

**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS**

**FOR**

**SWEET POTATO PRODUCTION**

**LEVEL 3**

****

TVET CDACC

P.O. BOX 15745-00100

NAIROBI

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# 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, Vision 2030 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 of Kenya 2010 and this resulted in 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 the 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 were developed for the purpose of developing a competency-based curriculum for Sweet potato Production. 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 Sweet Potato sector’s growth and development.

**PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING**

**MINISTRY OF EDUCATION**

# PREFACE

Kenya’s 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 in order 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.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with Sweet Potato Sector Skills Advisory Committee (SSAC) have developed these Occupational Standards for Sweet Potato Production. These standards will be the basis for development of competency-based curriculum for Sweet Potato Production.

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, Sweet Potato SSAC, expert workers and all those who participated in the development of these Occupational Standards.

**CHAIRPERSON, 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 Sweet Potato Sector Skills Advisory Committee (SSAC) members for their contribution to the development of these Standards. I thank all the individuals and organizations who participated in the validation of these Standards.

I acknowledge all other institutions which in one way or another contributed to the development of these Standards.

**CHAIRPERSON**

**SWEET POTATO SECTOR SKILLS ADVISORY COMMITTEE**

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# ACRONYMS AND ABBREVIATIONS

A Control Version

AGR Agriculture and Rural Development

BC Basic Competency

CBET Competency-Based Education and Training

CDACC Curriculum Development, Assessment and Certification Council

CR Core Competency

GAP Good Agricultural Practice

GMP Good Manufacturing Practice

ICT Information communication technology

NEMA National Environment Management Authority

OSH Occupational Safety and Health

SOPs Standard Operating Procedures

SPP Sweet Potato Production

SPVD Sweet Potato Virus Diseases

TVET Technical and Vocational Education and Training

# KEY TO UNIT CODE

AGR/OS/SPP/BC/01/3/A

Industry or sector

Occupational Standards

Occupational area

Type of competency

Competency number

Competency level

Control version

# OVERVIEW

Sweet Potato Production Certificate level 3 qualification consists of competencies that a person must achieve to carry out land preparation, produce sweet potato seed materials and sweet potato roots.

The units of competency leading to Sweet Potato Production certificate level 3 qualification include the following basic and core competencies:

**BASIC UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| AGR/OS/SPP/BC/01/3/A | Demonstrate communication skills |
| AGR/OS/SPP/BC/02/3/A | Demonstrate numeracy skills |
| AGR/OS/SPP/BC/03/3/A | Demonstrate digital literacy |
| AGR/OS/SPP/BC/04/3/A | Demonstrate entrepreneurial skills |
| AGR/OS/SPP/BC/05/3/A | Demonstrate employability skills |
| AGR/OS/SPP/BC/06/3/A | Demonstrate environmental literacy |
| AGR/OS/SPP/BC/07/3/A | Demonstrate Occupational safety and health practices |

**CORE UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| AGR/OS/SPP/CR/01/3/A | Carry out land preparation |
| AGR/OS/SPP/CR/02/3/A | Produce sweet potato seed materials |
| AGR/OS/SPP/CR/03/3/A | Produce sweet potato roots |

# BASIC UNITS OF COMPETENCY

# DEMONSTRATE COMMUNICATION SKILLS

**UNIT CODE:** AGR/OS/SPP/BC/01/3/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate communication skills. It involves obtaining and conveying workplace information, speaking English at a basic operational level, participating in workplace meetings and discussions, and completing relevant work-related documents.

**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. Obtain and convey workplace information | 1. Specific and relevant information is accessed from ***appropriate sources*** based on standard procedures 2. Effective questioning, active listening and speaking skills are used to gather and convey information based on communication needs 3. Appropriate ***medium*** is used to transfer information and ideas in accordance with workplace guidelines 4. Appropriate non- verbal communication is used as per the communication needs 5. Appropriate lines of communicationwith supervisors and colleagues are identified and followed based on workplace requirements 6. Location and storage of information is undertaken according to workplace procedures 7. Personal interaction is carried out clearly and concisely according to workplace requirements |
| 1. Speak English at a basic operational level | * 1. Participation in simple conversations with work colleagues is undertaken based on familiar topics   2. Simple verbal instructions and requests are responded to according to workplace guidelines   3. ***Routine procedures*** are provided in accordance with workplace policy   4. Likes, dislikes and preferences are expressed based on individual preference   5. Different forms of expression in English are identified in line with workplace requirements |
| 1. Participate in workplace meetings and discussions | * 1. Team meetings are attended on time according to schedules   2. Own opinions are clearly expressed and those of others are listened to in accordance with workplace guidelines   3. Meeting inputs are provided based on the meeting purpose and established ***protocols***   4. ***Workplace interactions*** are conducted as per organizations’ code of conduct   5. Work-related questions are asked and responded based on set protocols   6. Meetings outcomes are interpreted and implemented as per organizations’ objectives |
| 1. Complete relevant work-related documents | * 1. Range of forms relating to conditions of employment are completed according to workplace procedures   2. Workplace data is recorded based on workplace requirements   3. Errors in recording information are identified and acted upon in accordance with workplace policies   4. Reporting requirements are completed according to organizational guidelines |

**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. Appropriate Sources may include but not limited to: | * Various department heads, * organization documents |
| 1. Medium may include but not limited to: | * Method of communication * Physical media * Mechanical media |
| 1. Routine procedures may include but not limited to: | * Day to day activities |
| 1. Protocols may include but not limited to: | * Procedures for doing a task |
| 1. Workplace interactions may include but not limited to: | * Official inter relations |

**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
* Active Listening
* Communication
* writing
* Interpretation
* Basic Information Technology (IT)

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Minutes writing
* Report writing

**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. Prepared written communication following standard format of the organization 2. Accessed information using communication equipment 3. Spoken English at a basic operational level 4. Made use of relevant terms as an aid to transfer information effectively 5. Conveyed information effectively adopting the formal or informal communication |
| 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 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | * 1. Direct Observation   2. Interview   3. Written test |
| 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/SPP/BC/02/3/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate numeracy skills. It involves using whole numbers and money up to one hundred thousand for work, Locating, comparing and using highly familiar measurement for work, using highly familiar maps and diagrams for work, identifying and using some common 2D shapes for work and locating specific information in highly familiar tables, graphs and charts for work

**Elements and Performance Criteria**

| **Element** | **Performance Criteria** |
| --- | --- |
| Elements describe the essential outcomes. | Performance criteria describe the performance needed to demonstrate achievement of the element.  ***Bold and italicized terms*** ***are elaborated in the Range*** |
| 1. Use whole numbers for work | 1. Whole numbers and money amount up to 100,000 in highly familiar workplace documents and tasks are named and read according to workplace procedures. 2. Understanding of place value and the role of zero is demonstrate according to standard operating procedures. 3. Halves are recognised and understood in workplace as per Standard operating procedures. 4. Whole numbers and money amounting up to 100,000 are organised in size order and are compared as per workplace procedures. 5. Counting is done in numbers as per standard operating procedures. 6. Addition and subtraction of whole numbers and money up to 100,000 done in accordance with workplace requirement 7. Links between operations of addition and subtraction are clearly described as per job requirement. 8. Reasonableness of outcome with prompting and support is checked as per work requirement. 9. Numerical information is recorded, and the result of the task is communicated using informal language and symbolism as per workplace procedures. |
| 1. Locate, compare and use highly familiar measurement for work | 1. Measurements in highly familiar workplace documents and tasks are located as per standard operating procedures 2. Different units of measurements and their uses are identified in accordance with job specifications 3. The comparative relationship between the units of measurement identified as per standard operating procedures. 4. Understanding of conversion of amounts is demonstrated in accordance with requirements. 5. Informal language is used to compare measurements as per workplace procedures. 6. Digital time is well read and am and pm used in reference to time 7. Calendar used appropriately to record information in accordance with organizational events. 8. Basic measurement information is well read and recorded as per the manuals 9. Additions and subtraction of simple quantities done in workplace as per SOPs. |
| 1. Use highly familiar maps and diagrams for work | 1. Familiar items or places are in highly familiar maps and diagrams in accordance with SOPs 2. Simple symbols and pictorial representations are identified in accordance with familiar maps and diagrams 3. Simple oral directions are given to locate objects as per SOPs 4. Simple oral directions followed to locate objects as per job specifications 5. Understanding of informal directional language is demonstrated as per work procedures. |
| 1. Identify and use some common 2D shapes for work | 1. ***Common two-dimensional* shapes** are identified and named as per SOPs 2. Common objects are described in terms of size and shape as per SOPs 3. Common, every day, informal language is used to compare objects in accordance SOPs 4. Common objects are grouped based on shape, size, colour and features as per job requirements |
| 1. Locate specific Information in highly familiar tables, graphs and charts for work | 1. Features of simple tables identified as per work place procedures 2. Specific numerical information located in highly familiar tables using grid movement (up and down columns and across rows) and key as graph and chart manuals 3. Numerical information and data in highly familiar tables compared using appropriate informal language as per workplace procedures. 4. Information related to relevant workplace tasks as per workplace procedures 5. Features of simple graphs and charts identified as per SOPs 6. Specific numerical information located in highly familiar graphs and charts as per workplace procedures. 7. Numerical information and data compared using appropriate informal language as per SOPs. |

**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. Common two -dimensional shapes: may include but not limited to: | * + Round/circle   + Square   + Rectangular   + Triangle |

**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. Measured objects or materials as per job requirements   2. Used calculator to perform the four fundamental operations   3. Performed calculations involving money up to one hundred thousand   4. Performed conversions between hours, minutes and seconds   5. Calculated area and volume of regular shapes   6. Created tables and graphs to represent and interpret information | |
| 1. Resource Implications for competence assessment | 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 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written Test   2. Interview   3. Oral Questioning   4. Demonstration |
| 1. Context of Assessment | Competency may be assessed  4.1 On the job  4.2 Off the job  4.3 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 DIGITAL LITERACY

**UNIT CODE:** AGR/OS/SPP/BC/03/3/A

**UNIT DESCRIPTION**

This unit covers the competencies required to demonstrate digital literacy in a working environment. It entails identifying computer software and hardware, applying security measures to data, hardware, software, applying computer software in solving tasks and applying internet and email in communication at workplace.

**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 computer software and hardware | * 1. ***Computer software*** are identified according to manufacturer’s specification   2. ***Appropriate computer hardware*** is identified according to manufacturer’s specification |
| 1. Apply security measures to data, hardware, software | * 1. ***Data security and privacy are classified*** in accordance with the technological situation   2. ***Security and control measures*** are applied in accordance with laws governing protection of ICT   3. Computer threats and crimes are detected in accordance with information 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. Basic ***word processing concepts*** are applied in resolving workplace tasks as per job requirement.   2. ***Word processing utilities*** are applied in accordance with workplace procedures   3. Data is manipulated on worksheet in accordance with office procedures |
| 1. Apply internet and email in communication at workplace | * 1. Electronic mail is applied in workplace communication in accordance with office procedures   2. Office internet functions are defined and executed in accordance with office procedures   3. ***Network configuration*** and uses are determined in accordance with office operations 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. Computer software may include but not limited to: | * Operating system * MS office * Web browser   Media players |
| 1. Computer hardware may include but not limited to: | * Computer Case * Monitor * Keyboard * Mouse * Hard Disk Drive * Motherboard * Video Card |
| 1. Data security and privacy may include but not limited to: | * Confidentiality * Cloud computing * Confidentiality * Cyber terrorism * Integrity -but-curious data serving |
| 1. Security and control measures may include but not limited to: | * Countermeasures and risk reduction * Cyber threat issues * Risk management |
| 1. Word processing concepts may include but not limited to: | * Create * Edit * Print * Documents |

**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
* Computing skills
* Basic ICT skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Input and output devices
* Central processing Unit (CPU)
* Peripherals
* Storage Media
* Software concept
* Types of concept
* Function of computer software
* Data security and privacy
* Security threats and control measures
* Computer crimes
* Detection and protection of computer crimes
* Laws governing protection of ICT
* Word processing;
* Functions and concepts of word processing.
* Documents and tables creation and manipulations
* Mail merging
* Word processing utilities
* Spread sheet;
* Meaning, formulae, function and charts, uses, layout, data manipulation and application to cell
* Networking and Internet;
* Meaning, functions and uses of networking and internet.
* Electronic mail and world wide web
* Emerging trends and issues in ICT;
* Identify and apply emerging trends and issues in ICT
* Challenges posed by emerging trends and issues

**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 input, output, CPU and storage media devices of computers in accordance to computer specification   2. Identified concepts, types and functions of computer software according to operation manual   3. Identified and controlled security threats   4. Detected and protected computer crimes   5. Applied word processing in office tasks   6. Prepared work sheet and applied data to the cells in accordance to workplace procedures   7. Used Electronic Mail for office communication as per workplace procedure   8. Applied internet and World Wide Web for office tasks in accordance with office procedures   9. Applied laws governing protection of ICT |
| 1. Resource Implications for competence assessment | 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 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written Test   2. Observation   3. Practical assignment   4. Interview   5. Oral Questioning |
| 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 ENTREPRENEURIAL SKILLS

**UNIT CODE :** AGR/OS/SPP/BC/04/3/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate Entrepreneurial skills. It involves developing entrepreneurial culture, identifying entrepreneurial opportunities, starting, operating and growing a small business.

**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 entrepreneurial culture | 1. ***Entrepreneurship terminologies*** are defined following established procedures. 2. Contribution of entrepreneurship towards national development is identified in accordance to national development goals 3. Self-employment benefit are identified and emphasized to help create a positive attitude 4. Cultural factors that promote or inhibit entrepreneurial development areidentified and emphasis made on entrepreneurial promotion 5. Ways of managing factors that inhibit development of entrepreneurial culture are identified in accordance withcultural background and national social economic situation |
| 1. Identify entrepreneurial opportunities | 2.1 Myths associated with entrepreneurship, types of entrepreneurs and characteristics of entrepreneurship are determined in accordance with the set procedures  2.2 Identification of ***sources of business ideas,*** generation of business ideas is undertaken in accordance with the existing procedure  2.3 Evaluation of business opportunities is undertaken according to prevailing office procedures  2.4 Competencies are matched with business opportunities in accordance with business practices. |
| 1. Start a small business | 3.1 Factors to consider when starting a small business are identified according to business sector.  3.2 ***Forms of business ownership*** are identified and procedure of starting a small business stipulated according to relevant legal requirements  3.3 Procedure of starting a small business is identified as per the legal requirements  3.3 Challenges faced when starting a small business are identified and mitigating factors provided for in accordance prevailing legal and regulatory requirement  3.4 Resource requirement for a small business are specified according to nature of business  3.5 Business life cycle is projected as per the nature of business and national social economic situation |
| 1. Operate a small business | 4.1 Relevant terms are defined in accordance with the set rules  4..3 Small business record is maintained in accordance with office procedures  4.4 Business support services are set up in accordance with the nature and size of business  4.**5** Marketing activities are effected according to the nature and size of business  4.6 Small enterprise business plan is prepared depending on the size and nature of business and the client specification  4.6 Small business resources are run for efficiency and profitability  4.6 Small business records are kept for decision making purposes  4.7 Word processing concepts are applied in the management of small business according to office procedures  4.8 Basic computer application software and emerging trends and concerns are applied in small business management in accordance with office procedures |
| 1. Grow a small business | 5.1 Methods of growing/expanding a small business are identified and implemented in accordance with growth schedule  5.2 Resources for growing small business are identified and implementing  5.3 Small business growth plans are prepared according to growth schedule  5.4 ICT and small business growth schedule is prepared in accordance with office procedures  5.5 Use of computers and technology is incorporated in small scale business growth schedule in accordance with technological trends  5.6 Social media is used for business growth and profitability  5.7 Emerging issues and trends are considered in accordance with business growth schedule and activities  5.8 Community interest is built in product/service according to growth plan  5.9 Business communication is enhanced according to business communication planand profitability  5.10Basic business growth strategies are identified and implemented for increased profitability  5.11 Word processing concepts are applied in growing of small business according to office procedures  5.12 Basic computer application software, programming and emerging trends and concerns are applied in small business growth in accordance with office procedures for growth and profitability |

**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. Entrepreneurship terminologies include but not limited to: | * Intrapreneurship * Enterprise * Business vision. Mission, core values, objectives |
| 1. Sources of business ideas may include but not limited to: | |  | | --- | | * Brainstorming * Personal hobbies * Newspapers, magazines, * Friends and relatives * Accounting/Administrative work * Modern trends and concerns | |
| 1. Forms of business ownership may include but not limited to: | * Sole proprietorship * Partnership * Limited Company * Unlimited Company |

**REQUIRED SKILLS AND KNOWLEDGE**

**Required Skills**

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

The individual needs to demonstrate the following skills:

* Marketing skills
* Advertising
* Basic book-keeping
* accounting skills
* Communication skills

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Public relations concepts
* Basic product promotion strategies
* Basic market and feasibility studies
* Basic business ethics
* Building customer relations
* Business models and strategies
* Types and categories of businesses
* Business internal controls
* Relevant national and local legislation and regulations
* Basic quality control and assurance concepts
* Building relations with customer and employees
* Building competitive advantage of the enterprise

**EVIDENCE GUIDE**

This section describes the required skills which supports performance. These skills will need to be considered in the learning and assessment process.

|  |  |  |
| --- | --- | --- |
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:   |  | | --- | | 1.1 Demonstrated basic entrepreneurial skills  1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise  1.3 Demonstrated ability to manage/operate a micro/small-scale business  1.4 Demonstrated basic marketing skills | |
| 1. Resource Implications for assessment | 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 3. Materials relevant to the proposed activity or tasks |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   |  |  | | --- | --- | | 3.1 Written tests  3.2 Oral Questioning  3.3 Observation  3.4 Third Party Report |  | |
| 1. Context of Assessment | |  | | --- | | 4Competency may be assessed  4.1 On the job  4.2 Off the job  4.3 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/SPP/BC/05/3/A

**UNIT DESCRIPTON**

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating critical safe work habits, demonstrating workplace learning and 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 objectives 9. Self-strengths and weaknesses are identified based on personal objectives |
| 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. 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 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   * Alcohol * Tobacco * Miraa * Over-the-counter drugs * Cocaine * Bhang * Glue |
| 1. Feedback may include but not limited to: | * Verbal * Written * Informal * Formal |
| 1. Team may include but not limited to: | * Small work group * Staff in a section/department * Inter-agency group |
| 1. Innovation may include but not limited to: | * New ideas * Original ideas * Different ideas * Methods/procedures * Processes * New tools |
| 1. Emerging issues may include but not limited to: | * Terrorism * Social media * National cohesion * Open offices |

**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
* Record keeping
* Problem solving
* Decision Making
* Resource utilization

**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
* Organizing work
* Record keeping
* Workplace problems and how to deal with them
* Assertiveness
* Team work
* HIV and AIDS
* Drug and substance abuse
* Safe work habits
* Professional growth and development
* Technology in the workplace
* Innovation
* 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 critical safe work habits   3. Demonstrated workplace learning   4. 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/SPP/BC/06/3/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to demonstrate environmental literacy. It involves controlling environmental hazard, controlling environmental pollution and demonstrating sustainable resource use.

**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 and handling methods for environmentally hazardous materials are strictly followed according to environmental regulations and OSHS. 2. Disposal methods of hazardous wastes are followed at all times according to environmental regulations and OSHS. 3. ***PPE*** is used according to OSHS. |
| 1. Control environmental Pollution | * 1. ***Environmental pollution******control measures*** are complied with following standard protocol.   2. Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999   3. Methods for minimizing noise pollution complied following environmental regulations. |
| 1. Demonstrate sustainable use of resource | * 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 or reducing ***resource*** consumption are practiced. |

**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: | * + Mask   + Gloves   + Goggles   + Safety hat   + Overall   + Hearing protector |
| 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  1. Materials |
| 1. Workplace environmental hazards may include but not limited to: | 1. Biological hazards 2. Chemical and dust hazards 3. Physical hazards |

**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
* Observation
* Writing
* Analytical

**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
* Principle of 3Rs

**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 Controlled environmental hazard  1.2 Controlled environmental pollution  1.3 Demonstrated sustainable resource use |
| 1. Resource Implications for assessment | 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 |
| 1. Methods of Assessment | Competency in this unit may be assessed through:  3.1 Observation  3.2 Oral questioning  3.3 Written examination |
| 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/SPP/BC/07/3/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to practice and promote safety and health at work. This entails preparing to practice safety and health at work and complying and promoting compliance of workers to organization’s occupational safety and health instructions and requirements

**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. Prepare to practice safety and health at work | 1.1 Awareness of legislation that outlines the minimum standards for occupational safety and health requirements/ regulations are emphasized  1.2 Benefits of implementing an occupational safety and health program are identified  1.3 ***Safety requirements/ regulations*** of own work and of other workers are familiarized  1.4 Workplace standards and procedures ***for incidents and Emergencies*** are determined  1.5 ***Prevention and control measures***, including use of ***safety gears/PPE*** (Personal Protective Equipment) to avoid accident, injuries and sickness are identified |
| 1. Comply and promote compliance of workers to organization’s occupational safety and health instructions and requirements | 2.1 Safety instructions and safety signs are followed and disseminated to co-workers  2.2 Safe handling of tools, equipment and materials is learned and shared with co-workers  2.3 Execution of own work and of co-workers is monitored in  according to safe work procedures  2.4 Use of safe guards and safety devices is monitored  2.5 Hazards, incidents, injuries and sickness in the workplace are reported properly following standards and 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. ***Safety requirements / regulations*** may include but are not limited to: | * Building code * Permit to Operate * Occupational Safety and Health Standards |
| 1. ***Incidents and emergencies*** may include but are not limited to: | * Chemical spills * Equipment/vehicle accidents * Explosion * Fire * Gas leak * Injury to personnel * Structural collapse * Toxic and/or flammable vapors emission. |
| 1. ***Prevention and control measures*** may include but are not limited to: | * Eliminate the hazard * Isolate the hazard * Substitute the hazard with a safer alternative * Use administrative controls to reduce the risk * Use engineering controls to reduce the risk * Use personal protective equipment * Safety, Health and Work Environment Evaluation * Periodic and/or special medical examinations of workers |
| 1. ***Safety devices/ PPEs*** (personal protective equipment) May include but are not limited to: | * Arm/Hand guard, gloves * Eye protection (goggles, shield) * Hearing protection (ear muffs, ear plugs) * Hair Net/cap/bonnet * Hard hat * Face protection (mask, shield) * Apron/Gown/coverall/jump suit * Anti-static suits * High-visibility reflective vest |

**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
* Observation
* Reporting
* Organizing

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Elements of an effective occupational safety and health program
* Benefits of implementing an occupational safety and health program
* Safety requirements of own work and of other workers
* Standard emergency plan and procedures in the workplace
* Different OSH control measures
* General OSH principles
* Work standards and procedures
* Safe handling procedures of tools, equipment’s and materials
* Standard emergency plan and procedures in the workplace
* Different OSH control measures
* Standard accident and illness reporting procedures in the workplace
* Monitoring system on compliance to work safety and health

**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. Arranged work area and items in accordance with workplace procedures requirements 2. Followed work standards and procedures based on instructions 3. Applied ***Prevention and control measures*** based on instructions 4. Undertook orientations on ***OSH requirements and regulations*** in line with policy. 5. Provided feedback on occupational health and safety as per workplace instructions. 6. Adhered to workplace procedures for reporting hazards, incidents, injuries and sickness to as per workplace policy. 7. Identified and proposed ***OSH-related training needs*** as per workplace policy. |
| 1. Resource Implications for assessment | 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. |

# CORE UNITS OF COMPETENCY

# CARRY OUT LAND PREPARATION

**UNIT CODE:** AGR/OS/SPP/CR/01/3/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to carry out land preparation. It involves clearing land, installing soil, soil-water and water conservation structures, carrying out tillage and preparing seedbed.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up workplace function (to be stated in active) | **PERFORMANCE CRITERIA**  These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice)  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Clear land | * 1. Tools, equipment and materials for land clearanceare identified and assembled as per work place requirements   2. Land is cleared to establish a clean field for ploughing based on ***suitable parameters*** as per Good Agricultural Practices   3. Trash from the cleared land is disposed as per GAPs |
| 1. Install soil, soil-water and water conservation structures | * 1. Indicators of soil erosion and water loss within the farm are identified according to soil and soil-water conservation practices in the soil-water conservation manual   2. Type of ***soil, soil-water and water conservation structures*** to be installed are identified according to field condition, GAP procedures and best water conservation practices   3. Tools, equipment and materials for installing conservation structures are identified and assembled based on the type of structure to be constructed   4. Soil, soil-water, water conservation structures are installed based on soil-water conservation manual andprovided layout |
| 1. Carry out tillage | * 1. ***Land tillage practice*** is identified as per the GAPs   2. Tools, equipment and materials for use during tillage are identified and assembled as per type of tillage   3. Field is tilled as per GAPs requirements |
| 1. Prepare seedbed | * 1. ***Type of seedbed*** to be prepared is determined based on topography and available tools and implements   2. Tools, equipment and implements are identified and assembled based on type of seedbed to be prepared   3. Selected type of seedbed is prepared based on GAP and recommended spacing as per the AEZ |

**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. Suitable parameters may include but are not limited to: | * Vegetation   + Stumps   + Trees   + Grass |
| 1. Soil, soil-water and water conservation structures may include but are not limited to: | Soil conservation structures   * Fanya juu terraces * Cut off drains * Fanya chini terraces * Detention ditches * Grass strips * Hedge rows * Contour bunds   Soil – water conservation structures   * Water harvesting systems inside the farm * Water harvesting systems outside the farm * Trapozoidal bunds * Zai pits * Negarims * Mulching * Plastic membranes   Water conservation structures   * Water ponds |
| 1. Land tillage practices may include but are not limited to: | * Conservation agriculture * Minimum tillage * Conventional tillage * Zero tillage |
| 1. Type of seedbed may include but are not limited to: | * Rigdes * Mounds * Flatbeds |

**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:

* Technical
* Observation
* Problem solving
* Reporting
* Interpretation

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Use and management of tools, equipment and materials
* Bush clearing
* Types of conservation measures
* Construction of soil, soil-water and water conservation structures
* Tillage methods
* Making ridges and mounds

**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 assembled tools, equipment and materials for land preparation   2. Cleared land to establish a clean field for tillage   3. Identified types of soil, soil-water and water conservation measures   4. Constructed soil, soil-water and water conservation structures   5. Tilled land   6. Prepared seedbed |
| 1. Resource Implications | The following resources must 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. Oral   2. Written   3. Observation   4. Third party report   5. Practical test |
| 1. Context of Assessment | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# PRODUCE SWEET POTATO SEED MATERIALS

**UNIT CODE:** AGR/OS/SPP/CR/02/3/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to produce sweet potato seed materials. It involves carrying out site selection, preparing nursery bed and preparing planting materials. It also involves planting seed material, maintaining seed field, harvesting seed materials and handling harvested seed material.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up workplace function (to be stated in active) | **PERFORMANCE CRITERIA**  These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice)  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Carry out site selection | * 1. Land is assessed to establish the history of the farm based on good agricultural practices and survey findings.   2. A suitable location is identified based on method of vine multiplication to be used   3. Layout of farm plots is done based on land use practice requirements, history of farm use and ***physical land conditions*** |
| 1. Prepare nursery bed | * 1. ***Tools and equipment*** for preparing nursery bed are identified and assembled as per ***type of nursery beds***   2. For conventional multiplication, a seedbed is prepared based on the Good Agricultural Practices manual |
| 1. Prepare planting materials | * 1. ***Suitable variety*** is identified and selected based on demand   2. Tools and equipment are identified and assembled based on the types of nursery bed   3. Types of ***planting material*** are identified, selected and sourced as per Good Agricultural Practices and based on their quality and availability   4. Planting materials are ***prepared*** based on their condition and GAP |
| 1. Plant seed material | * 1. Planting holes are made based on recommended spacing and depth depending on type of planting material   2. ***Fertilizer*** is applied in the planting holes as per soil fertility recommendations   3. Planting materials are established based on the method of propagation identified and seed certification standards   4. Planted materials are watered based on soil moisture content |
| 1. Maintain seed bed | * 1. The seed bed is weeded based on the recommendations in Good Agricultural Practices   2. Gapping and ***rogueing*** is conducted based on GAPs   3. Common pests and diseases are identified and controlled based on the crop protection guidelines and seed certification standards   4. ***Additional maintenance activities*** of seed bed are done based on seed certification standards |
| 1. Harvest seed materials | * 1. ***Seed material quality*** is assessed before harvesting based on GAP and seed certification standards   2. Tools and equipment for harvesting and ***handling*** are identified and assembled as per GAPs   3. Vines are harvested as per the good agricultural practice guidelines for harvesting |
| 1. Handle harvested seed material | * 1. Conditioning of the vines by cooling is conducted as per the cold chain procedure   2. Harvested seed materials are cleaned as per SOPs   3. Harvested seed materials are sorted as per SOPs   4. Harvested seed materials are packaged as per SOPs   5. Harvested seed materials are stored as per GAP |

**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. Physical land conditions may include but are not limited to: | * Slope of land * Orientation of land * Existing land structures / plants / trees * Existing land features - stones * Land Shape   + Square   + Rectangle |
| 1. Tools and equipment may include but are not limited to: | * Jembe * Measuring line * Demarcation sticks |
| 1. Suitable variety may include but are not limited to: | * Adaptability to ecological requirements * Customer preferences |
| 1. Planting materials may include but are not limited to: | * Vines * Seedlings |
| 1. Prepared may include but are not limited to: | * Hardening * Cutting clean vines to recommended sizes * Preservation |
| 1. Fertilizer may include but are not limited to: | * Organic fertilizer * Inorganic fertilizer |
| 1. Rogueing may include but are not limited to: | Manual removal of;   * Off types * Diseased plants * Obnoxious weeds |
| 1. Additional maintenance activities may include but are not limited to: | * Maintain recommended isolation distance between sweet potato variety and related crop * Maintain purity of planted variety * Recommended visits by regulator * Application of top dress or foliar fertilizer |
| 1. Seed material quality may include but are not limited to: | * Health status * True-to-type |
| 1. Handling may include but are not limited to: | * Storage * Packaging * Transportation |

**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:

* Estimation
* Observation
* Pest and disease identification and control
* Nursery management

**Required Knowledge**

The individual needs to demonstrate knowledge of

* Crop protection
* Plant morphology
* Computing

**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 a suitable location   2. Performed layout of farm plots   3. Identified suitable variety   4. Identified tools and equipment for preparing nursery bed   5. Demarcated beds   6. Prepared seedbed   7. Identified types of planting materials   8. Cut clean planting materials   9. Preserved planting materials   10. Established planting materials   11. Watered planted materials   12. Applied fertilizer   13. Weeded the seed bed   14. Conducted gapping and rogueing   15. Identified and controlled pests and diseases   16. Maintained seed bed   17. Harvested seed material   18. Performed post-harvest activities |
| 1. Resource Implications | The following resources must 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. Oral   2. Written   3. Third party report   4. Observation |
| 1. Context of Assessment | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

# PRODUCE SWEET POTATO ROOTS

**UNIT CODE:** AGR/OS/SPP/CR/03/3/A

**UNIT DESCRIPTION**

This unit specifies the competencies required to produce sweet potato roots. It involves preparing land, sourcing planting materials, supplies and other inputs and planting sweet potato seed materials. It also involves managing sweet potato crop, harvesting sweet potato roots and handling harvested sweet potato roots.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up workplace function (to be stated in active) | **PERFORMANCE CRITERIA**  These are **assessable statements** which specify the required level of performance for each of the elements (to be stated in passive voice)  ***Bold and italicized terms are elaborated in the Range*** |
| 1. Prepare land | * 1. Location and actual site to grow sweet potato for root production is identified based on ***suitability***   2. Tools and equipment are identified and assembled as per the scale of production   3. Land is prepared to achieve the ***recommended tilth*** as per good agricultural practices and scale of operation.   4. Preparation of ridges and mounds done as per GAP and dictated by prevailing ***field conditions and grower’s preference***. |
| 1. Source planting materials, supplies and other inputs | * 1. Sweet potato variety to plant is identified based on adaptability and market demand   2. ***Quality planting materials***, supplies and inputs are sourced as per ecological features and GAPs   3. ***Planting materials*** preparedbased on GAP |
| 1. Plant sweet potato seed materials | * 1. ***Appropriate time for planting*** is determined as per crop establishment requirement and crop rotational schedule   2. ***Right spacing, depth and orientation*** are identified as per GAPs   3. Approved ***fertilizer*** is applied based on ***Soil analysis recommendations*** given   4. Actual planting is carried out as per GAPs |
| 1. Manage sweet potato crop | * 1. ***Soil fertility is maintained*** based on GAP   2. Rogueing is carried out as per GAP.   3. Gapping is done to replace missing plants in the field within the first two weeks after planting as per GAP   4. The crop is ***kept free of weeds*** within the first two months after planting according to GAP.   5. ***Earthing up*** is carried out when cracks are noticed as per GAP   6. ***Diseases and pests*** are identified and ***managed*** to maximize fresh root yield as per GAP and applicable food safety standards |
| 1. Harvest sweet potato roots | * 1. Maturity indicators on the crop are identified before harvesting as per GAP   2. ***Preparation*** for harvesting is carried out according to GAP.   3. Roots are harvested either piece meal or completely using appropriate ***tools and equipment*** as per GAP and Kenya standards for handling sweet potato roots |
| 1. Handle harvested sweet potato roots | * 1. Harvested roots are transported from the field as per good handling practices   2. Harvested roots are sorted as per SOPs and Kenya standards for handling sweet potato roots   3. Harvested roots are washed as per SOPs and Kenya standards for handling sweet potato roots   4. Harvested roots are packaged as per GAP and Kenya standards for handling sweet potato roots   5. Harvested roots are stored as per GAP and Kenya standards for handling sweet potato roots |

**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. Suitability may include but are not limited to: | * Soil condition * Climatic condition * History of field use * Neighboring crops * Pest and disease prevalence |
| 1. Recommended tilth may include but are not limited to: | * Ploughing * Harrowing * Number of operations * Depth of ploughing * Minimum tillage * Root development and enlargement |
| 1. Field conditions and grower’s preference may include but are not limited to: | * Flat land * Sloppy land * Swamps/poorly drained fields * Labour availability * Mole infestation * Making of ridges and mounds at the required spacing |
| 1. Quality planting materials may include but are not limited to: | * Planting materials not showing symptoms of virus diseases * Planting materials to be sourced from plants of 2 to 3 months * Free of weevils, weevil eggs, larvae or pupae. * Cuttings from vine tips * Use of insecticides to treat materials with weevils * Conservation of planting materials |
| 1. Planting materials may include but are not limited to: | * Vine cuttings |
| 1. Appropriate time of planting may include but are not limited to: | * Sufficient soil moisture * Pest infestation |
| 1. Fertilizer application may include but are not limited to: | * Fertilizer recommendations on;   + Recommended/ approved type of fertilizer   + Recommended fertilizer application rate |
| 1. Right spacing, depth and orientation may include but are not limited to: | * Spacing of ridges and mounds * Spacing of vine cuttings * Insertion of cuttings in the soil * Depth of planting * Orientation of cuttings at planting * Planting on the mounds * Planting on ridges * Number of vines required per acre |
| 1. Fertilizer applied may include but are not limited to: | * Organic fertilizer * Inorganic fertilizer |
| 1. Soil fertility is maintained may include but are not limited to: | * Mulching * Reduction in soil erosion |
| 1. Kept free of weeds may include but are not limited to: | * Time and number of weeding * Hand weeding * Recomended tools for weeding * Mulching * Use of herbicides |
| 1. Earthing up may include but are not limited to: | * Filing up of cracks * Covering exposed roots with soil |
| 1. Diseases and pests may include but are not limited to: | Sweet potato diseases   * Sweet potato virus disease * Erinose (hairiness)   Pests   * Weevils * Aphids * Moles * Monkeys * Foliage * Root pest |
| 1. Managed may include but are not limited to: | * Chemically * Biologically * Culturally * Manually   + Rogueing |
| 1. Preparation may include but are not limited to: | * Purpose for harvesting * Tools and other requirements * Cutting back * Market/disposal. |
| 1. Harvesting tools and equipment may include but are not limited to: | * Jembe/fork * Ox plough * Tractor drawn implements * Crates * Gunny bags |

**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
* Computer
* Maintenance
* Problem solving
* Critical thinking
* Observation
* Interpretation
* Preparation of planting materials
* Chemical application
* Field layout
* Variety identification
* Pest identification

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Common sweet potato crop varieties
* Measurement units; length, weights, heights
* Good agricultural practices
* Land preparation/Tillage
* Farm tools
* Diseases and pests
* Soils and soil fertility
* Weed management
* Adaptability of sweet potato varieties
* Seed multiplication
* Indigenous technical knowledge
* Moisture stress
* Drainage
* Crop rotation
* Crop protection
* Post-harvest handling

**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 necessary input requirements for root production 2. Identified suitable site 3. Identified common recommended varieties 4. Identified different types of sweet potatoes based on flesh / skin colour 5. Identified and selected tools used in land preparation 6. Made seedbed for root production 7. Made ridges and mounds at the right spacing 8. Selected and prepared clean planting material 9. Applied fertilizer and manure as recommended 10. Planting materials inserted in the soil at the right spacing, depth and orientation 11. Maintained soil fertility 12. Weeded crop 13. Covered cracks by earthing up 14. Took control measures to manage diseases and pests. 15. Harvested mature crops using appropriate tools 16. Took precautions for maintaining fresh root quality 17. Sorted, washed, packaged and stored harvested sweet potato roots |
| 1. Resource Implications | The following resources must 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 3. Land or field for demonstration |
| 1. Methods of Assessment | Competency in this unit may be assessed through:   * 1. Oral   2. Written   3. Third party report   4. Observation |
| 1. Context of Assessment | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |