not limited to: | * Crop rotation * Intercropping * Alley cropping * Agroforestry * Relay cropping * Companion planting * Cover cropping |
| 10. Organic farming standards and procedures may include but not limited to: | * Conversion period * Organic certification * Labelling * Packaging * Harvesting * Sorting * Grading * Inspection * Pests and disease control * Weed control * Processing and handling requirements * Animal production requirement * Crop production requirements * Transport and storage * Animal welfare |
| 11.Organic crop farming practices may include but not limited to: | * Land clearing * Ploughing * planting * Weeding * Gapping * Thinning * Pruning * De suckering * Spraying * Fertigation * Grafting * Budding * Layering * Pest and disease control * Harvesting * Post- harvest handling * Marketing |
| 12.Organic livestock enterprises may include but not limited to: | * Poultry * Dairy * Sheep and goats * Fish * Bees * Pigs |
| 13. Organic livestock farming principles | * Health * Housing * Breeding * Feeding * Animal welfare. |
| 14. Organic livestock practices | * Deworming * Vaccination * Hoof trimming * Docking * Debeaking * Dehorning * Castration * Disbudding * Teeth clipping |
|  | * Identification * Feeding |
| 15. Organic farm records may include but not limited to: | * Production * Inventory * Sales * Purchases * Organic Standards records |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Agronomic practices
* Farming systems
* Soil fertility
* Record keeping
* Animal welfare
* Farm records
* Pest and diseases
* Agro ecological zones
* Market structure and marketing
* ICT
* Public relations
* Principles of organic farming
* Compositing

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:  1.1 Identified Principles of organic farming based on International and local organic Agriculture networks guidelines. IFOAM (International Federation of Organic Agriculture Movement) &KOAN (Kenya Organic Agriculture Network)  1. 2 Applied Principles of organic farming as per international and local organic Agriculture network guidelines  1. 3 Identified Pest & diseases based on integrated Pest Management Manual.  1. 4 Identified factors that lead to the emergence of pest and diseases based on the Agro ecological zone.  1. 5 Prepared Bio-pesticides, and bio-fungicides for pests and disease control as per the organic farming manuals and standards.  1. 6 Identified existing organic farming technologies based on Organic farming manuals.  1. 7 Selected appropriate organic farming technologies as per the farm plan.  1. 8 Applied selected organic farming technologies as per the farm plan.  1. 9 Identified types of kitchen gardens based on organic farming manuals.  1. 10 Selected appropriate intensive kitchen gardens as per farm plans and household needs.  1. 11 Implemented selected intensive kitchen gardens based on organic farming manuals.  1. 12 Documented intensive kitchen garden activities based on the on organic farming manual.  1. 13 Identified organic crop enterprises as per Agro ecological zones.  1. 14 Selected organic crop enterprises based on farm plan, and market survey.  1. 15 Established selected organic crop enterprises as per organic cropping systems.  1. 16 Managed selected organic crops based on organic farming standards and procedures.  1. 17 Documented organic crop farming practices are documented based on organic farming manuals  1. 18 Identified organic livestock enterprises as per Agro ecological zones.  1. 19 Selected organic livestock enterprises based on farm plan, and market survey.  1. 20 Established selected organic livestock enterprises as per organic livestock farming principles.  1. 21 Managed selected organic livestock enterprises based on IFOAM organic livestock farming principles  1. 22 Documented organic livestock farming activities based on organic farming manuals  1. 23 Identified organic farming standards according to IFOAM.  1. 24 Selected appropriate organic farming standards based on the selected enterprise.  1. 25 Applied selected organic farming standards as per the selected farm enterprise.  1. 26 Documented organic farming standards based on the selected farm enterprise  1. 27 Identified appropriate organic farm records as per the selected organic farm enterprise.  1. 28 Calculated gross margins as per the selected organic farm enterprise.  1. 29 Selected viable organic farm enterprise based on the gross margin analysis.  1. 30 Documented economic performance of organic farming enterprises based on the records and gross margin analysis |
| 1. Resource Implications | The following resources must be provided:   * 1. Organic farm   2. Livestock   3. Crops   4. Farm structures   5. Farm tools, equipment and machinery   6. Writing materials   7. Library   8. Text books   9. ICT   10. Organic pesticides, fungicides and bio fertilizers.   11. Planting materials   12. Water   13. Source of power |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation   6. Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# 

# MANAGE AGROFORESTRY ACTIVITIES

**UNIT CODE:** AGR/OS/SARD/CR/04/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to classify agroforestry systems and technologies, identify agroforestry tree species, establish relationship between trees, crops and livestock, implement management practices in agroforestry, demonstrate understanding of Socio-economic issues in agroforestry and promote agroforestry and networking.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Classify agroforestry systems and technologies | 1. ***Agroforestry systems*** are identified as per the agroforestry manual 2. ***Agroforestry technologies*** are identified as per the agroforestry manual 3. Agroforestry systems are selected based on the agro ecological conditions/zones 4. Agroforestry technologies are selected based on the farm plan 5. ***Agroforestry activities*** are implemented as per the farm plan |
| 1. Identify agroforestry tree species | 1. ***Agroforestry tree species*** are identified as per agroforestry trees and shrubs of Kenya selection manual (ICRAF) 2. Agroforestry tree species are selected as per the agroforestry trees and shrubs of Kenya selection manual (ICRAF) |
| 1. Establish relationship between trees, crops and livestock | 1. ***Benefits of agroforestry*** are analyzed based on the agroforestry manual 2. Challenges of agroforestry are analyzed as per the agroforestry manual. |
| 1. Implement management practices in agroforestry | 1. Certified ***planting materials*** are sourced as per the MOALF and nursery manual 2. Tree nursery is established as per the MOALF nursery management manual 3. Agroforestry tree seedlings are established in the field based on Guide to tree planting in Kenya {KEFRI, FAO) 4. Agroforestry systems field management practices are carried out as per the agroforestry manual |
| 1. Demonstrate understanding of Socio-economic issues in agroforestry | 1. ***Socio-economic and environmental issues*** are identified based on the culture, gender, relevant policies and financial incentives. 2. Tree species are selected with reference to the socio economic and environmental concerns of a given community 3. Tree species are established based on the agroforestry manual. |
| 1. Promote agroforestry and networking | 1. Agroforestry networks are identified as per the agroforestry partners database 2. Agroforestry networks are categorized based on their functions 3. Network linkages are established as per work place procedures 4. Agroforestry networks are maintained as per the work place procedures |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| 1. Agroforestry systems may include but not limited to: | * Agro-silviculture * Silvopastoral * Agrosilvopastoral * Apiculture with forestry * Aqua forestry * Silvoentomology |
| 1. Agroforestry technologies may include but not limited to: | * Alley intercropping * Woodlot * Fodder lot * Trees on boundaries and borderlines * Trees on conservation structures * Trees on waterways * Trees in home compounds |
| 1. Agroforestry activities may include but not limited to: | * Tree nursery establishment * Sourcing of planting material * Tree nursery management   + Treatment of planting material   + Seed sowing   + Watering   + Root pruning   + Pest control   + Disease control and management   + Hardening off * Field management practice * Planting/Transplanting * Beating up/gapping * Thinning * Branch pruning * Pollarding * Coppicing * Grafting * Budding * Lopping * Weeding * Fertigation/manuring * Pest and disease management * Harvesting |
| 1. Agroforestry tree species may include but not limited to: | Fodder trees   * + Sesbania sesban   + Leucaena leucocephala   + Albizia albanda   + Gliricidia sepium   + Acacia spp   + Calliandra calothyrsus   Trees for soil and water conservation   * Grevillea robusta * Dombeya spp * Whistling pine * Hakea saligna   Tree for intercropping   * + Sesbania sesban   + Leucaena leucocephala   + Albizia albanda   + Gliricidia sepium   + Acacia spp   + Calliandra calothyrsus * Grevillea robusta * Dombeya spp * Trees for soil fertility enhancement   + Sesbania sesban   + Leucaena leucocephala   + Albizia albanda   + Gliricidia sepium   + Acacia spp   + Calliandra calothyrsus * Grevillea robusta * Dombeya spp * Trees for woodlot and bounderies * Cupressus lustanica * Ecalyptus spp * Bamboo spp * Pinus spp * Markhamia lutea * Trees for home compound * Pepper tree * Jacaranda * Bottle brush * Hakea saligna * Croton spp * Rose wood * Polysius kikuensis * Nandi flame * Podocarpus falcatus * Fruit trees e.g. mango, avocado, |
| 1. Benefits of agroforestry may include but not limited to: | * Soil and water conservation * Economic benefits * Aesthetic value * Food and fodder * Bee forage * Medicine * Energy |
| 1. Planting materials may include but not limited to: | * Seeds * Seedlings * Wildlings * Vines * Cuttings * Suckers * Clones * buds |
| 1. Socio-economic and environmental issues may include but not limited to: | * Gender * Legal * Land tenure * Taboos * Income * Pollution control * Aesthetic value |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking
* Decision making

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Trees and shrubs
* Agro ecological zones
* Agroforestry
* Types of trees
* Uses of trees
* Agro ecological conditions
* Soil fertility
* Animal nutrition
* Crop nutrition
* Human nutrition
* Culture
* Tree lifespan
* Policies
* Uses of trees
* value of trees
* Tree species
* Planting media
* Nursery structures
* Propagation of trees
* Seed policy
* Farm planning
* Ecological zones
* Uses
* Partnership and engagements
* Stakeholders analysis
* Networking
* Coordination

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | 1. Identified agroforestry systems 2. Identified agroforestry technologies 3. Implemented agroforestry activities 4. Identified agroforestry tree species) 5. Analyzed benefits of agroforestry 6. Established tree nursery 7. Established agroforestry tree seedlings in the field 8. Carried out agroforestry systems field management practices 9. Identified socio-economic and environmental issues based on the culture, gender, relevant policies and financial incentives |
| 1. Resource Implications | The following resources must be provided:   * 1. Land   2. Farm structures   3. Water source   4. Farm power   5. Tree planting materials   6. Farm tools and equipment   7. Fertilizers and manures   8. Agrochemicals   9. Potting materials   10. Rooting media   11. Rooting hormones |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation   6. Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# PROCESS FARM PRODUCE

**UNIT CODE:** AGR/OS/SARD/CR/05/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to harvest farm produce, process crop produce and process animal produce.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Harvest farm produce | 1. ***Maturity indices*** of the crop are classified as per the crops production manual 2. ***PPEs,*** harvesting tools and equipment’s are identified as per the crop to be harvested 3. PPEs***, harvesting tools, equipment and machines*** are sourced as per the work place procedure 4. Harvesting of the crop produce is carried out as per the crop production manual 5. ***Harvested crops*** are handled as per the crop production manual 6. Harvested crops are transported as per the crop production manual 7. Harvested crops are stored as per the crop production manual |
| 1. Process crop produce | 1. Sorting of the harvested crop produce is carried out as per the MoALF crops manual 2. ***Grading of the harvested crop produce*** is carried out as per the MoALF crop production manual 3. ***Value addition*** is carried out as per the crop type and requirements 4. Standardization agencies are engaged as per the country regulations (KEBS) 5. Value added products are packaged as per the market requirements 6. ***Packaged products are preserved*** according to the product requirement and SOPs 7. Waste is managed as per the EMCA guidelines 8. Facility, tools and equipment hygiene is managed as per SOPs 9. Personal hygiene is managed as per the work place procedure |
| 1. Process animal products | 1. ***Animal products*** to be processed are identified as per business plan 2. ***Tools and equipment for processing*** are identified as per the product to be processed 3. ***Ingredients*** identified and assembled according to the product 4. PPEs, Tools and equipment for processing animal products are sourced as per the work place procedure and product requirements 5. Animal products are added value as per the product requirements and SOPs 6. ***Processed products*** are preservedaccording to the product requirements and SOPs 7. Waste is managed as per the EMCA guideline 8. Facility, tools and equipment hygiene is managed as per SOPs 9. Personal hygiene is managed as per the work place procedure |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range  May include but not limited to: |
| 1. Maturity indices may include but not limited to: | * Physical methods– * color * texture * dropping of cobs * size * taste * shape |
|  | * Chemical Methods * acidity * total soluble solids * Firmness * hardiness * Abscission * accumulated heat unit * specific gravity * duration after flowering * dry matter * juice content * oil content * waxiness * tenderness |
| 1. PPEs may include but not limited to: | * overall * apron * dust coat * mouth mask * gum boot * eye wear * head gerar * gloves |
| 1. Harvesting tools, equipment and machines may include but not limited to: | * Knives * Panga * Hoe * Fork * Potatoes harvester * Combine harvester * Basket * Bucket * Sacks * Milk churn * Milking machine * Stunners * Secateurs |
|  |  |
| 1. Harvested crops may include but not limited to: | * Leafy vegetables * Roots and tuber * Fruits * Cereals * Stem |
| 1. Value addition may include but not limited to: | * Vegetables * Cooking * Drying/dehydration * Blanching * Batching * Packaging * Chopping * Snatching * Frying * Boiling * Salads * Fruits * Canning and packaging * Drying * Blending * Labeling * Peeling * Cutting and slicing * Root and tubers * Boiling * Chipping * Drying * Roasting * Frying * Baking * Milling * Cereals * Drying * Milling * Threshing * Shelling * Boiling * Winnowing * Roasting * Packaging * Mixing Cereals * Drying * Milling * Threshing * Shelling * Boiling * Winnowing * Roasting * Packaging |
| 1. Animal products may include but not limited to: | * Milk * Eggs * Honey * Meat |
| 1. Tools and equipment for processing animal products may include but not limited to: | * Thermometer * Cream separator * Pasteurizer * Fridge * Cooling basket * Knifes * Panga * Hack saw * Stunner * Slaughter house * Source of heat * Cooking equipment * Kitchen equipment |
| 1. Ingredients may include but not limited to: | * cultures * flavor * spices * salts * stabilizers * sweeteners |
| 1. Processed products may include but not limited to: | Crop processed products   * Jams * Jellies * Crips * Juice * Chips * Flour * Baked * Pickled   Animals processed products   * Fermented * Pasteurized * Cottage cheese * Boiled * Fried * Scrambled * Omellete * Mayonnaise * Pickled * Smoked * Steamed * Tenderized * Deboned * Filleted * Bone * Minced * Dried meat * Roasted meat * Canned * Fresh milk * Butter * Condensed/ powder |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Crop harvesting
* Hygiene
* Tools and equipment
* Post-harvest handling
* Documentation
* Process of certification
* Policies
* Packaging
* Hygiene
* tools & equipment
* Documentation
* Process of certification
* Policies
* Packaging
* Cooking
* Preservation
* Food presentation

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Classified maturity indices of the crop as per the crops production manual   2. Identified PPEs, harvesting tools and equipment’s as per the crop to be harvested   3. Carried out harvesting of the crop produce as per the crop production manual   4. Handled harvested crops as per the crop production manual   5. Stored harvested crops as per the crop production manual   6. Carried out sorting of the harvested crop produce as per the MoALF crops manual   7. Carried out grading of the harvested crop produce as per the MoALF crop production manual   8. Carried out value addition as per the crop type and requirements   9. Packaged Value-added products as per the market requirements   10. Preserved packaged products according to the product requirement and SOPs   11. Managed waste as per the EMCA guideline   12. Managed facility, tools and equipment hygiene as per SOPs   13. Identified animal products to be processed as per business plan   14. Added value to animal products as per the product requirements and SOPs |
| 1. Resource Implications | The following resources must be provided:   * 1. Slaughter house   2. Animal handling units   3. Storage areas   4. Farm structures   5. Equipped Processing unit   6. Equipped Kitchen   7. Crops   8. Animals   9. Fridges & freezers   10. Cold room   11. Change room   12. PPE |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation   6. Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# CONDUCT SARD COMMUNITY DEVELOPMENT

**UNIT CODE:** AGR/OS/SARD/CR/06/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to conduct community mobilization, carry out community surveys, form community groups and leadership structures, build capacity to SARD stakeholders, develop community cooperative societies, develop community action plans and create awareness on SARD opportunities.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Conduct community mobilization | 1. ***Target area/groups*** are identified based on objective 2. Community needs assessment is conducted based on the workplace procedures. 3. ***Community needs*** are communicated as per the needs assessment. 4. Needs are prioritized as per the resources available. 5. Resources are identified as per the prioritized needs. 6. Community is mobilized as per the purpose. |
| 1. Carry out community surveys | 1. Community survey purpose is identified as per the community need. 2. ***Survey approaches*** are determined as per the community setup. 3. ***Survey tools*** are prepared as per the type of the survey guide. 4. Survey tools selected are pretested as per the survey guide. 5. Survey tools are revised based on the pretested outcome. 6. The revised survey tool is implemented as per the survey guide. 7. Survey results are analyzed as per survey parameters. 8. Survey findings are documented as per the workplace procedures. |
| 1. Form community groups and leadership structures | 1. Community group / cooperatives purpose is determined as per the community needs. 2. Community group members are selected as per the group purpose. 3. Community group members are assembled as per group needs. 4. ***Group leadership structures*** are developed as per community needs. 5. Group / cooperatives registration is done as per the law (if required |
| 1. Build capacity to SARD stakeholders | 1. ***SARD gaps*** are identified as per the existing community development practices. 2. ***Capacity building strategies*** are developed as per the gaps identified. 3. Resources are allocated as per strategies selected. 4. Capacity building is conducted as per the developed strategies |
| 1. Develop community cooperative societies | 1. ***Cooperative related opportunities*** are identified as per the community needs 2. ***Stakeholders*** are mobilized for information sharing as per the cooperatives society Acts CAP 490 and regulations 3. Community is sensitized as per the cooperatives society Acts CAP 490 and regulations 4. Cooperative is formed as per the cooperatives society Acts CAP 490 and regulations 5. ***Cooperative management structures*** are established as per cooperatives society Acts CAP 490 and regulations 6. Cooperatives society is managed as per cooperatives society Acts CAP 490, regulations and by-laws |
| 1. Develop community action plans | 1. Community needs are prioritized as per the resources available. 2. Action plan is developed based on need assessment report. 3. Action plan is documented as per the workplace procedures |
| 1. Create awareness on SARD opportunities | 1. ***SARD opportunities*** are identified as per community development plans/ SDGS 2. Opportunities are documented as per the workplace procedures. 3. Documented SARD opportunities are disseminated as per workplace procedures |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| 1. Target area/groups may include but not limited to: | * Geographical * Focal area * Women groups * Youth groups * Men groups * Marginalized groups * Marketing groups * Production groups * Vulnerable groups |
| 1. Community needs may include but not limited to: | * Food * Income * Infrastructure * Shelter * Health and sanitation * Security * Water * Energy * Education |
| 1. Survey approaches may include but not limited to: | * Participatory action research * Rapid rural appraisal * Participatory integrated community development * People led development * Participatory rural appraisal |
| 1. Survey tools may include but not limited to: | * Transect walk * Van-diagram * Ranking * Questionnaires * Focus group discussions * Resource mapping * Observations * Interviews |
|  | * Seasonal calendars * Daily calendars |
| 1. Group leadership structures may include but not limited to: | * Executive * Management * Credit committee * Conflict resolution committee * Development committee * Administrative * Supervisory committee |
| 1. SARD Gaps may include but not limited to: | * Knowledge gaps * Resource gaps * Technological * Economic |
| 1. Capacity building strategies may include but not limited to: | * Trainings * Exposure visit * Research * On-site coaching * Demonstration |
| 1. Cooperative related opportunities may include but not limited to: | * Marketing * Production * Financing * Resource mobilization * Investing * Training |
| 1. Stakeholders may include but not limited to: | * Learning partners * Positioning partner * Resources partners |
| 1. Cooperative management structures may include but not limited to: | * Executive * Credit * Management * Education * Audit * Marketing * Supervisory |
| 1. SARD opportunities may include but not limited to: | * Farm enterprise integration * Waste minimization * Community willingness & acceptance * Government support * Emerging technologies |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Interpersonal
* Communication s
* Monitoring &Evaluation
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Community mobilization strategies
* Community participation
* Leadership
* Decision making
* Participatory planning
* Facilitation.
* Types of community survey
* Data collection
* Data presentation
* Data analysis
* Data interpretation
* Community group dynamics
* SARD principles
* SDGS
* SARD pillars
* Cooperative act
* Group management and Leaderships
* Group dynamics
* Regulations
* Governance and leadership
* Types of cooperatives
* Planning
* Budgeting
* Communication
* Creation of awareness.
* Public relations

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identified Target area/groups based on objective 2. Conducted Need Assessment based on the workplace procedures. 3. Prioritized needs as per the resources available. 4. Identified resources as per the prioritized needs. 5. Determined survey approaches as per the community setup. 6. Prepared survey tools as per the type of the survey guide. 7. Analyzed survey results as per survey parameters. 8. Identified SARD gaps as per the existing community development practices. 9. Developed capacity building strategies as per the gaps identified. 10. Conducted capacity building as per the developed strategies 11. Identified cooperative related opportunities as per the community needs 12. Prioritized community needs as per the resources available. 13. Developed action plan based on need assessment report. 14. Documented action plan as per the workplace procedures 15. Identified SARD opportunities as per community development plans/ SDGS 16. Documented SARD opportunities as per the work place procedures |
| 1. Resource Implications | The following resources must be provided:   * 1. Community   2. Stationery   3. Means of transport   4. Venue   5. Communication costs   6. Information ,Education and Communication materials |
| 1. Methods of Assessment | Competency may be accessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation   6. Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# 

# MANAGE SARD PROJECTS

**UNIT CODE:** AGR/OS/SARD/CR/07/5/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to manage project inception phase, project implementation, monitor and evaluate projects, audit and review projects, manage project environment and project closure.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **PERFORMANCE CRITERIA**  These are **assessable** statements which specify the required level of performance for each of the elements.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Manage project inception phase | 1. Project concept note is developed as per the SARD principles 2. Project site identification is carried out based on workplace procedures 3. Broad based survey is conducted as per the broad-based survey manual 4. Broad based survey findings are analyzed as per the broad-based survey manual. 5. ***Underlying SARD issues*** are identified based on the sustainability criteria framework 6. Development strategy is identified based on sustainability criteria framework 7. Resources are mobilized based on the developed strategy |
| 1. Manage project implementation | 1. Implementation plan is developed as per the developed strategy 2. ***project resources*** are procured based on workplace procedures 3. Approaches for implementation are identified according to the sustainable development criteria 4. Implementation strategy is identified as per the sustainable development criteria 5. Processes for implementation are identified as per the development criteria. 6. Work plan is developed based on the development strategy, approaches and processes 7. SARD project is implemented as per the work plan. 8. ***SARD project strategies***, activities, approaches and processes are documented in accordance with the implementation plan. |
| 1. Monitor and evaluate projects | 1. ***Monitoring and evaluation indicators*** are developed according to development needs 2. Monitoring and evaluation framework is developed according to the M& E standard framework (FAO, UKDFA) 3. Monitoring and evaluation is carried out based on the results framework and Development Associate, committee standard evaluation criteria.) 4. Documentation of the project progress is carried out as per the project implementation plan |
| 1. Audit and review projects | 1. Post implementation audit and review plan is scheduled as per the project implementation plan 2. Audit and review is conducted as per the audit and review plan schedule 3. Lessons from audit and review processes are documented as per project implementation plan |
| 1. Manage project environment | 1. ***Implications of the projects to the environment*** are identified as per EMCA guidelines 2. ***Negative impacts of the project*** are managed as per EMCA guidelines 3. Project implementation is managed within the framework of EMCA guidelines |
| 1. Manage project closure | 1. Project exit strategies are identified as per project design 2. ***Exit strategies*** are implemented as per the project design |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| 1. Underlying SARD issues may include but not limited to: | * Environment conservation * Project sustainability * Soil Fertility * Appropriate technology * Impact * Social economic * Water Conservation * Energy conservation |
| 1. Project resources may include but not limited to: | * Finances * Labour * Land * Tools and equipment * Farm structures * Farm machinery * water supply * power source * crops * livestock |
| 1. SARD project strategies may include but not limited to: | * Demonstration * Research * Participatory |
| 1. Monitoring and evaluation indicators may include but not limited to: | * Project viability * Crop vigor * Livestock vigor * Project relevance * Application of SARD principles * Gaps * Maximum utilization of resources. * Project efficiency and performance * Project output |
| 1. Implications of the projects to the environment may include but not limited to: | * Environmental conservation * Improved livelihood * Increased production * Proper utilization of farm resources * Creation of employment |
| 1. Negative impacts of the project may include but not limited to: | * Environmental pollution * Loss of employment * Imbalances in nature * loss of biodiversity * Increased cost of living |
| 1. Exit strategies may include but not limited to: | * Project Scale up * Adoption * Capacity building * Hand over to beneficiary * Documentation and dissemination |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Interpersonal
* Communication
* Problem solving
* Critical thinking
* Creative thinking
* Analytical
* Mobilisation
* Farm planning

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Resource mobilization
* Knowledge of project cycle management
* Community dynamics
* conducting survey
* Report writing
* Project cycle management
* Implementation plan
* Report writing
* Capacity building
* Documentation
* Performance indicator formulation
* Project monitoring
* Project evaluation
* Impact assessment
* Participatory monitoring and evaluation
* Environment
* Sustainability
* Inventory Knowledge

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects | **Assessment requires evidence that the candidate**:   * 1. Developed Project concept note as per the SARD principles   2. Carried out Project site identification is based on workplace procedures   3. Conducted broad based survey as per the broad-based survey manual   4. Analyzed broad based survey findings as per the broad-based survey manual.   5. Identified underlying SARD issues based on the sustainability criteria framework   6. Identified development strategy based on sustainability criteria framework   7. Mobilized resources based on the developed strategy   8. Developed implementation plan as per the developed strategy   9. Procured required project resources based on workplace procedures   10. Identified approaches for implementation according to the sustainable development criteria   11. Identified implementation strategy as per the sustainable development criteria   12. Identified processes for implementation as per the development criteria.   13. Developed work plan based on the development strategy, approaches and processes   14. Implemented SARD project as per the work plan.   15. Documented SARD project strategies, activities, approaches and processes in accordance to the implementation plan   16. Developed monitoring and evaluation indicators according to development needs   17. Developed monitoring and evaluation framework according to the M& E standard framework (FAO, UKDFA)   18. Carried out monitoring and evaluation based on the results framework and Development Associate, committee standard evaluation criteria.)   19. Carried out Documentation of the project progress as per the project implementation plan.   20. Scheduled post implementation audit and review plan as per the project implementation plan   21. Conducted Audit and review as per the audit and review plan schedule   22. Documented lessons from audit and review processes   23. Identified implications of the projects to the environment as per EMCA   24. Managed negative impacts of the project as per EMCA guidelines   25. Managed project implementation within the framework of EMCA guidelines   26. Identified project exit strategies as per project design   27. Implemented exit strategies as per the project design |
| 1. Resource Implications | The following resources must be provided:   * 1. Land   2. Water   3. Finances   4. Labor   5. Farm tools and equipment   6. Writing materials   7. ICT   8. Source of power   9. Crops   10. Livestock   11. Farm structures   12. Weather station |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation   6. Portfolio of Evidence |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the–job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |