



# NATIONAL BOARD FOR TECHNICAL EDUCATION

PLOT B BIDA ROAD, P.M.B. 2239, KADUNA, NIGERIA

IN COLLABORATION WITH



## NATIONAL OCCUPATIONAL STANDARDS (NOS)

### ROOT AND TUBER CROPS PRODUCTION LEVELS 4 - 5

JUNE, 2026



**RENEWED HOPE  
IN AGRICULTURE**

## **PREFACE**

The development of the National Occupational Standards (NOS) for the agricultural sector marks another important milestone in Nigeria's commitment to strengthening Technical and Vocational Education and Training (TVET), promoting skills development, and improving workforce productivity. These standards have been developed to provide nationally recognized benchmarks for the knowledge, skills, and competencies required for effective performance in various agricultural occupations. The National Occupational Standards were developed through a collaborative process involving industry experts, employers, professional bodies, regulatory agencies, training institutions, development partners, and other key stakeholders. Their contributions ensured that the standards reflect current industry practices, emerging technologies, and the competency requirements of the modern agricultural sector. I wish to express my sincere appreciation to the Honourable Minister of Education for providing the policy direction that made this initiative possible. I also acknowledge the support of the Honourable Minister of Agriculture and Food Security and the Honourable Minister of Livestock Development for their commitment to advancing agricultural skills development in Nigeria. I extend my profound gratitude to the Tertiary Education Trust Fund (TETFund) for its intervention and support, which facilitated the development of these National Occupational Standards. I also appreciate the invaluable contributions of the Sector Skills Council for Agriculture (SSC4A), members of the Implementation Committee, resource persons, industry practitioners, employers, professional associations, regulatory agencies, the French Embassy in Nigeria, development partners, and all stakeholders who contributed their expertise throughout the development process. These National Occupational Standards will serve as an important reference for competency-based training, assessment, certification, apprenticeship, Recognition of Prior Learning (RPL), and workforce development within the agricultural sector. It is my expectation that all implementing institutions and industry partners will effectively utilize these standards to enhance the quality, relevance, and competitiveness of agricultural skills development in Nigeria. I commend all stakeholders for their dedication and commitment to this important national assignment and look forward to the successful implementation of these National Occupational Standards for the benefit of the agricultural sector and the nation as a whole.

Professor Idris M. Bugaje, FNSE  
Chairman, Implementation Committee

### **EXECUTIVE SECRETARY**

National Board for Technical Education (NBTE), Kaduna

## TABLE OF CONTENTS

|                                                                                   |    |
|-----------------------------------------------------------------------------------|----|
| PREFACE .....                                                                     | 1  |
| NATIONAL SKILLS QUALIFICATION (NSQ).....                                          | 4  |
| TABLE OF CONTENTS.....                                                            | 5  |
| GENERAL INFORMATION .....                                                         | 7  |
| NATIONAL SKILLS QUALIFICATION TABLE .....                                         | 8  |
| QUALIFICATION STRUCTURE .....                                                     | 8  |
| GENERAL GUIDE .....                                                               | 9  |
| UNIT 001: HEALTH AND SAFETY .....                                                 | 10 |
| UNIT 002: COMMUNICATION .....                                                     | 12 |
| UNIT 003: TEAMWORK .....                                                          | 15 |
| UNIT 004: SITE SELECTION, SOIL FERTILITY AND CROP NUTRITION.....                  | 17 |
| UNIT 005: LAND PREPARATION .....                                                  | 18 |
| UNIT 006: NURSERY AND PLANTING PRACTICES .....                                    | 21 |
| UNIT 007: INTEGRATED PEST AND DISEASE MANAGEMENT .....                            | 23 |
| UNIT 008: HARVESTING AND POST-HARVEST HANDLING .....                              | 25 |
| UNIT 009: STORAGE AND PROCESSING TECHNOLOGY .....                                 | 27 |
| Unit 010: Transport logistics and Marketing .....                                 | 30 |
| Unit 011: Sustainable Farming and Environmental Conservation .....                | 32 |
| NATIONAL SKILLS QUALIFICATION (NSQ).....                                          | 33 |
| GENERAL INFORMATION .....                                                         | 34 |
| NATIONAL SKILLS QUALIFICATION TABLE .....                                         | 35 |
| QUALIFICATION STRUCTURE .....                                                     | 36 |
| GENERAL GUIDE .....                                                               | 37 |
| UNIT 002: COMMUNICATION Systems in the Work Environment.....                      | 40 |
| UNIT 003: TEAM WORK AND COLLABORATIVE WORK PRACTICES .....                        | 43 |
| UNIT 004: AGRIBUSINESS AND ENTREPRENEURSHIP .....                                 | 46 |
| UNIT 005: SOIL AND WATER RESOURCE MANAGEMENT .....                                | 49 |
| UNIT 006: PRECISION AGRICULTURE AND INFORMATION COMMUNICATION<br>TECHNOLOGY ..... | 52 |
| UNIT 007: MECHANIZATION IN ROOT AND TUBER CROP PRODUCTION .....                   | 55 |
| UNIT 008: BIOTECHNOLOGY APPLICATIONS IN ROOT AND TUBER CROPS .....                | 58 |
| Unit 009: INDUSTRIAL PROCESSING OF ROOT AND TUBER CROPS.....                      | 60 |
| UNIT 010: STORAGE AND PRESERVATION TECHNOLOGY .....                               | 63 |
| UNIT 011: MARKETING STRATEGIES AND EXPORT PROCEDURES.....                         | 65 |
| UNIT 012: AGRICULTURAL RESEARCH AND POLICY COMPLIANCE.....                        | 67 |
| LIST OF MINIMUM REQUIREMENTS/PHYSICAL FACILITIES .....                            | 70 |

|                                     |    |
|-------------------------------------|----|
| LIST OF WORKSHOP PARTICIPANTS ..... | 72 |
|-------------------------------------|----|



**NATIONAL SKILLS QUALIFICATION (NSQ)**

**ROOT AND TUBER CROPS PRODUCTION**

**LEVEL 4**

**JUNE, 2026**



## TABLE OF CONTENTS

|                                                                    |    |
|--------------------------------------------------------------------|----|
| NATIONAL SKILLS QUALIFICATION (NSQ) .....                          | 1  |
| LEVEL 4-5.....                                                     | 1  |
| PREFACE.....                                                       | 2  |
| NATIONAL SKILLS QUALIFICATION (NSQ) .....                          | 4  |
| LEVEL 4.....                                                       | 4  |
| GENERAL INFORMATION.....                                           | 6  |
| NATIONAL SKILLS QUALIFICATION TABLE .....                          | 7  |
| QUALIFICATION STRUCTURE.....                                       | 8  |
| GENERAL GUIDE .....                                                | 9  |
| Unit 001: Health and Safety.....                                   | 11 |
| Unit 002: Communication.....                                       | 13 |
| Unit 003: Teamwork .....                                           | 15 |
| Unit 005: Mechanized Land Preparation .....                        | 19 |
| Unit 008: Harvesting and Post-Harvest Handling .....               | 25 |
| Unit 010: Transport logistics and Marketing .....                  | 29 |
| Unit 011: Sustainable Farming and Environmental Conservation ..... | 31 |
| NATIONAL SKILLS QUALIFICATION (NSQ) .....                          | 32 |
| LEVEL 5.....                                                       | 32 |
| GENERAL INFORMATION.....                                           | 33 |
| NATIONAL SKILLS QUALIFICATION TABLE .....                          | 34 |
| QUALIFICATION STRUCTURE.....                                       | 34 |
| GENERAL GUIDE .....                                                | 35 |
| Unit 001: Health and safety .....                                  | 37 |
| Unit 002: Communication Systems in The Work Environment.....       | 39 |
| Unit 003: Teamwork and Collaborative Work Practices .....          | 41 |
| Unit 004: Agribusiness and Entrepreneurship .....                  | 43 |
| Unit 005: Soil and Water Resource Management.....                  | 46 |
| Unit 006: Precision agriculture and ICT .....                      | 48 |
| Unit 007: Mechanization in Root and tuber crops production.....    | 50 |
| Unit 008: Biotechnology applications in Root and tuber crops.....  | 52 |
| Unit 009: Industrial Processing of Root and tuber crops .....      | 54 |
| Unit 010: Storage and Preservation Technology .....                | 57 |
| UNIT 011: Marketing strategies and export procedures.....          | 60 |
| UNIT 012: Agricultural research and policy compliance.....         | 62 |
| LIST OF MINIMUM REQUIREMENTS/PHYSICAL FACILITIES.....              | 64 |

|                                     |    |
|-------------------------------------|----|
| LIST OF WORKSHOP PARTICIPANTS ..... | 66 |
|-------------------------------------|----|



## GENERAL INFORMATION

### OVERVIEW

This qualification is designed for individuals who are interested in pursuing a career in **Root and tuber crops production** for the award of National Skills Qualifications (NSQ). It is aimed at producing Supervisors II with competencies in **Root and tuber crops production**. This qualification is subject to review as and when the need arises.

### QUALIFICATION PURPOSE

This qualification is targeted at developing competence in **Root and tuber crops production**. This is focused on supervising root and tuber processing and production lines, manage quality assurance systems, control production efficiency, team and resource management, and ensure compliance with regulatory standards.

### QUALIFICATION REQUIREMENTS

All Candidates must:

- a. Be at least eighteen (18) years of age
- b. Be medically fit
- c. Be mentally fit (Mental alertness)
- d. Have achieved NSQ Level 3 in Root and Tuber Crop Production
- e. Be a Nigerian
- f. Other nationals (should in addition present international passport and residence permit)

### QUALIFICATION OBJECTIVES

To achieve this qualification, the learner should have the following competencies:

- i. Apply occupational health and safety practices for Root and tuber crops production.
- ii. Carry out supervisory communication skills for effective workplace interaction in crop production.
- iii. Develop leadership, collaboration, and compliance skills for effective teamwork in crop production
- iv. Select suitable sites, managing soil fertility, and crop nutrition.
- v. Carry out mechanized land clearing, tillage, and soil conservation.
- vi. Carry out nursery establishment and planting operations.
- vii. Identify and control pests and diseases.
- viii. Apply harvesting techniques, post-harvest handling, grading, packaging, and hygiene management for Root and tuber crops.
- ix. Carry out modern storage and processing technologies for Root and tuber crops.
- x. Carry out transport logistics and marketing strategies for Root and tuber crops.
- xi. Apply sustainable farming practices and environmental conservation.

**NATIONAL SKILLS QUALIFICATION TABLE**

| S/N          | Reference Number | NOS Title                                          | Credit Value | Guided Learning Hours | Practice Hours | Remark         |
|--------------|------------------|----------------------------------------------------|--------------|-----------------------|----------------|----------------|
| 1            | AGR/RTP/001/L4   | Health and Safety                                  | 3            | 30                    | 80             | Mandatory Unit |
| 2            | AGR/RTP/002/L4   | Communication                                      | 3            | 30                    | 80             | Mandatory Unit |
| 3            | AGR/RTP/003/L4   | Teamwork                                           | 3            | 30                    | 80             | Mandatory Unit |
| 4            | AGR/RTP/004/L4   | Site Selection, Soil Fertility and Crop Nutrition  | 6            | 60                    | 200            | Mandatory Unit |
| 5            | AGR/RTP/005/L4   | Mechanized Land Preparation                        | 6            | 60                    | 200            | Mandatory Unit |
| 6            | AGR/RTP/006/L4   | Nursery and Planting Practices                     | 6            | 60                    | 200            | Mandatory Unit |
| 7            | AGR/RTP/007/L4   | Integrated Pest and Disease Management             | 6            | 60                    | 200            | Mandatory Unit |
| 8            | AGR/RTP/008/L4   | Harvesting and Post-Harvest Handling               | 6            | 60                    | 200            | Mandatory Unit |
| 9            | AGR/RTP/009/L4   | Storage and Processing Technology                  | 5            | 50                    | 180            | Mandatory Unit |
| 10           | AGR/RTP/010/L4   | Transport Logistics and Marketing                  | 4            | 40                    | 150            | Mandatory Unit |
| 11           | AGR/RTP/011/L4   | Sustainable Farming and Environmental Conservation | 4            | 40                    | 150            | Mandatory Unit |
| <b>TOTAL</b> |                  |                                                    | <b>52</b>    | <b>520</b>            | <b>1720</b>    |                |

**QUALIFICATION STRUCTURE**

This qualification comprises a total of eleven (11) Mandatory Units, with a credit value of 52 and 520 Guided Learning Hours (GLH) across the full qualification. One (1) credit is equivalent to ten (10) GLH. Guided Learning Hours are the time a learner spends in the classroom, workshop and laboratory of the Skills Training Centre (STC), being taught, instructed, supervised or assessed by a qualified trainer, facilitator or assessor.

In addition to the GLH, the qualification requires at least twice or thrice the GLH as practice time. Practice time is the time a learner is expected to spend applying the skills of each unit in a real workplace environment, carrying out the same tasks repeatedly until performance

becomes consistent, accurate and habitual to the standard the qualification demands. It is undertaken under the guidance of a workplace supervisor, recorded in the learner's logbook and duly endorsed. Practice time is the principal setting where core assessment is conducted. It is through repeated performance in the workplace that a learner's achievement of the Learning Outcomes and Performance Criteria is judged and evidenced. Practice time is an additional requirement to GLH and does not replace them.

To achieve this qualification, the learner must complete all mandatory units, undertake the prescribed practice time, and accumulate the minimum credit value approved by NBTE. Credit is awarded only when a learner has been assessed as competent against all Learning Outcomes and Performance Criteria of a unit.

### GENERAL GUIDE

|                                   |                                                                                                                                                |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unit title</b>                 | Provides a clear explanation of the content of the unit.                                                                                       |
| <b>Unit number</b>                | The unique number assigned to the unit                                                                                                         |
| <b>Unit reference</b>             | The unique reference number given to each unit at qualification approval by NBTE                                                               |
| <b>Unit level</b>                 | Denotes the level of the unit within the Nigerian Skills Qualification framework NSQF.                                                         |
| <b>Unit credit value</b>          | The value that has been given to the unit based on the expected learning time for an average learner.<br>1 credit = 10 learning hours          |
| <b>Unit aim</b>                   | Provides a brief outline of the unit content.                                                                                                  |
| <b>Learning outcome</b>           | A statement of what a learner will know, understand or be able to do, as a result of a process of learning.                                    |
| <b>Assessment criteria</b>        | A description of the requirements a learner must achieve to demonstrate that a learning outcome has been met.                                  |
| <b>Unit assessment guidance</b>   | Any additional guidance provided to support the assessment of the unit.                                                                        |
| <b>Unit guided learning hours</b> | The average number of hours of supervised or directed study time or assessment required to achieve a qualification or unit of a qualification. |

## UNIT 001: HEALTH AND SAFETY

**Unit Reference Number:** AGR/RTP/001/L4

**NSQ Level:** 4

**Credit Value:** 3

**Guided Learning Hours:** 30

**Practice Time:** 80 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to equip learners with advanced knowledge and skills in occupational health and safety practices for Root and tuber crops production.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

**Unit 001: Health and Safety**

| <b>LEARNING OUTCOME (LO) The learner will:</b>             |     | <b>PERFORMANCE CRITERIA The learner can:</b> | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|------------------------------------------------------------|-----|----------------------------------------------|----------------------|-------------------------------|
| <b>LO 1:<br/>Apply advanced workplace safety practices</b> | 1.1 | Demonstrate correct use of PPE               |                      |                               |
|                                                            | 1.2 | Conduct risk assessments                     |                      |                               |
|                                                            | 1.3 | Follow safety signage and instructions       |                      |                               |
|                                                            | 1.4 | Apply safe work habits consistently          |                      |                               |
| <b>LO 2:<br/>Manage emergency response</b>                 | 2.1 | Identify emergency exits.                    |                      |                               |
|                                                            | 2.2 | Administer basic first aid                   |                      |                               |
|                                                            | 2.3 | Coordinate evacuation procedures             |                      |                               |
|                                                            | 2.4 | Report incidences                            |                      |                               |
| <b>LO 3:<br/>Identify hazards and risks</b>                | 3.1 | Recognize unsafe conditions                  |                      |                               |
|                                                            | 3.2 | Record hazards in workplace log              |                      |                               |
|                                                            | 3.3 | Suggest corrective measures                  |                      |                               |
|                                                            | 3.4 | Monitor hazard resolution                    |                      |                               |
| <b>LO 4:<br/>Promote hygienic workplace</b>                | 4.1 | Maintain clean work areas                    |                      |                               |
|                                                            | 4.2 | Dispose waste properly                       |                      |                               |
|                                                            | 4.3 | Apply sanitation practices                   |                      |                               |
|                                                            | 4.4 | Encourage hygiene among team members         |                      |                               |

|                                    |       |
|------------------------------------|-------|
| Learner's Signature:               | Date: |
| Assessor's Signature:              | Date: |
| IQA Signature (if sampled):        | Date: |
| <b>EQA Signature (if sampled):</b> | Date: |

## UNIT 002: COMMUNICATION

|                               |                |
|-------------------------------|----------------|
| <b>Unit Reference Number:</b> | AGR/RTP/002/L4 |
| <b>NSQ Level:</b>             | 4              |
| <b>Credit Value:</b>          | 3              |
| <b>Guided Learning Hours:</b> | 30             |
| <b>Practice Time:</b>         | 80 hours       |
| <b>Unit Status:</b>           | Mandatory Unit |

**Unit Purpose:** This unit is designed to provide learners with supervisory communication skills for effective workplace interaction in Root and tuber crops production.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**Unit 002: Communication**

| <b>LEARNING OUTCOME (LO) The learner will:</b>                      |     | <b>PERFORMANCE CRITERIA The learner can:</b> | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|---------------------------------------------------------------------|-----|----------------------------------------------|----------------------|-------------------------------|
| <b>LO 1: Demonstrate effective supervisory communication skills</b> | 1.1 | Deliver clear instructions                   |                      |                               |
|                                                                     | 1.2 | Use respectful language                      |                      |                               |
|                                                                     | 1.3 | Apply active listening                       |                      |                               |
|                                                                     | 1.4 | Provide constructive feedback                |                      |                               |
| <b>LO 2: Apply documentation skills</b>                             | 2.1 | Prepare accurate reports                     |                      |                               |
|                                                                     | 2.2 | Maintain records                             |                      |                               |
|                                                                     | 2.3 | Document errors and solutions                |                      |                               |
|                                                                     | 2.4 | File workplace communications                |                      |                               |
| <b>LO 3: Interpret verbal and non-verbal signs</b>                  | 3.1 | Recognize tone of voice                      |                      |                               |
|                                                                     | 3.2 | Interpret body language                      |                      |                               |
|                                                                     | 3.3 | Clarify ambiguous messages                   |                      |                               |
|                                                                     | 3.4 | Respond appropriately                        |                      |                               |
| <b>LO 4: Resolve workplace conflicts</b>                            | 4.1 | Identify sources of conflict                 |                      |                               |
|                                                                     | 4.2 | Apply negotiation techniques                 |                      |                               |
|                                                                     | 4.3 | Mediate disputes fairly                      |                      |                               |
|                                                                     | 4.4 | Document resolutions                         |                      |                               |

|                                    |       |
|------------------------------------|-------|
| Learner's Signature:               | Date: |
| Assessor's Signature:              | Date: |
| IQA Signature (if sampled):        | Date: |
| <b>EQA Signature (if sampled):</b> | Date: |



### UNIT 003: TEAMWORK

**Unit Reference Number:** AGR/RTP/003/L4

**NSQ Level:** 4

**Credit Value:** 3

**Guided Learning Hours:** 30

**Practice Time:** 80 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to develop leadership, collaboration, and compliance skills for effective teamwork in Root and tuber crops production.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

#### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**Unit 003: Teamwork**

| <b>LEARNING OUTCOME (LO) The learner will:</b>           |     | <b>PERFORMANCE CRITERIA The learner can:</b> | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|----------------------------------------------------------|-----|----------------------------------------------|----------------------|-------------------------------|
| <b>LO 1: Lead and motivate teams</b>                     | 1.1 | Assign roles effectively                     |                      |                               |
|                                                          | 1.2 | Monitor team performance                     |                      |                               |
|                                                          | 1.3 | Encourage collaboration                      |                      |                               |
|                                                          | 1.4 | Recognize achievements                       |                      |                               |
| <b>LO 2: Ensure compliance with organizational rules</b> | 2.1 | Apply codes of conduct                       |                      |                               |
|                                                          | 2.2 | Enforce discipline                           |                      |                               |
|                                                          | 2.3 | Follow organizational standards              |                      |                               |
|                                                          | 2.4 | Report non-compliance                        |                      |                               |
| <b>LO 3: Define roles and responsibilities</b>           | 3.1 | Clarify duties                               |                      |                               |
|                                                          | 3.2 | Align tasks with skills                      |                      |                               |
|                                                          | 3.3 | Ensure accountability                        |                      |                               |
|                                                          | 3.4 | Review responsibilities regularly            |                      |                               |
| <b>LO 4: Evaluate team performance</b>                   | 4.1 | Assess outcomes                              |                      |                               |
|                                                          | 4.2 | Provide feedback                             |                      |                               |
|                                                          | 4.3 | Recommend improvements                       |                      |                               |
|                                                          | 4.4 | Document evaluations                         |                      |                               |

|                                    |       |
|------------------------------------|-------|
| Learner's Signature:               | Date: |
| Assessor's Signature:              | Date: |
| IQA Signature (if sampled):        | Date: |
| <b>EQA Signature (if sampled):</b> | Date: |

**UNIT 004: SITE SELECTION, SOIL FERTILITY AND CROP NUTRITION****Unit Reference Number:** AGR/RTP/004/L4**NSQ Level:** 4**Credit Value:** 6**Guided Learning Hours:** 60**Practice Time:** 200 hours**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to equip learners with knowledge and skills in selecting suitable sites, managing soil fertility, and crop nutrition.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

**Unit Assessment Requirements/Evidence Requirements**

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

**Unit 004: Site selection, Soil fertility and Crop nutrition**

| LEARNING OUTCOME (LO) The learner will:                          |     | PERFORMANCE CRITERIA The learner can: | Evidence Type | Evidence Ref. Page No. |
|------------------------------------------------------------------|-----|---------------------------------------|---------------|------------------------|
| <b>LO 1:</b><br><b>Evaluate soil properties</b>                  | 1.1 | Carry out soil sampling               |               |                        |
|                                                                  | 1.2 | Conduct soil tests                    |               |                        |
|                                                                  | 1.3 | Classify soil types                   |               |                        |
|                                                                  | 1.4 | Recommend soil use                    |               |                        |
| <b>LO 2:</b><br><b>Identify suitable climate</b>                 | 2.1 | Identify rainfall patterns            |               |                        |
|                                                                  | 2.2 | Evaluate sunshine levels              |               |                        |
|                                                                  | 2.3 | Match crops to climate                |               |                        |
|                                                                  | 2.4 | Recommend suitable sites              |               |                        |
| <b>LO 3:</b><br><b>Apply crop nutrition management practices</b> | 3.1 | Recommend fertilizers                 |               |                        |
|                                                                  | 3.2 | Adjust inputs                         |               |                        |
|                                                                  | 3.3 | Record nutrition practices            |               |                        |
| <b>LO 4:</b><br><b>Recommend soil amendments</b>                 | 4.1 | Propose organic inputs                |               |                        |
|                                                                  | 4.2 | Propose inorganic inputs              |               |                        |
|                                                                  | 4.3 | Apply amendments correctly            |               |                        |
|                                                                  | 4.4 | Monitor soil improvement              |               |                        |

|                                    |       |
|------------------------------------|-------|
| Learner's Signature:               | Date: |
| Assessor's Signature:              | Date: |
| IQA Signature (if sampled):        | Date: |
| <b>EQA Signature (if sampled):</b> | Date: |



### UNIT 005: LAND PREPARATION

**Unit Reference Number:** AGR/RTP/005/L4

**NSQ Level:** 4

**Credit Value:** 6

**Guided Learning Hours:** 60

**Practice Time:** 200 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to provide learners with skills in mechanized land clearing, tillage, and soil conservation.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

#### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)

2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**Unit 005: Mechanized Land Preparation**

| <b>LEARNING OUTCOME (LO) The learner will:</b>  |     | <b>PERFORMANCE CRITERIA The learner can:</b> | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|-------------------------------------------------|-----|----------------------------------------------|----------------------|-------------------------------|
| <b>LO 1: Apply mechanized land clearing</b>     | 1.1 | Operate tractors                             |                      |                               |
|                                                 | 1.2 | Plough fields                                |                      |                               |
|                                                 | 1.3 | Harrow fields                                |                      |                               |
|                                                 | 1.4 | Level fields                                 |                      |                               |
|                                                 | 1.5 | Ridge seedbeds                               |                      |                               |
| <b>LO 2: Manage debris and crop residues</b>    | 2.1 | Dispose non-biodegradable debris             |                      |                               |
|                                                 | 2.2 | Carry out composting                         |                      |                               |
|                                                 | 2.3 | Apply compost                                |                      |                               |
| <b>LO 3: Apply soil conservation strategies</b> | 3.1 | Prevent erosion                              |                      |                               |
|                                                 | 3.2 | Apply mulching                               |                      |                               |
|                                                 | 3.3 | Maintain soil structure                      |                      |                               |
| <b>LO 4: Maintain farm tools</b>                | 4.1 | Clean tools                                  |                      |                               |
|                                                 | 4.2 | Sharpen blades                               |                      |                               |
|                                                 | 4.3 | Repair damaged tools                         |                      |                               |
|                                                 | 4.4 | Store tools properly                         |                      |                               |

Learner's Signature:

Date:

Assessor's Signature:

Date:

IQA Signature (if sampled):

Date:

**EQA Signature (if sampled):**

Date:

## UNIT 006: NURSERY AND PLANTING PRACTICES

**Unit Reference Number:** AGR/RTP/006/L4

**NSQ Level:** 4

**Credit Value:** 6

**Guided Learning Hours:** 60

**Practice Time:** 200 hours

**Unit Status:** Mandatory Unit

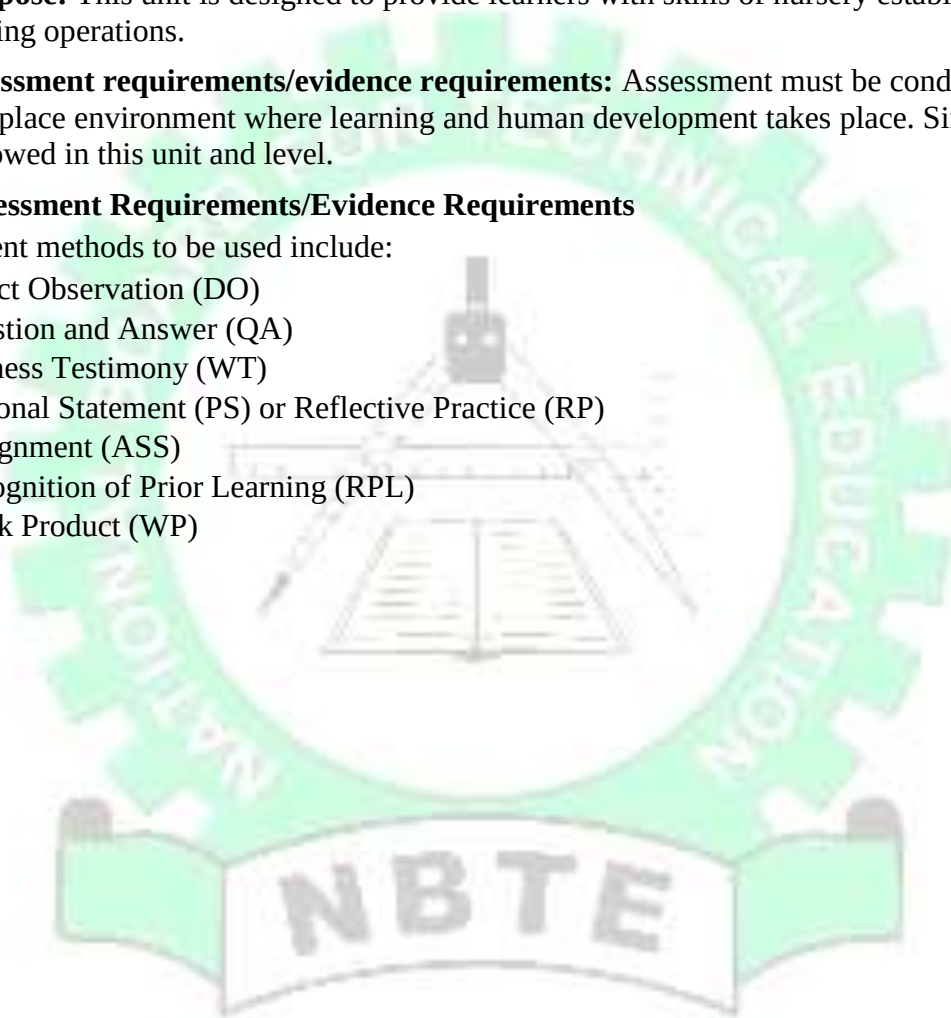
**Unit Purpose:** This unit is designed to provide learners with skills of nursery establishment and planting operations.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**Unit 006: Nursery and Planting Practices**

| <b>LEARNING OUTCOME (LO) The learner will:</b> |     | <b>PERFORMANCE CRITERIA The learner can:</b>    | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|------------------------------------------------|-----|-------------------------------------------------|----------------------|-------------------------------|
| <b>LO 1: Establish nurseries</b>               | 1.1 | Select site                                     |                      |                               |
|                                                | 1.2 | Prepare nursery beds                            |                      |                               |
|                                                | 1.3 | Construct sheds                                 |                      |                               |
|                                                | 1.4 | Ensure adequate water supply                    |                      |                               |
|                                                | 1.5 | Apply good agronomic practices(GAP)             |                      |                               |
| <b>LO 2: Implement planting operations</b>     | 2.1 | Plant at the right time                         |                      |                               |
|                                                | 2.2 | Plant at correct spacing                        |                      |                               |
|                                                | 2.3 | Apply planting depth                            |                      |                               |
|                                                | 2.4 | Use correct tools                               |                      |                               |
|                                                | 2.5 | Monitor germination                             |                      |                               |
| <b>LO 3: Select and dress seeds/cuttings</b>   | 3.1 | Select viable seeds                             |                      |                               |
|                                                | 3.2 | Treat seeds                                     |                      |                               |
|                                                | 3.3 | Prepare stem cuttings                           |                      |                               |
|                                                | 3.4 | Store seeds properly                            |                      |                               |
| <b>LO 4: Apply irrigation</b>                  | 4.1 | Install irrigation system                       |                      |                               |
|                                                | 4.2 | Irrigate with the recommended quantity of water |                      |                               |
|                                                | 4.3 | Monitor soil moisture                           |                      |                               |
|                                                | 4.4 | Prevent waterlogging                            |                      |                               |

|                                    |              |
|------------------------------------|--------------|
| Learner's Signature:               | Date:        |
| Assessor's Signature:              | Date:        |
| IQA Signature (if sampled):        | Date:        |
| <b>EQA Signature (if sampled):</b> | <b>Date:</b> |

## UNIT 007: INTEGRATED PEST AND DISEASE MANAGEMENT

**Unit Reference Number:** AGR/RTP/007/L4

**NSQ Level:** 4

**Credit Value:** 6

**Guided Learning Hours:** 60

**Practice Time:** 200 hours

**Unit Status:** Mandatory Unit

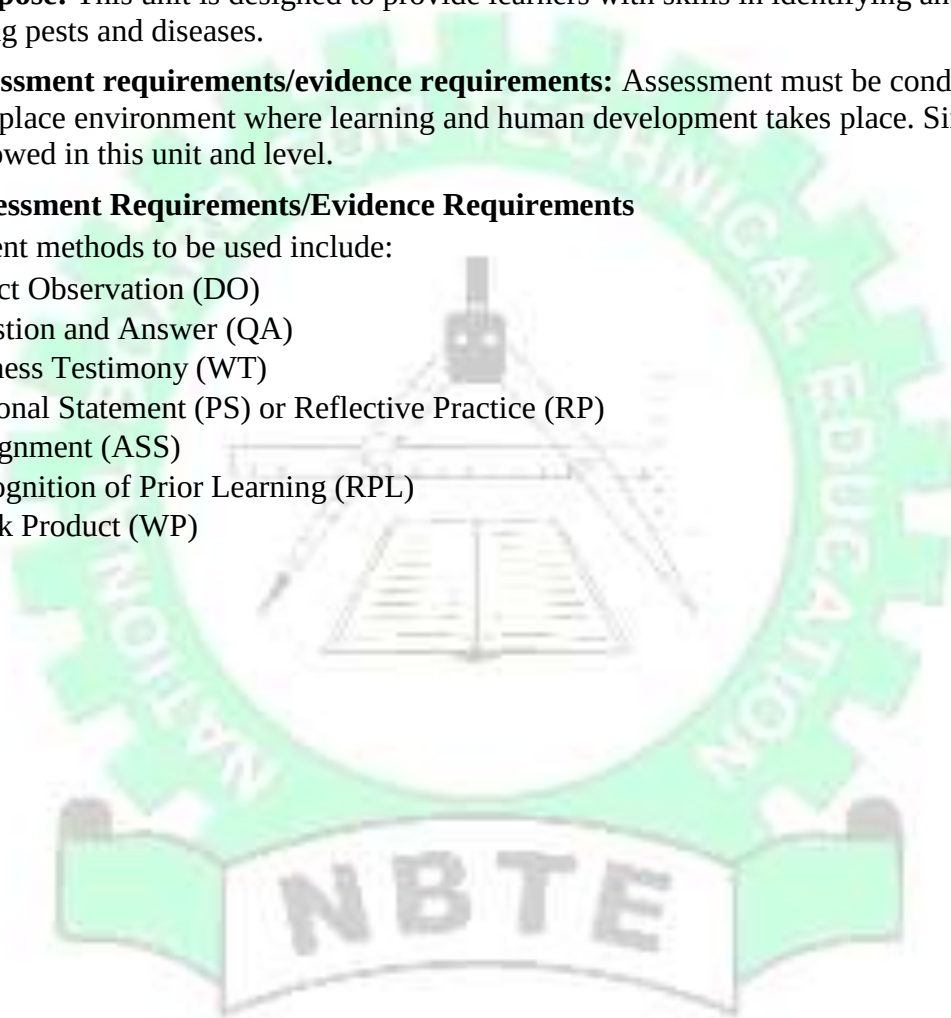
**Unit Purpose:** This unit is designed to provide learners with skills in identifying and controlling pests and diseases.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**Unit 007: Integrated Pest and Disease Management**

| <b>LEARNING OUTCOME (LO) The learner will:</b>  |     | <b>PERFORMANCE CRITERIA The learner can:</b> | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|-------------------------------------------------|-----|----------------------------------------------|----------------------|-------------------------------|
| <b>LO 1: Identify pests and diseases</b>        | 1.1 | Identify diseases symptoms                   |                      |                               |
|                                                 | 1.2 | Classify pest types                          |                      |                               |
|                                                 | 1.3 | Record infestations                          |                      |                               |
|                                                 | 1.4 | Differentiate diseases                       |                      |                               |
| <b>LO 2: Apply integrated control methods</b>   | 2.1 | Use biological controls                      |                      |                               |
|                                                 | 2.2 | Apply cultural practices                     |                      |                               |
|                                                 | 2.3 | Use chemical controls responsibly            |                      |                               |
|                                                 | 2.4 | Combine methods effectively                  |                      |                               |
| <b>LO 3: Monitor pest resistance</b>            | 3.1 | Track resistance trends                      |                      |                               |
|                                                 | 3.2 | Record changes                               |                      |                               |
|                                                 | 3.3 | Explore other control methods                |                      |                               |
|                                                 | 3.4 | Report findings                              |                      |                               |
| <b>LO 4: Report infestations and Infections</b> | 4.1 | Document pest activities                     |                      |                               |
|                                                 | 4.2 | Prepare reports                              |                      |                               |
|                                                 | 4.3 | Share findings                               |                      |                               |
|                                                 | 4.4 | Recommend actions                            |                      |                               |

|                                    |       |
|------------------------------------|-------|
| Learner's Signature:               | Date: |
| Assessor's Signature:              | Date: |
| IQA Signature (if sampled):        | Date: |
| <b>EQA Signature (if sampled):</b> | Date: |

## UNIT 008: HARVESTING AND POST-HARVEST HANDLING

**Unit Reference Number:** AGR/RTP/008/L4

**NSQ Level:** 4

**Credit Value:** 6

**Guided Learning Hours:** 60

**Practice Time:** 200 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to provide learners with skills in harvesting techniques, post-harvest handling, grading, packaging, and hygiene management for Root and tuber crops.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

**Unit 008: Harvesting and Post-Harvest Handling**

| <b>LEARNING OUTCOME (LO) The learner will:</b> |     | <b>PERFORMANCE CRITERIA The learner can:</b>            | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|------------------------------------------------|-----|---------------------------------------------------------|----------------------|-------------------------------|
| <b>LO 1: Apply harvesting techniques</b>       | 1.1 | Assess crop maturity before harvesting                  |                      |                               |
|                                                | 1.2 | Use appropriate harvesting tools                        |                      |                               |
|                                                | 1.3 | Minimize crop damage during harvesting                  |                      |                               |
|                                                | 1.4 | Harvest crops efficiently within recommended timeframes |                      |                               |
| <b>LO 2: Manage post-harvest handling</b>      | 2.1 | Sort crops according to quality standards               |                      |                               |
|                                                | 2.2 | Store harvested crops in suitable facilities            |                      |                               |
|                                                | 2.3 | Maintain correct temperature and humidity levels        |                      |                               |
| <b>LO 3: Grade crops</b>                       | 3.1 | Classify crops into grades based on size and quality    |                      |                               |
|                                                | 3.2 | Ensure grading meets market standards                   |                      |                               |
|                                                | 3.3 | Prepare sub-grade materials for alternative markets     |                      |                               |
|                                                | 3.4 | Label graded materials accurately for traceability      |                      |                               |
| <b>LO 4: Package crops</b>                     | 4.1 | Use appropriate packaging materials                     |                      |                               |
|                                                | 4.2 | Ensure packaging meets market standards                 |                      |                               |
|                                                | 4.3 | Label packages accurately for traceability              |                      |                               |
| <b>LO 5: Maintain hygiene standards</b>        | 5.1 | Clean tools and equipment after use                     |                      |                               |
|                                                | 5.2 | Sanitize storage and packaging areas                    |                      |                               |
|                                                | 5.3 | Apply personal hygiene practices during handling        |                      |                               |
|                                                | 5.4 | Prevent contamination through safe practices            |                      |                               |

|                                    |       |
|------------------------------------|-------|
| Learner's Signature:               | Date: |
| Assessor's Signature:              | Date: |
| IQA Signature (if sampled):        | Date: |
| <b>EQA Signature (if sampled):</b> | Date: |

## UNIT 009: STORAGE AND PROCESSING TECHNOLOGY

**Unit Reference Number:** AGR/RTP/009/L4

**NSQ Level:** 4

**Credit Value:** 5

**Guided Learning Hours:** 50

**Practice Time:** 180 hours

**Unit Status:** Mandatory Unit

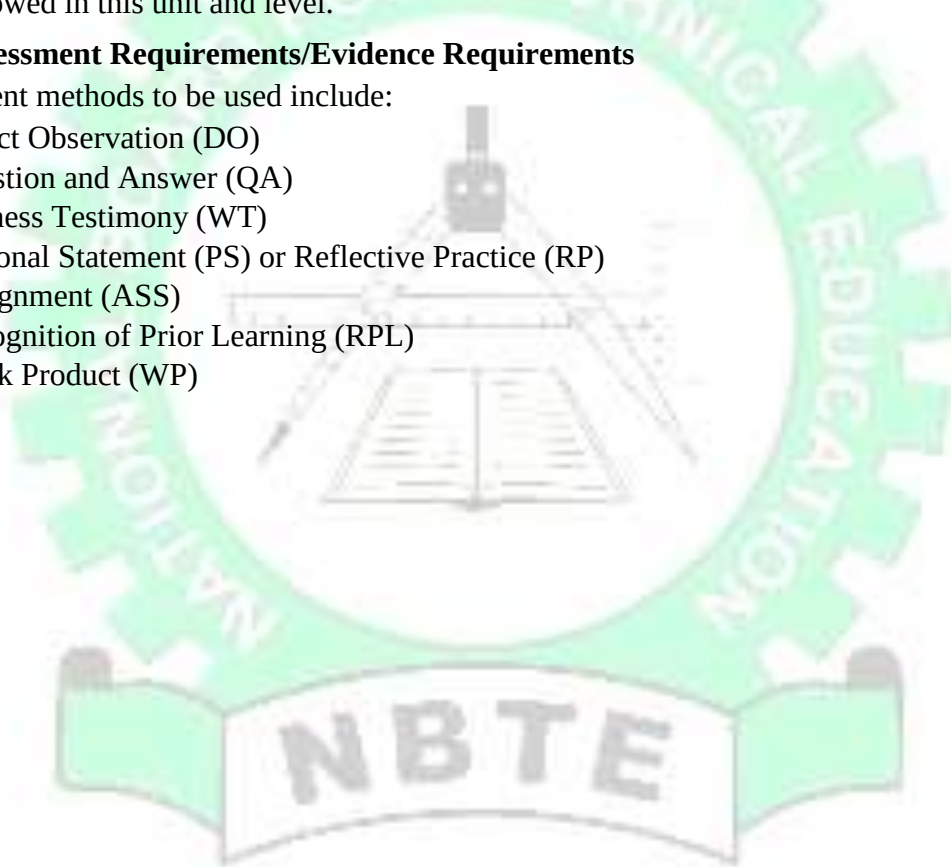
**Unit Purpose:** This unit is designed to provide learners with knowledge and skills in modern storage and processing technologies for Root and tuber crops.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**Unit 009: Storage and Processing Technology**

| <b>LEARNING OUTCOME (LO) The learner will:</b>       |     | <b>PERFORMANCE CRITERIA The learner can:</b> | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|------------------------------------------------------|-----|----------------------------------------------|----------------------|-------------------------------|
| <b>LO 1: Apply modern storage methods</b>            | 1.1 | Use cold storage facilities                  |                      |                               |
|                                                      | 1.2 | Use ventilated warehouse systems             |                      |                               |
|                                                      | 1.3 | Monitor storage conditions                   |                      |                               |
|                                                      | 1.4 | Prevent spoilage during storage              |                      |                               |
| <b>LO 2: Process crops into value-added products</b> | 2.1 | Operate processing equipment                 |                      |                               |
|                                                      | 2.2 | Apply correct processing techniques          |                      |                               |
|                                                      | 2.3 | Ensure product quality                       |                      |                               |
|                                                      | 2.4 | Maintain equipment hygiene                   |                      |                               |
| <b>LO 3: Ensure food safety compliance</b>           | 3.1 | Follow food safety regulations               |                      |                               |
|                                                      | 3.2 | Apply sanitation standards                   |                      |                               |
|                                                      | 3.3 | Prevent contamination                        |                      |                               |
|                                                      | 3.4 | Document compliance records                  |                      |                               |
| <b>LO 4: Maintain storage facilities</b>             | 4.1 | Inspect facilities regularly                 |                      |                               |
|                                                      | 4.2 | Repair damaged structures                    |                      |                               |
|                                                      | 4.3 | Maintain ventilation systems                 |                      |                               |
|                                                      | 4.4 | Record maintenance activities                |                      |                               |

|                                    |       |
|------------------------------------|-------|
| Learner's Signature:               | Date: |
| Assessor's Signature:              | Date: |
| IQA Signature (if sampled):        | Date: |
| <b>EQA Signature (if sampled):</b> | Date: |

## UNIT 010: TRANSPORT LOGISTICS AND MARKETING

**Unit Reference Number:** AGR/RTP/010/L4

**NSQ Level:** 4

**Credit Value:** 4

**Guided Learning Hours:** 40

**Practice Time:** 150 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to provide learners with knowledge and skills in transport logistics and marketing strategies for Root and tuber crops.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**UNIT 010: TRANSPORT LOGISTICS AND MARKETING**

| <b>LEARNING OUTCOME (LO) The learner will:</b> |     | <b>PERFORMANCE CRITERIA The learner can:</b> | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|------------------------------------------------|-----|----------------------------------------------|----------------------|-------------------------------|
| <b>LO 1: Manage transport logistics</b>        | 1.1 | Plan transport routes                        |                      |                               |
|                                                | 1.2 | Minimize losses during transit               |                      |                               |
|                                                | 1.3 | Ensure timely delivery                       |                      |                               |
|                                                | 1.4 | Monitor transport costs                      |                      |                               |
| <b>LO 2: Apply marketing strategies</b>        | 2.1 | Conduct market surveys                       |                      |                               |
|                                                | 2.2 | Promote products effectively                 |                      |                               |
|                                                | 2.3 | Use branding techniques                      |                      |                               |
|                                                | 2.4 | Apply pricing strategies                     |                      |                               |
| <b>LO 3: Negotiate with buyers</b>             | 3.1 | Identify potential buyers                    |                      |                               |
|                                                | 3.2 | Secure fair pricing                          |                      |                               |
|                                                | 3.3 | Draft agreements                             |                      |                               |
|                                                | 3.4 | Maintain buyer relationships                 |                      |                               |
| <b>LO 4: Conduct market surveys</b>            | 4.1 | Collect market data                          |                      |                               |
|                                                | 4.2 | Analyze demand trends                        |                      |                               |
|                                                | 4.3 | Identify competitors                         |                      |                               |
|                                                | 4.4 | Recommend marketing improvements             |                      |                               |

|                                    |       |
|------------------------------------|-------|
| Learner's Signature:               | Date: |
| Assessor's Signature:              | Date: |
| IQA Signature (if sampled):        | Date: |
| <b>EQA Signature (if sampled):</b> | Date: |

## UNIT 011: SUSTAINABLE FARMING AND ENVIRONMENTAL CONSERVATION

**Unit Reference Number:** AGR/RTP/011/L4

**NSQ Level:** 4

**Credit Value:** 4

**Guided Learning Hours:** 40

**Practice Time:** 150 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to provide learners with knowledge and skills in sustainable farming practices and environmental conservation.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

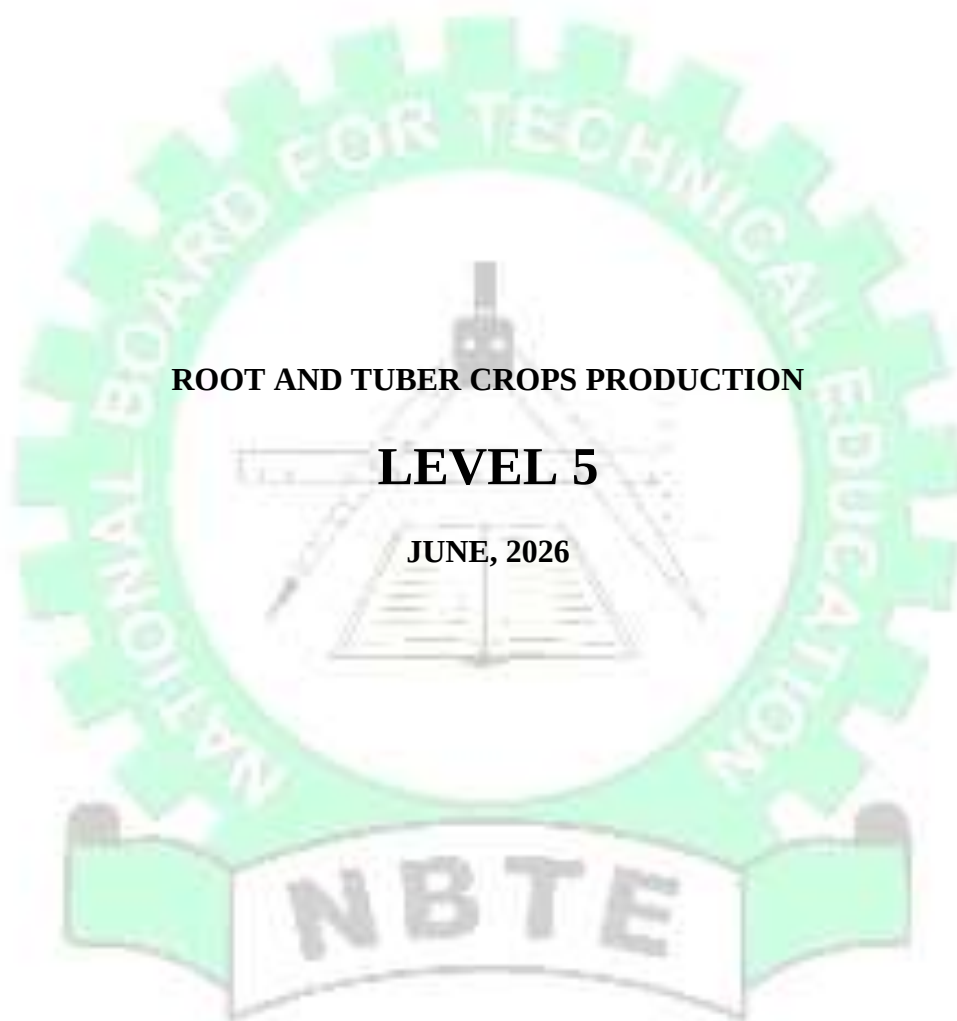
1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

**UNIT 011: SUSTAINABLE FARMING AND ENVIRONMENTAL CONSERVATION**

| <b>LEARNING OUTCOME (LO) The learner will:</b>   |     | <b>PERFORMANCE CRITERIA The learner can:</b>          | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|--------------------------------------------------|-----|-------------------------------------------------------|----------------------|-------------------------------|
| <b>LO 1: Apply sustainable practices</b>         | 1.1 | Use organic inputs                                    |                      |                               |
|                                                  | 1.2 | Apply crop rotation                                   |                      |                               |
|                                                  | 1.3 | Conserve water resources                              |                      |                               |
|                                                  | 1.4 | Apply energy-saving methods                           |                      |                               |
| <b>LO 2: Promote environmental conservation</b>  | 2.1 | Prevent deforestation                                 |                      |                               |
|                                                  | 2.2 | Protect biodiversity                                  |                      |                               |
|                                                  | 2.3 | Encourage eco-friendly practices                      |                      |                               |
| <b>LO 3: Implement resource management</b>       | 3.1 | Monitor resource use                                  |                      |                               |
|                                                  | 3.2 | Apply recycling methods                               |                      |                               |
|                                                  | 3.3 | Manage waste effectively                              |                      |                               |
|                                                  | 3.4 | Document resource conservation                        |                      |                               |
| <b>LO 4: Educate community on sustainability</b> | 4.1 | Conduct awareness campaigns                           |                      |                               |
|                                                  | 4.2 | Mount eco-friendly practices with farming communities |                      |                               |
|                                                  | 4.3 | Share conservation knowledge                          |                      |                               |
|                                                  | 4.4 | Promote community participation                       |                      |                               |

|                                    |       |
|------------------------------------|-------|
| Learner's Signature:               | Date: |
| Assessor's Signature:              | Date: |
| IQA Signature (if sampled):        | Date: |
| <b>EQA Signature (if sampled):</b> | Date: |

**NATIONAL SKILLS QUALIFICATION (NSQ)**



## GENERAL INFORMATION

### OVERVIEW

This qualification is designed for individuals who are interested in pursuing a career in **Root and tuber crops production** for the award of National Skills Qualifications (NSQ). It is aimed at producing Supervisors I with competencies in **Root and tuber crops production**. This qualification is subject to review as and when the need arises.

### QUALIFICATION PURPOSE

This qualification is targeted at developing competence in **Root and tuber crops production**. This is focused on supervising root and tuber processing and production lines, manage quality assurance systems, control production efficiency, team and resource management, and ensure compliance with regulatory standards.

### QUALIFICATION REQUIREMENTS

All Candidates must:

1. Be at least twenty (20) years of age
2. Be medically fit
3. Be mentally fit (Mental alertness)
4. Have achieved NSQ Level 4 in Root and Tuber Crop Production
5. Be a Nigerian
6. Other nationals (should in addition present international passport and residence permit)

### QUALIFICATION OBJECTIVES

To achieve this qualification, the learner should have the following competencies:

- i Design, implement and audit comprehensive occupational health and safety management systems for medium-to-large Root and tuber crops enterprises.
- ii Strategic communication, negotiation and stakeholder engagement skills for agribusiness leadership.
- iii Lead multidisciplinary teams, manage human resources and foster innovation in crop production enterprises.
- iv Develop learners' capacity to create, manage and scale agribusiness enterprises in the root and tuber value chain.
- v Design and manage integrated soil fertility and water resource systems for sustainable, high-yield root and tuber production.
- vi Apply precision agriculture tools and ICT for data-driven decision making in root and tuber production.
- vii Plan, supervise and optimize mechanized planting and related operations for large-scale root and tuber production.
- viii Apply advanced crop protection strategies and appropriate biotechnology techniques to improve crop resilience and productivity
- ix Manage industrial-scale harvesting and processing operations, ensuring efficiency, quality and compliance with food industry standards.
- x Design and manage advanced storage and preservation systems to extend shelf life and maintain quality of root and tuber products
- xi Develop market strategies, meet export requirements and access regional and international markets for root and tuber products

- xii Design and conduct applied agricultural research and ensure enterprise compliance with agricultural policies, standards and regulations.

**NATIONAL SKILLS QUALIFICATION TABLE**

| S/N | Reference Number | NOS Title                                          | Credit Value | Guided Learning Hours | Practice Hours | Remark         |
|-----|------------------|----------------------------------------------------|--------------|-----------------------|----------------|----------------|
| 1   | AGR/RTP/001/L5   | Health, Safety, and Environmental Practices        | 3            | 30                    | 80             | Mandatory Unit |
| 2   | AGR/RTP/002/L5   | Communication Systems in the Work Environment      | 3            | 30                    | 80             | Mandatory Unit |
| 3   | AGR/RTP/003/L5   | Teamwork and Collaborative Work Practices          | 3            | 30                    | 80             | Mandatory Unit |
| 4   | AGR/RTP/004/L5   | Agribusiness and Entrepreneurship                  | 6            | 60                    | 200            | Mandatory Unit |
| 5   | AGR/RTP/005/L5   | Soil and Water Resource Management                 | 6            | 60                    | 200            | Mandatory Unit |
| 6   | AGR/RTP/006/L5   | Precision Agriculture and ICT                      | 5            | 50                    | 180            | Mandatory Unit |
| 7   | AGR/RTP/007/L5   | Mechanization in Root and Tuber Crop Production    | 8            | 80                    | 300            | Mandatory Unit |
| 8   | AGR/RTP/008/L5   | Biotechnology applications in Root and tuber crops | 6            | 60                    | 200            | Mandatory Unit |
| 9   | AGR/RTP/009/L5   | Industrial Processing of Root and tuber crops      | 6            | 60                    | 200            | Mandatory Unit |
| 10  | AGR/RTP/010/L5   | Storage and Preservation Technology                | 6            | 60                    | 200            | Mandatory Unit |
| 11  | AGR/RTP/011/L5   | Marketing Strategies and Export Procedures         | 5            | 50                    | 180            | Mandatory Unit |
| 12  | AGR/RTP/012/L5   | Agricultural Research and                          | 4            | 40                    | 150            | Mandatory Unit |

|       |  |                   |           |            |             |  |
|-------|--|-------------------|-----------|------------|-------------|--|
|       |  | Policy Compliance |           |            |             |  |
| TOTAL |  |                   | <b>61</b> | <b>610</b> | <b>2050</b> |  |

### QUALIFICATION STRUCTURE

This qualification comprises a total of twelve (12) Mandatory Units, with a credit value of 61 and 610 Guided Learning Hours (GLH) across the full qualification. One (1) credit is equivalent to ten (10) GLH. Guided Learning Hours are the time a learner spends in the classroom, workshop and laboratory of the Skills Training Centre (STC), being taught, instructed, supervised or assessed by a qualified trainer, facilitator or assessor.

In addition to the GLH, the qualification requires at least twice or thrice the GLH as practice time. Practice time is the time a learner is expected to spend applying the skills of each unit in a real workplace environment, carrying out the same tasks repeatedly until performance becomes consistent, accurate and habitual to the standard the qualification demands. It is undertaken under the guidance of a workplace supervisor, recorded in the learner's logbook and duly endorsed. Practice time is the principal setting where core assessment is conducted. It is through repeated performance in the workplace that a learner's achievement of the Learning Outcomes and Performance Criteria is judged and evidenced. Practice time is an additional requirement to GLH and does not replace them.

To achieve this qualification, the learner must complete all mandatory units, undertake the prescribed practice time, and accumulate the minimum credit value approved by NBTE. Credit is awarded only when a learner has been assessed as competent against all Learning Outcomes and Performance Criteria of a unit.

**GENERAL GUIDE**

|                                   |                                                                                                                                                |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unit title</b>                 | Provides a clear explanation of the content of the unit.                                                                                       |
| <b>Unit number</b>                | The unique number assigned to the unit                                                                                                         |
| <b>Unit reference</b>             | The unique reference number given to each unit at qualification approval by NBTE                                                               |
| <b>Unit level</b>                 | Denotes the level of the unit within the Nigerian Skills Qualification framework NSQF.                                                         |
| <b>Unit credit value</b>          | The value that has been given to the unit based on the expected learning time for an average learner.<br>1 credit = 10 learning hours          |
| <b>Unit aim</b>                   | Provides a brief outline of the unit content.                                                                                                  |
| <b>Learning outcome</b>           | A statement of what a learner will know, understand or be able to do, as a result of a process of learning.                                    |
| <b>Assessment criteria</b>        | A description of the requirements a learner must achieve to demonstrate that a learning outcome has been met.                                  |
| <b>Unit assessment guidance</b>   | Any additional guidance provided to support the assessment of the unit.                                                                        |
| <b>Unit guided learning hours</b> | The average number of hours of supervised or directed study time or assessment required to achieve a qualification or unit of a qualification. |

**UNIT 001: HEALTH AND SAFETY****Unit Reference Number:** AGR/RTP/001/L5**NSQ Level:** 5**Credit Value:** 3**Guided Learning Hours:** 30**Practice Time:** 80 hours**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to enable learners to design, implement and audit comprehensive occupational health and safety management systems for medium-to-large Root and tuber crops enterprises.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

**Unit Assessment Requirements/Evidence Requirements**

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

## Unit 001: Health and safety

| <b>LEARNING OUTCOME (LO) The learner will:</b>          |     | <b>PERFORMANCE CRITERIA<br/>The learner can:</b>                                                 | <b>Evidence Type</b> |  |  |  | <b>Evidence Ref. Page No.</b> |  |  |  |
|---------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------|----------------------|--|--|--|-------------------------------|--|--|--|
| <b>LO 1: Implement safety management systems</b>        | 1.1 | Draft clear safety policies and procedures for operations.                                       |                      |  |  |  |                               |  |  |  |
|                                                         | 1.2 | Implement incident reporting and investigation systems.                                          |                      |  |  |  |                               |  |  |  |
|                                                         | 1.3 | Document safety responsibilities across roles.                                                   |                      |  |  |  |                               |  |  |  |
|                                                         | 1.4 | Integrate safety requirements into operational plans and Standard Operational Procedures (SOPs). |                      |  |  |  |                               |  |  |  |
|                                                         | 1.5 |                                                                                                  |                      |  |  |  |                               |  |  |  |
| <b>LO 2: Conduct safety audits and risk assessments</b> | 2.1 | Carry out scheduled safety inspections and audits.                                               |                      |  |  |  |                               |  |  |  |
|                                                         | 2.2 | Identify hazards and non-conformances with evidence.                                             |                      |  |  |  |                               |  |  |  |
|                                                         | 2.3 | Produce audit reports with prioritized corrective actions and timelines.                         |                      |  |  |  |                               |  |  |  |
|                                                         | 2.4 | Monitor corrective actions.                                                                      |                      |  |  |  |                               |  |  |  |
|                                                         | 2.5 | Verify corrective actions taken.                                                                 |                      |  |  |  |                               |  |  |  |
|                                                         | 2.6 |                                                                                                  |                      |  |  |  |                               |  |  |  |
| <b>LO 3: Perform emergency response operations</b>      | 3.1 | Develop emergency response and evacuation plans.                                                 |                      |  |  |  |                               |  |  |  |
|                                                         | 3.2 | Organize regular emergency drills and debriefs.                                                  |                      |  |  |  |                               |  |  |  |
|                                                         | 3.3 | Coordinate early response actions and liaise with external responders.                           |                      |  |  |  |                               |  |  |  |
|                                                         | 3.4 | Review incidents and update emergency procedures accordingly.                                    |                      |  |  |  |                               |  |  |  |
| <b>LO 4: Coach staff on safety culture</b>              | 4.1 | Design role-specific safety training modules and materials.                                      |                      |  |  |  |                               |  |  |  |
|                                                         | 4.2 | Deliver training on participant competence                                                       |                      |  |  |  |                               |  |  |  |
|                                                         | 4.3 | Assess participant competence.                                                                   |                      |  |  |  |                               |  |  |  |
|                                                         | 4.4 | Reinforce safe behaviour on the job.                                                             |                      |  |  |  |                               |  |  |  |
|                                                         | 4.5 | Monitor safety Key Performance Indicators (KPIs)                                                 |                      |  |  |  |                               |  |  |  |
|                                                         | 4.6 | Report on KPIs                                                                                   |                      |  |  |  |                               |  |  |  |

|                              |       |
|------------------------------|-------|
| Learner's Signature:         | Date: |
| Assessor's Signature:        | Date: |
| IQAM Signature (if sampled): | Date: |
| web.nbte.gov.ng              |       |
| EQAM Signature (if sampled): | Date: |

## UNIT 002: COMMUNICATION SYSTEMS IN THE WORK ENVIRONMENT

**Unit Reference Number:** AGR/RTP/002/L5

**NSQ Level:** 5

**Credit Value:** 3

**Guided Learning Hours:** 30

**Practice Time:** 80 hours

**Unit Status:** Mandatory Unit

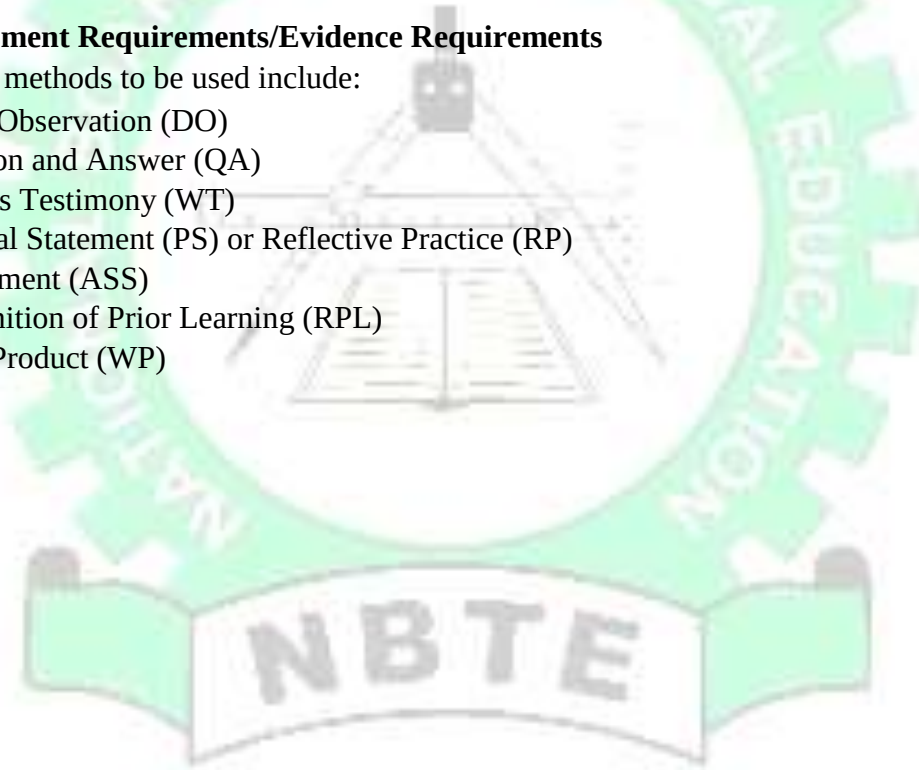
**Unit Purpose:** This unit is designed to equip learners with strategic communication, negotiation and stakeholder engagement skills for agribusiness leadership.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**Unit 002: Communication Systems in the Work Environment**

| <b>LO 1:<br/>LEARNING<br/>OUTCOME</b>                                   | <b>1.1</b> | <b>PERFORMANCE<br/>CRITERIA The learner</b>                                   | <b>Evidence<br/>Type</b> |  |  |  | <b>Evidence<br/>Ref. Page</b> |  |  |  |
|-------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------|--------------------------|--|--|--|-------------------------------|--|--|--|
| <b>LO 1: Plan<br/>strategic<br/>communication</b>                       | 1.1        | Identify stakeholder groups and communication needs.                          |                          |  |  |  |                               |  |  |  |
|                                                                         | 1.2        | Develop communication plans with channels and timelines.                      |                          |  |  |  |                               |  |  |  |
|                                                                         | 1.3        | Set measurable communication objectives and KPIs.                             |                          |  |  |  |                               |  |  |  |
|                                                                         | 1.4        | Allocate resources and responsibilities for communication activities.         |                          |  |  |  |                               |  |  |  |
|                                                                         | 1.5        |                                                                               |                          |  |  |  |                               |  |  |  |
| <b>LO 2:<br/>Negotiate<br/>commercial<br/>agreements</b>                | 2.1        | Prepare negotiation strategies and Best Alternative to a Negotiated Agreement |                          |  |  |  |                               |  |  |  |
|                                                                         | 2.2        | Conduct negotiations with suppliers, buyers and customers.                    |                          |  |  |  |                               |  |  |  |
|                                                                         | 2.3        | Record agreed terms and ensure contractual clarity                            |                          |  |  |  |                               |  |  |  |
|                                                                         | 2.4        | Secure mutually acceptable contracts and follow up on implementation.         |                          |  |  |  |                               |  |  |  |
|                                                                         | 2.5        |                                                                               |                          |  |  |  |                               |  |  |  |
| <b>LO 3:<br/><br/>Manage<br/>stakeholder<br/>relations</b>              | 3.1        | Establish stakeholder engagement schedules and records.                       |                          |  |  |  |                               |  |  |  |
|                                                                         | 3.2        | Respond to stakeholder concerns.                                              |                          |  |  |  |                               |  |  |  |
|                                                                         | 3.3        | Maintain accurate records of interactions and commitments                     |                          |  |  |  |                               |  |  |  |
|                                                                         | 3.4        | Develop sustainable long-term partnerships.                                   |                          |  |  |  |                               |  |  |  |
| <b>LO 4: Produce<br/>professional<br/>reports and<br/>presentations</b> | 4.1        | Compile technical and business reports using data and evidence.               |                          |  |  |  |                               |  |  |  |
|                                                                         | 4.2        | Prepare and deliver clear presentations to management and                     |                          |  |  |  |                               |  |  |  |
|                                                                         | 4.3        | Use visual aids and data to support recommendations.                          |                          |  |  |  |                               |  |  |  |
|                                                                         | 4.4        | Interpret feedback responses                                                  |                          |  |  |  |                               |  |  |  |
|                                                                         | 4.5        | Update reports accordingly.                                                   |                          |  |  |  |                               |  |  |  |

Learner's Signature:

Date:

Assessor's Signature:

Date:

IQA Signature (if sampled):

Date:

**EQA Signature (if sampled):**

**Date:**



### UNIT 003: TEAM WORK AND COLLABORATIVE WORK PRACTICES

**Unit Reference Number:** AGR/RTP/003/L5

**NSQ Level:** 5

**Credit Value:** 3

**Guided Learning Hours:** 30

**Practice Time:** 80 hours

**Unit Status:** Mandatory Unit

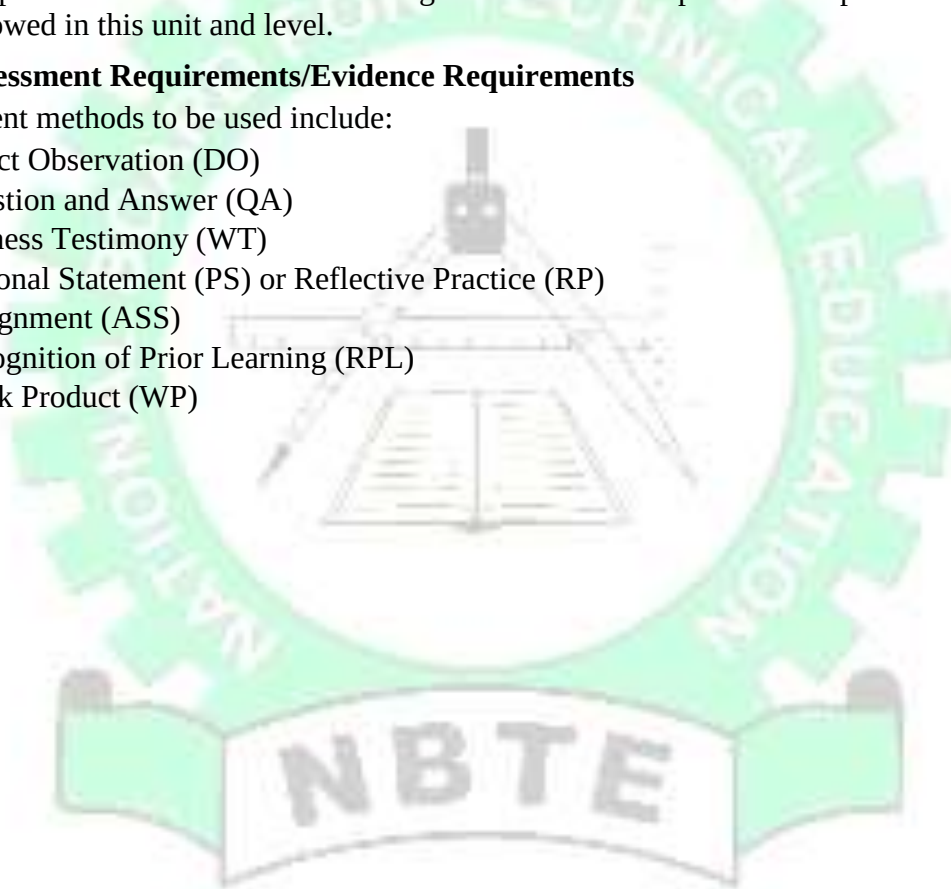
**Unit Purpose:** This unit is designed to prepare learners to lead multidisciplinary teams, manage human resources and foster innovation in root and tuber crops production enterprises.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

#### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**Unit 003: Teamwork and Collaborative Work Practices**

| <b>LO 1:</b>                                                        | <b>1.1</b> | <b>PERFORMANCE</b>                                                          | <b>Evidence</b> |  |  |  | <b>Evidence</b> |  |  |  |
|---------------------------------------------------------------------|------------|-----------------------------------------------------------------------------|-----------------|--|--|--|-----------------|--|--|--|
| <b>LO 1:<br/>Build multidisciplinary teams</b>                      | 1.1        | Form teams with complementary skills and clear roles.                       |                 |  |  |  |                 |  |  |  |
|                                                                     | 1.2        | Set team objectives, milestones and deliverables.                           |                 |  |  |  |                 |  |  |  |
|                                                                     | 1.3        | Coordinate cross-functional activities and schedules.                       |                 |  |  |  |                 |  |  |  |
|                                                                     | 1.4        | Resolve inter-team dependencies and conflicts.                              |                 |  |  |  |                 |  |  |  |
|                                                                     | 1.5        |                                                                             |                 |  |  |  |                 |  |  |  |
| <b>LO 2:<br/>Manage staff performance and development</b>           | 2.1        | Set measurable performance targets and KPIs.                                |                 |  |  |  |                 |  |  |  |
|                                                                     | 2.2        | Conduct appraisals, constructive feedback and coaching.                     |                 |  |  |  |                 |  |  |  |
|                                                                     | 2.3        | Identify training needs and arrange development activities.                 |                 |  |  |  |                 |  |  |  |
|                                                                     | 2.4        | Monitor individual development plans.                                       |                 |  |  |  |                 |  |  |  |
|                                                                     | 2.5        |                                                                             |                 |  |  |  |                 |  |  |  |
| <b>LO 3:<br/>Facilitate innovation and continuous improvement</b>   | 3.1        | Promote idea generation and problem-solving sessions.                       |                 |  |  |  |                 |  |  |  |
|                                                                     | 3.2        | Pilot innovations with defined metrics.                                     |                 |  |  |  |                 |  |  |  |
|                                                                     | 3.3        | Scale successful pilots into standard practice.                             |                 |  |  |  |                 |  |  |  |
|                                                                     | 3.4        | Measure productivity and quality improvements from innovations.             |                 |  |  |  |                 |  |  |  |
|                                                                     | 3.5        |                                                                             |                 |  |  |  |                 |  |  |  |
| <b>LO 4:<br/>Ensure compliance to labour laws and staff welfare</b> | 4.1        | Apply relevant labour laws, codes and workplace policies.                   |                 |  |  |  |                 |  |  |  |
|                                                                     | 4.2        | Monitor working conditions and hours for compliance.                        |                 |  |  |  |                 |  |  |  |
|                                                                     | 4.3        | Implement welfare measures (shelter, sanitation, safety, etc.) for workers. |                 |  |  |  |                 |  |  |  |
|                                                                     | 4.4        | Maintain records and reports on labour compliance.                          |                 |  |  |  |                 |  |  |  |

Learner's Signature:

Date:

Assessor's Signature:

Date:

IQAM Signature (if sampled):

Date:

EQAM Signature (if sampled):

Date:



#### UNIT 004: AGRIBUSINESS AND ENTREPRENEURSHIP

**Unit Reference Number:** AGR/RTP/004/L5

**NSQ Level:** 5

**Credit Value:** 6

**Guided Learning Hours:** 60

**Practice Time:** 200 hours

**Unit Status:** Mandatory Unit

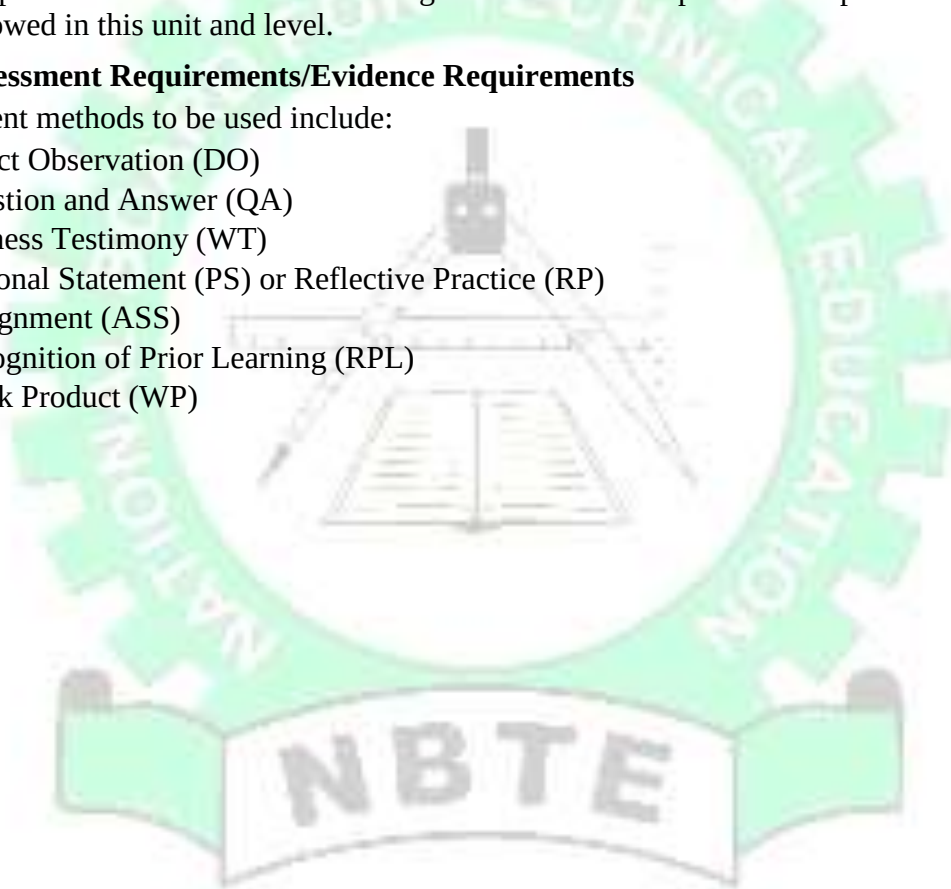
**Unit Purpose:** This unit is designed to develop learners' capacity to create, manage and scale agribusiness enterprises in the root and tuber crops value chain.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

##### **Unit Assessment Requirements/Evidence Requirements**

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**Unit 004: Agribusiness and Entrepreneurship**

| <b>LEARNING OUTCOME (LO)</b><br><b>The learner will:</b> |     | <b>PERFORMANCE CRITERIA</b><br><b>The learner can:</b>              | <b>Evidence Type</b> |  |  |  | <b>Evidence Ref. Page No.</b> |  |  |  |
|----------------------------------------------------------|-----|---------------------------------------------------------------------|----------------------|--|--|--|-------------------------------|--|--|--|
| <b>LO 1: Develop viable agribusiness plans</b>           | 1.1 | Conduct market and feasibility analysis for products and services.  |                      |  |  |  |                               |  |  |  |
|                                                          | 1.2 | Prepare business models, budgets and cash-flow projections.         |                      |  |  |  |                               |  |  |  |
|                                                          | 1.3 | Identify value-chain opportunities and partners.                    |                      |  |  |  |                               |  |  |  |
|                                                          | 1.4 | Present business plans to potential investors or lenders.           |                      |  |  |  |                               |  |  |  |
|                                                          | 1.5 |                                                                     |                      |  |  |  |                               |  |  |  |
| <b>LO 2: Access finance</b>                              | 2.1 | Identify appropriate funding sources (loans, grants, equity, etc.). |                      |  |  |  |                               |  |  |  |
|                                                          | 2.2 | Prepare loan/grant applications and supporting documents.           |                      |  |  |  |                               |  |  |  |
|                                                          | 2.3 | Be open in negotiation                                              |                      |  |  |  |                               |  |  |  |
| <b>LO 3: Manage capital</b>                              | 3.1 | Manage working capital and cash flow prudently.                     |                      |  |  |  |                               |  |  |  |
|                                                          | 3.2 | Produce periodic financial reports and forecasts.                   |                      |  |  |  |                               |  |  |  |
|                                                          | 3.3 | Adhere to the agreed terms                                          |                      |  |  |  |                               |  |  |  |
|                                                          | 3.4 |                                                                     |                      |  |  |  |                               |  |  |  |
| <b>LO 4: Implement enterprise risk management</b>        | 4.1 | Identify operational, market and financial risks.                   |                      |  |  |  |                               |  |  |  |
|                                                          | 4.2 | Develop mitigation and contingency strategies.                      |                      |  |  |  |                               |  |  |  |
|                                                          | 4.3 | Arrange insurance or hedging where appropriate.                     |                      |  |  |  |                               |  |  |  |
|                                                          | 4.4 | Monitor risk indicators and update risk register.                   |                      |  |  |  |                               |  |  |  |
|                                                          | 4.5 |                                                                     |                      |  |  |  |                               |  |  |  |
| <b>LO 5: Scale operations and diversify income</b>       | 5.1 | Plan for scaling production capacity and market reach.              |                      |  |  |  |                               |  |  |  |
|                                                          | 5.2 | Introduce value-added products and services.                        |                      |  |  |  |                               |  |  |  |
|                                                          | 5.3 | Develop partnerships and contract arrangements for expansion.       |                      |  |  |  |                               |  |  |  |
|                                                          | 5.4 | Monitor profitability.                                              |                      |  |  |  |                               |  |  |  |
|                                                          | 5.5 | Evaluate performance of all the production lines                    |                      |  |  |  |                               |  |  |  |

|                                     |       |
|-------------------------------------|-------|
| Learner's Signature:                | Date: |
| Assessor's Signature:               | Date: |
| IQAM Signature (if sampled):        | Date: |
| <b>EQAM Signature (if sampled):</b> | Date: |



## UNIT 005: SOIL AND WATER RESOURCE MANAGEMENT

**Unit Reference Number:** AGR/RTP/005/L5

**NSQ Level:** 5

**Credit Value:** 6

**Guided Learning Hours:** 60

**Practice Time:** 200 hours

**Unit Status:** Mandatory Unit

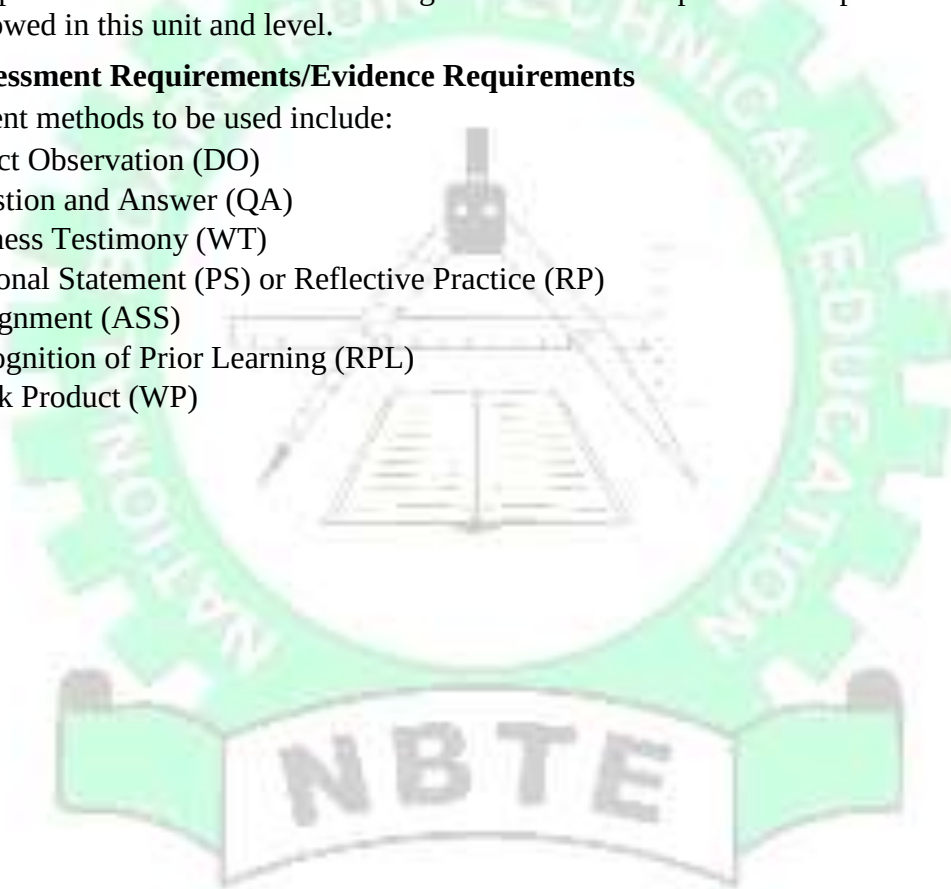
**Unit Purpose:** This unit is designed to enable learners to design and manage integrated soil fertility and water resource systems for sustainable, high-yield root and tuber production.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)



**Unit 005: Soil and Water Resource Management**

| <b>LEARNING OUTCOME (LO)</b><br><b>The learner will:</b> |     | <b>PERFORMANCE CRITERIA</b><br><b>The learner can:</b>              | <b>Evidence Type</b> |  |  |  |  | <b>Evidence Ref. Page No.</b> |  |  |  |  |
|----------------------------------------------------------|-----|---------------------------------------------------------------------|----------------------|--|--|--|--|-------------------------------|--|--|--|--|
| <b>LO 1: Conduct soil assessment</b>                     | 1.1 | Design soil sampling plans                                          |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 1.2 | Implement soil sampling plans.                                      |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 1.3 | Interpret laboratory soil analysis results.                         |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 1.4 | Map soil fertility zones and variability.                           |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 1.5 | Recommend site-specific soil interventions.                         |                      |  |  |  |  |                               |  |  |  |  |
| <b>LO 2: Manage irrigation systems</b>                   | 2.1 | Assess water availability and quality for irrigation.               |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 2.2 | Select appropriate irrigation technologies (drip, sprinkler, etc.). |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 2.3 | Design irrigation schedules based on crop needs and climate.        |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 2.4 | Monitor water use efficiency and adjust schedules.                  |                      |  |  |  |  |                               |  |  |  |  |
| <b>LO 3: Implement soil conservation measures</b>        | 3.1 | Design contouring, terracing or structural measures where needed.   |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 3.2 | Apply cover crops, mulches and organic matter to reduce erosion     |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 3.3 | Implement practices to increase soil organic carbon.                |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 3.4 | Monitor soil structure and erosion indicators.                      |                      |  |  |  |  |                               |  |  |  |  |
| <b>LO 4: Manage nutrient budgeting and application</b>   | 4.1 | Prepare nutrient budgets for cropping systems.                      |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 4.2 | Apply fertilizers and amendments based on soil tests.               |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 4.3 | Use integrated soil fertility management (organic + inorganic).     |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 4.4 | Record Performance data                                             |                      |  |  |  |  |                               |  |  |  |  |
|                                                          | 4.5 | Evaluate performance data outcomes.                                 |                      |  |  |  |  |                               |  |  |  |  |

|                                     |       |
|-------------------------------------|-------|
| Learner's Signature:                | Date: |
| Assessor's Signature:               | Date: |
| IQAM Signature (if sampled):        | Date: |
| <b>EQAM Signature (if sampled):</b> | Date: |



## UNIT 006: PRECISION AGRICULTURE AND INFORMATION COMMUNICATION TECHNOLOGY

**Unit Reference Number:** AGR/RTP/006/L5

**NSQ Level:** 5

**Credit Value:** 5

**Guided Learning Hours:** 50

**Practice Time:** 180 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to equip learners to apply precision agriculture tools and ICT for data-driven decision making in root and tuber crops production.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

## Unit 006: Precision agriculture and ICT

| LEARNING OUTCOME (LO)<br>The learner will:                |     | PERFORMANCE CRITERIA<br>The learner can:                   | Evidence Type | Evidence Ref.<br>Page No. |
|-----------------------------------------------------------|-----|------------------------------------------------------------|---------------|---------------------------|
| <b>LO 1: Deploy sensing and mapping technologies</b>      | 1.1 | Use GPS and GIS for accurate field mapping.                |               |                           |
|                                                           | 1.2 | Operate drones and ground sensors for crop monitoring.     |               |                           |
|                                                           | 1.3 | Collect geo-referenced agronomic and environmental data.   |               |                           |
|                                                           | 1.4 | Calibrate sensing equipment.                               |               |                           |
|                                                           | 1.5 | Carry out routine maintenance of sensing equipment         |               |                           |
| <b>LO 2: Apply data analytics for crop management</b>     | 2.1 | Process sensor, satellite and yield data.                  |               |                           |
|                                                           | 2.2 | Generate actionable maps.                                  |               |                           |
|                                                           | 2.3 | Produce prescription maps for variable-rate application.   |               |                           |
|                                                           | 2.4 | Use analytics to inform input and management decisions.    |               |                           |
| <b>LO 3: Implement precision input application</b>        | 3.1 | Calibrate variable-rate applicators and planters.          |               |                           |
|                                                           | 3.2 | Apply inputs according to prescription maps.               |               |                           |
|                                                           | 3.3 | Monitor application accuracy and coverage.                 |               |                           |
|                                                           | 3.4 | Evaluate input savings and yield response.                 |               |                           |
| <b>LO 4: Use ICT for farm management and traceability</b> | 4.1 | Implement farm management information systems (FMIS).      |               |                           |
|                                                           | 4.2 | Record production activities and inputs digitally.         |               |                           |
|                                                           | 4.3 | Ensure product traceability from field to market.          |               |                           |
|                                                           | 4.4 | Use mobile tools to access market and weather information. |               |                           |

Learner's Signature:

Date:

Assessor's Signature:

Date:

IQAM Signature (if sampled):

Date:

EQAM Signature (if sampled):

Date:



## UNIT 007: MECHANIZATION IN ROOT AND TUBER CROP PRODUCTION

**Unit Reference Number:** AGR/RTP/007/L5

**NSQ Level:** 5

**Credit Value:** 8

**Guided Learning Hours:** 80

**Practice Time:** 300 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to prepare learners to plan, supervise and optimize mechanized planting and related operations for large-scale root and tuber crops production.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

**Unit 007: Mechanization in Root and tuber crops production**

| <b>LEARNING OUTCOME (LO)</b><br><b>The learner will:</b> |     | <b>PERFORMANCE CRITERIA</b><br><b>The learner can:</b>                           | <b>Evidence Type</b> | <b>Evidence Ref.</b><br><b>Page No.</b> |
|----------------------------------------------------------|-----|----------------------------------------------------------------------------------|----------------------|-----------------------------------------|
| <b>LO 1: Plan mechanized planting operations</b>         | 1.1 | Select appropriate machinery and implements for crop and field conditions.       |                      |                                         |
|                                                          | 1.2 | Schedule planting operations to meet agronomic windows.                          |                      |                                         |
|                                                          | 1.3 | Allocate crews, fuel and spare parts.                                            |                      |                                         |
|                                                          | 1.4 | Prepare risk and contingency plans for machinery breakdowns.                     |                      |                                         |
| <b>LO 2: Operate and supervise planting machinery</b>    | 2.1 | Calibrate planters for depth and spacing.                                        |                      |                                         |
|                                                          | 2.2 | Monitor planting operations and emergence rates.                                 |                      |                                         |
|                                                          | 2.3 | Troubleshoot common mechanical faults.                                           |                      |                                         |
|                                                          | 2.4 | Ensure operator safety and compliance with SOPs.                                 |                      |                                         |
| <b>LO 3: Optimize planting efficiency and quality</b>    | 3.1 | Monitor stands establishment and uniformity.                                     |                      |                                         |
|                                                          | 3.2 | Adjust operations to field variability and soil conditions.                      |                      |                                         |
|                                                          | 3.3 | Record planting performance metrics (area, time, seed rate, etc).                |                      |                                         |
|                                                          | 3.4 | Implement predictive, preventive and corrective actions to improve establishment |                      |                                         |
| <b>LO 4: Maintain mechanization equipment</b>            | 4.1 | Implement preventive maintenance schedules.                                      |                      |                                         |
|                                                          | 4.2 | Conduct routine servicing and minor repairs.                                     |                      |                                         |
|                                                          | 4.3 | Keep accurate maintenance and service records.                                   |                      |                                         |
|                                                          | 4.4 | Manage spare parts inventory and procurement.                                    |                      |                                         |

Learner's Signature:

Date:

Assessor's Signature:

Date:

IQAM Signature (if sampled):

Date:

EQAM Signature (if sampled):

Date:



## UNIT 008: BIOTECHNOLOGY APPLICATIONS IN ROOT AND TUBER CROPS

**Unit Reference Number:** AGR/RTP/008/L5

**NSQ Level:** 5

**Credit Value:** 6

**Guided Learning Hours:** 60

**Practice Time:** 200 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to prepare learners to manage industrial-scale harvesting and processing operations of root and tuber crops, ensuring efficiency, quality and compliance with food industry standards.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

**Unit 008: Biotechnology applications in Root and tuber crops**

| <b>LEARNING OUTCOME (LO)</b><br><b>The learner will:</b>          |     | <b>PERFORMANCE CRITERIA</b><br><b>The learner can:</b>                       | <b>Evidence Type</b> | <b>Evidence Ref.</b> | <b>Page No.</b> |
|-------------------------------------------------------------------|-----|------------------------------------------------------------------------------|----------------------|----------------------|-----------------|
| <b>LO 1:</b><br><b>Deploy biotechnology techniques</b>            | 1.1 | Describe Biotech applications                                                |                      |                      |                 |
|                                                                   | 1.2 | Demonstrate basic tissue culture and propagation principles.                 |                      |                      |                 |
|                                                                   | 1.3 | Use improved planting materials and certified seeds.                         |                      |                      |                 |
|                                                                   | 1.4 | Document experimental procedures and results accurately.                     |                      |                      |                 |
| <b>LO 2:</b><br><b>Design integrated crop protection programs</b> | 2.1 | Combine cultural, biological and chemical control methods                    |                      |                      |                 |
|                                                                   | 2.2 | Select appropriate pesticides and bio-pesticides based on risk and efficacy. |                      |                      |                 |
|                                                                   | 2.3 | Schedule interventions to minimize resistance development.                   |                      |                      |                 |
|                                                                   | 2.4 | Evaluate effectiveness.                                                      |                      |                      |                 |
| <b>LO 3:</b><br><b>Manage pesticide safety and compliance</b>     | 3.1 | Handle pesticides safely and in compliance with regulations.                 |                      |                      |                 |
|                                                                   | 3.2 | Ensure correct mixing, calibration and application rates.                    |                      |                      |                 |
|                                                                   | 3.3 | Maintain application records and safety data sheets (SDS).                   |                      |                      |                 |
|                                                                   | 3.4 | Enforce pre-harvest intervals and withdrawal periods.                        |                      |                      |                 |

|                                     |              |
|-------------------------------------|--------------|
| Learner's Signature:                | Date:        |
| Assessor's Signature:               | Date:        |
| IQAM Signature (if sampled):        | Date:        |
| <b>EQAM Signature (if sampled):</b> | <b>Date:</b> |

## UNIT 009: INDUSTRIAL PROCESSING OF ROOT AND TUBER CROPS

**Unit Reference Number:** AGR/RTP/009/L5

**NSQ Level:** 5

**Credit Value:** 6

**Guided Learning Hours:** 60

**Practice Time:** 200 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to prepare learners to manage industrial-scale harvesting and processing operations of root and tuber crops, ensuring efficiency, quality and compliance with food industry standards.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

**Unit 009: Industrial Processing of Root and tuber crops**

| <b>LEARNING OUTCOME (LO)</b><br><b>The learner will:</b>         |     | <b>PERFORMANCE CRITERIA</b><br><b>The learner can:</b>                                                                             | <b>Evidence Type</b> |  |  |  | <b>Evidence Ref. Page No.</b> |  |  |  |
|------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------|----------------------|--|--|--|-------------------------------|--|--|--|
| <b>LO 1: Plan industrial harvesting operations</b>               | 1.1 | Select appropriate harvesting machinery and schedules to match crop maturity.                                                      |                      |  |  |  |                               |  |  |  |
|                                                                  | 1.2 | Coordinate logistics between field and processing units to minimize delays.                                                        |                      |  |  |  |                               |  |  |  |
|                                                                  | 1.3 | Implement traceability systems from field to plant.                                                                                |                      |  |  |  |                               |  |  |  |
|                                                                  | 1.4 | Plan for labour, transport and storage capacity during peak harvest.                                                               |                      |  |  |  |                               |  |  |  |
| <b>LO 2: Manage processing lines</b>                             | 2.1 | Set up processing lines for target throughput and quality.                                                                         |                      |  |  |  |                               |  |  |  |
|                                                                  | 2.2 | Monitor critical control points and process parameters.                                                                            |                      |  |  |  |                               |  |  |  |
|                                                                  | 2.3 | Implement Hazard Analysis Critical Control Point (HACCP) and Good Maintenance Practices (GMP) principles in processing operations. |                      |  |  |  |                               |  |  |  |
|                                                                  | 2.4 | Troubleshoot production issues and minimize downtime.                                                                              |                      |  |  |  |                               |  |  |  |
| <b>LO 3: Ensure product quality and safety</b>                   | 3.1 | Implement quality control checks at defined stages.                                                                                |                      |  |  |  |                               |  |  |  |
|                                                                  | 3.2 | Monitor microbial, physical and chemical quality parameters.                                                                       |                      |  |  |  |                               |  |  |  |
|                                                                  | 3.3 | Enforce hygiene, sanitation and GMPs among staff.                                                                                  |                      |  |  |  |                               |  |  |  |
|                                                                  | 3.4 | Maintain batch and traceability records for recall readiness.                                                                      |                      |  |  |  |                               |  |  |  |
| <b>LO 4: Optimize processing efficiency and waste management</b> | 4.1 | Improve yield recovery and throughput.                                                                                             |                      |  |  |  |                               |  |  |  |
|                                                                  | 4.2 | Implement by-product utilization and value recovery.                                                                               |                      |  |  |  |                               |  |  |  |
|                                                                  | 4.3 | Reduce energy and water consumption through efficiency measures.                                                                   |                      |  |  |  |                               |  |  |  |
|                                                                  | 4.4 | Record and report processing efficiency metrics.                                                                                   |                      |  |  |  |                               |  |  |  |

Learner's Signature:

Date:

Assessor's Signature:

Date:

IQAM Signature (if sampled):

Date:

EQAM Signature (if sampled):

Date:



## UNIT 010: STORAGE AND PRESERVATION TECHNOLOGY

**Unit Reference Number:** AGR/RTP/010/L5

**NSQ Level:** 5

**Credit Value:** 6

**Guided Learning Hours:** 60

**Practice Time:** 200 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to enable learners to design and manage advanced storage and preservation systems to extend shelf life and maintain quality of root and tuber crops products.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

**Unit 010: Storage and Preservation Technology**

| <b>LEARNING OUTCOME (LO) The learner will:</b>                |     | <b>PERFORMANCE CRITERIA The learner can:</b>                             | <b>Evidence Type</b> |  |  |  | <b>Evidence Ref. Page No.</b> |  |  |  |
|---------------------------------------------------------------|-----|--------------------------------------------------------------------------|----------------------|--|--|--|-------------------------------|--|--|--|
| <b>LO 1:<br/>Select suitable storage systems</b>              | 1.1 | Select appropriate storage technologies for product and scale.           |                      |  |  |  |                               |  |  |  |
|                                                               | 1.2 | Use controlled atmosphere, cold chain or ventilated systems as required. |                      |  |  |  |                               |  |  |  |
|                                                               | 1.3 | Assess capital and operating costs and Return on Investment (ROI).       |                      |  |  |  |                               |  |  |  |
|                                                               | 1.4 | Plan for scalability and contingency (power, backup, etc.).              |                      |  |  |  |                               |  |  |  |
| <b>LO 2:<br/>Implement preservation techniques</b>            | 2.1 | Apply curing, drying and chemical preservation.                          |                      |  |  |  |                               |  |  |  |
|                                                               | 2.2 | Use controlled atmosphere and temperature regimes correctly.             |                      |  |  |  |                               |  |  |  |
|                                                               | 2.3 | Monitor preservation parameters and adjust as needed.                    |                      |  |  |  |                               |  |  |  |
|                                                               | 2.4 | Evaluate preservation effectiveness against shelf-life targets.          |                      |  |  |  |                               |  |  |  |
| <b>LO 3:<br/>Control storage environment</b>                  | 3.1 | Use monitoring equipment for temperature and humidity.                   |                      |  |  |  |                               |  |  |  |
|                                                               | 3.2 | Maintain logs and respond promptly to deviations.                        |                      |  |  |  |                               |  |  |  |
|                                                               | 3.3 | Calibrate monitoring equipment.                                          |                      |  |  |  |                               |  |  |  |
|                                                               | 3.4 | Implement corrective actions to protect stored product.                  |                      |  |  |  |                               |  |  |  |
| <b>LO 4:<br/>Manage post-storage quality and distribution</b> | 4.1 | Inspect product quality before dispatch.                                 |                      |  |  |  |                               |  |  |  |
|                                                               | 4.2 | Adopt appropriate packaging and branding techniques.                     |                      |  |  |  |                               |  |  |  |
|                                                               | 4.3 | Ensure proper handling to preserve quality during distribution.          |                      |  |  |  |                               |  |  |  |
|                                                               | 4.4 | Coordinate cold chain logistics for perishable shipments.                |                      |  |  |  |                               |  |  |  |
|                                                               | 4.5 | Record shelf-life performance and customer feedback.                     |                      |  |  |  |                               |  |  |  |

Learner's Signature:

Date:

Assessor's Signature:

Date:

IQAM Signature (if sampled):

Date:

EQAM Signature (if sampled):

Date

## UNIT 011: MARKETING STRATEGIES AND EXPORT PROCEDURES

**Unit Reference Number:** AGR/RTP/011/L5

**NSQ Level:** 5

**Credit Value:** 5

**Guided Learning Hours:** 50

**Practice Time:** 180 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to equip learners to develop market strategies, meet export requirements and access regional and international markets for root and tuber crops products.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

**UNIT 011: Marketing strategies and export procedures**

| <b>LEARNING OUTCOME (LO) The learner will:</b>            |     | <b>PERFORMANCE CRITERIA The learner can:</b>                                         | <b>Evidence Type</b> | <b>Evidence Ref. Page No.</b> |
|-----------------------------------------------------------|-----|--------------------------------------------------------------------------------------|----------------------|-------------------------------|
| <b>LO 1: Develop market entry and branding strategies</b> | 1.1 | Conduct target market segmentation and buyer profiling.                              |                      |                               |
|                                                           | 1.2 | Develop branding, packaging and value propositions.                                  |                      |                               |
|                                                           | 1.3 | Design promotional campaigns and channels.                                           |                      |                               |
|                                                           | 1.4 | Measure marketing ROI and adjust strategies.                                         |                      |                               |
| <b>LO 2: Prepare products for export markets</b>          | 2.1 | Identify export standards, Standard Procurement System (SPS) and buyer requirements. |                      |                               |
|                                                           | 2.2 | Ensure product and packaging compliance with target markets.                         |                      |                               |
|                                                           | 2.3 | Prepare export documentation (phytosanitary, invoices, certificates, etc.).          |                      |                               |
|                                                           | 2.4 | Coordinate pre-shipment inspections and testing.                                     |                      |                               |
| <b>LO 3: Manage distribution channels and logistics</b>   | 3.1 | Select distribution partners and agents.                                             |                      |                               |
|                                                           | 3.2 | Negotiate distribution and service level agreements.                                 |                      |                               |
|                                                           | 3.3 | Plan cold chain and transport logistics for exports.                                 |                      |                               |
|                                                           | 3.4 | Monitor delivery performance and customer satisfaction.                              |                      |                               |
| <b>LO 4: Conduct market intelligence and pricing</b>      | 4.1 | Gather competitor, price and demand data regularly.                                  |                      |                               |
|                                                           | 4.2 | Set competitive pricing strategies based on costs and margins.                       |                      |                               |
|                                                           | 4.3 | Adjust pricing for seasonal and market fluctuations.                                 |                      |                               |
|                                                           | 4.4 | Report market trends and recommendations to management.                              |                      |                               |

|                              |       |
|------------------------------|-------|
| Learner's Signature:         | Date: |
| Assessor's Signature:        | Date: |
| IQAM Signature (if sampled): | Date: |
| EQAM Signature (if sampled): | Date: |

## UNIT 012: AGRICULTURAL RESEARCH AND POLICY COMPLIANCE

**Unit Reference Number:** AGR/RTP/012/L5

**NSQ Level:** 5

**Credit Value:** 4

**Guided Learning Hours:** 40

**Practice Time:** 150 hours

**Unit Status:** Mandatory Unit

**Unit Purpose:** This unit is designed to prepare learners to design and conduct applied agricultural research and ensure enterprise compliance with agricultural policies, standards and regulations.

**Unit assessment requirements/evidence requirements:** Assessment must be conducted in a real workplace environment where learning and human development takes place. Simulation is not allowed in this unit and level.

### Unit Assessment Requirements/Evidence Requirements

Assessment methods to be used include:

1. Direct Observation (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS) or Reflective Practice (RP)
5. Assignment (ASS)
6. Recognition of Prior Learning (RPL)
7. Work Product (WP)

**UNIT 012: Agricultural research and policy compliance**

| <b>LEARNING OUTCOME (LO) The learner will:</b>               |     | <b>PERFORMANCE CRITERIA The learner can:</b>                          | <b>Evidence Type</b> |  |  |  |  | <b>Evidence Ref. Page No.</b> |  |  |  |
|--------------------------------------------------------------|-----|-----------------------------------------------------------------------|----------------------|--|--|--|--|-------------------------------|--|--|--|
| <b>LO 1: Design applied research projects</b>                | 1.1 | Formulate research questions, objectives and hypotheses.              |                      |  |  |  |  |                               |  |  |  |
|                                                              | 1.2 | Select appropriate experimental designs and methodologies.            |                      |  |  |  |  |                               |  |  |  |
|                                                              | 1.3 | Prepare research protocols and budgets.                               |                      |  |  |  |  |                               |  |  |  |
|                                                              | 1.4 | Obtain necessary approvals and ethical clearances.                    |                      |  |  |  |  |                               |  |  |  |
| <b>LO 2: Conduct small-scale trials and evaluate results</b> | 2.1 | Design trial protocols with controls and replication.                 |                      |  |  |  |  |                               |  |  |  |
|                                                              | 2.2 | Collect trial data using appropriate methods.                         |                      |  |  |  |  |                               |  |  |  |
|                                                              | 2.3 | Analyze trial data using appropriate methods                          |                      |  |  |  |  |                               |  |  |  |
|                                                              | 2.4 | Interpret results for practical recommendations.                      |                      |  |  |  |  |                               |  |  |  |
|                                                              | 2.5 | Report findings and advise on adoption.                               |                      |  |  |  |  |                               |  |  |  |
| <b>LO 3: Conduct data collection and analysis</b>            | 3.1 | Implement sampling and data collection plans accurately.              |                      |  |  |  |  |                               |  |  |  |
|                                                              | 3.2 | Use statistical and analytical tools to process data.                 |                      |  |  |  |  |                               |  |  |  |
|                                                              | 3.3 | Interpret results in agronomic and economic contexts.                 |                      |  |  |  |  |                               |  |  |  |
|                                                              | 3.4 | Ensure data integrity and reproducibility.                            |                      |  |  |  |  |                               |  |  |  |
| <b>LO 4: Translate research into practice</b>                | 4.1 | Develop practical recommendations for farmers and enterprises.        |                      |  |  |  |  |                               |  |  |  |
|                                                              | 4.2 | Pilot innovations on demonstration plots or farms.                    |                      |  |  |  |  |                               |  |  |  |
|                                                              | 4.3 | Evaluate adoption, impact and scalability.                            |                      |  |  |  |  |                               |  |  |  |
|                                                              | 4.4 | Document lessons learned and best practices.                          |                      |  |  |  |  |                               |  |  |  |
| <b>LO 5: Ensure policy and regulatory compliance</b>         | 5.1 | Interpret relevant agricultural laws, standards and SPS requirements. |                      |  |  |  |  |                               |  |  |  |
|                                                              | 5.2 | Implement compliance procedures and recordkeeping.                    |                      |  |  |  |  |                               |  |  |  |
|                                                              | 5.3 | Prepare compliance reports and liaise with regulators.                |                      |  |  |  |  |                               |  |  |  |
|                                                              | 5.4 | Update enterprise practices to meet changing regulations.             |                      |  |  |  |  |                               |  |  |  |

|                                     |       |
|-------------------------------------|-------|
| Learner's Signature:                | Date: |
| Assessor's Signature:               | Date: |
| IQAM Signature (if sampled):        | Date: |
| <b>EQAM Signature (if sampled):</b> | Date: |



**LIST OF MINIMUM REQUIREMENTS/PHYSICAL FACILITIES**

| <b>S/N</b> | <b>Name of Item</b>                                                                                          | <b>Quantity</b>                   |
|------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 1.         | Personal Protective Equipment (helmets, gloves, boots, goggles, masks)                                       | Per participant /Resource persons |
| 2.         | First aid kits                                                                                               | 2 kits                            |
| 3.         | Fire extinguishers                                                                                           | 2 units                           |
| 4.         | Safety signage and hazard markers                                                                            | 10 signs                          |
| 5.         | Emergency communication devices (whistles, radios)                                                           | 5 units                           |
| 6.         | Notebooks and pens                                                                                           | Per participant /Resource persons |
| 7.         | Report templates and logbooks                                                                                | Per participant /Resource persons |
| 8.         | ICT Tools ( computer, printer, projector, internet access, farm mgt. software)                               | 2 units                           |
| 9.         | Filing cabinets                                                                                              | 3 units                           |
| 10.        | Attendance registers                                                                                         | 5 books                           |
| 11.        | White marker board                                                                                           | each per lecture room             |
| 12.        | Role assignment charts                                                                                       | 5 sets                            |
| 13.        | Soil testing kits (pH meters, nutrient test kits)                                                            | 5 kits                            |
| 14.        | Augers and soil samplers                                                                                     | 5 units                           |
| 15.        | Weather station                                                                                              | 1 set                             |
| 16.        | Tractor                                                                                                      | 1 unit                            |
| 17.        | Plough                                                                                                       | 1 unit                            |
| 18.        | Harrow                                                                                                       | 1 unit                            |
| 19.        | Ridger                                                                                                       | 1 unit                            |
| 20.        | Mulching materials                                                                                           | Assorted                          |
| 21.        | Toolbox (files, sharpening stones, oil cans)                                                                 | 2 sets                            |
| 22.        | Watering cans, hoses, water pump and drip kits                                                               | 10 units                          |
| 23.        | Planting tools (dibblers, hoes, spades ,cutlass and hand trowels )                                           | 15 units                          |
| 24.        | Planting inputs (agrochemicals and fertilizer, certified cassava stems, yam setts & seed storage containers) | 5 units                           |
| 25.        | Irrigation systems (drip lines, sprinklers, surface)                                                         | 3 systems                         |
| 26.        | Pest traps (pheromone traps, sticky traps)                                                                   | 10 sets each                      |
| 27.        | Sprayers                                                                                                     | 5 units                           |
| 28.        | Harvesting knives, diggers and lifters                                                                       | 15 units each                     |
| 29.        | Sorting tables                                                                                               | 5 tables                          |
| 30.        | Storage crates and baskets                                                                                   | 20 units                          |
| 31.        | Thermometers, hygrometers and test kits for storage monitoring                                               | 5 units each                      |
| 32.        | Packaging materials (sacks, cartons, labels)                                                                 | 50 units                          |
| 33.        | Cleaning and sanitizing equipment                                                                            | 5 sets                            |
| 34.        | Cold storage facility                                                                                        | 1 units                           |
| 35.        | Ventilated warehouses                                                                                        | 1 facility                        |
| 36.        | Processing machines (peelers, slicers, dryers, grinders & conveyors )                                        | 4 machines (1 each)               |

|     |                                                  |           |
|-----|--------------------------------------------------|-----------|
| 37. | Hygienic equipment (sterilizers, cleaning kits)  | 3 sets    |
| 38. | Transport trucks/vans                            | 1 vehicle |
| 39. | Pallets and loading equipment(forklift )         | 10 units  |
| 40. | Weighing scales                                  | 5 units   |
| 41. | Marketing materials (brochures, posters, labels) | 50 pieces |
| 42. | Communication devices (phones, radios)           | 5 units   |
| 43. | Flour milling machines                           | 1 units   |
| 44. | Branding and labeling equipment                  | 1 units   |
| 45. | Power supply (generator set )                    | 1 unit    |



**LIST OF WORKSHOP PARTICIPANTS**

| <b>S/N</b> | <b>NAME</b>             | <b>ORGANISATION</b>                                                                                   | <b>EMAIL</b>                                                                           |
|------------|-------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1.         | Prof. Idris M. Bugaje   | Executive Secretary National Board for Technical Education, Kaduna                                    | <a href="mailto:es@nbte.gov.ng">es@nbte.gov.ng</a>                                     |
| 2.         | Dr. Rufai Ibrahim       | College of Agriculture and Animal Science Mando, Kaduna                                               | <a href="mailto:rufai37@yahoo.co.uk">rufai37@yahoo.co.uk</a>                           |
| 3.         | Prof. Inuwa Shehu Usman | Ahmadu Bello University, Zaria.                                                                       | <a href="mailto:inuwasu@gmail.com">inuwasu@gmail.com</a>                               |
| 4.         | Abubakar Ibrahim Moh'd  | Aims Agro Plus                                                                                        | <a href="mailto:aimsadik1128@gmail.com">aimsadik1128@gmail.com</a>                     |
| 5.         | Dr. Usman Umar Kunji    | Green Pal Seeds, Kano State                                                                           | <a href="mailto:uukunji.hort@fchdk.edu.ng">uukunji.hort@fchdk.edu.ng</a>               |
| 6.         | Dr. Abubakar Sani. A.   | Ahmadu Bello University, Zaria.                                                                       | <a href="mailto:abubakargreat@gmail.com">abubakargreat@gmail.com</a>                   |
| 7.         | Dr. Sunusi Yakubu Ahmad | Global Agri project and Consultancy Services                                                          | <a href="mailto:sunindi67@gmail.com">sunindi67@gmail.com</a>                           |
| 8.         | Sabo Ahmed Said         | Green Hope Agro-Allied and Gen. Business Services, Kano                                               | <a href="mailto:ambosas@gmail.com">ambosas@gmail.com</a>                               |
| 9.         | Isaac Oleng             | Sector Skills Council for Agriculture, Abuja                                                          | <a href="mailto:kwabenaosi784@gmail.com">kwabenaosi784@gmail.com</a>                   |
| 10.        | Yahaya Abdullahi        | Audu Bako College of Agriculture, Dambatta                                                            | <a href="mailto:yahayaabdullahizango71@gmail.com">yahayaabdullahizango71@gmail.com</a> |
| 11.        | Engr. S.M. Yusuf        | Director Vocational Technical and Skills Development, National Board for Technical Education, Kaduna. | <a href="mailto:smohammedyusuf@yahoo.com">smohammedyusuf@yahoo.com</a>                 |
| 12.        | Dr. O.O Bello           | Director Curriculum Development, National Board for Technical Education, Kaduna.                      | <a href="mailto:engroobello@gmail.com">engroobello@gmail.com</a>                       |
| 13.        | Dr. Kubra Jauro D       | Deputy Director Polytechnic and Allied Programmes, National Board for Technical Education, Kaduna.    | <a href="mailto:kuburagombe@yahoo.com">kuburagombe@yahoo.com</a>                       |
| 14.        | Abdulrahman Idris       | National Board for Technical Education, Kaduna.                                                       | <a href="mailto:Idrisabdulraham12@gmail.com">Idrisabdulraham12@gmail.com</a>           |
| 15.        | Muhammad Aliyu Maiwada  | National Board for Technical Education, Kaduna.                                                       | <a href="mailto:Mamaiwada1990@gmail.com">Mamaiwada1990@gmail.com</a>                   |
| 16.        | Muhammad Umar           | National Board for Technical                                                                          | <a href="mailto:Muhammadauna.mu@gmail.com">Muhammadauna.mu@gmail.com</a>               |

|     |                      |                                                 |                                                                            |
|-----|----------------------|-------------------------------------------------|----------------------------------------------------------------------------|
|     | Auna                 | Education, Kaduna.                              |                                                                            |
| 17. | Nsan Tiku Nsan       | National Board for Technical Education, Kaduna. | <a href="mailto:santoadaapez@gmail.com">santoadaapez@gmail.com</a>         |
| 18. | Engr. Abubakar Shehu | National Board for Technical Education, Kaduna. | <a href="mailto:asdauja@yahoo.com">asdauja@yahoo.com</a>                   |
| 19. | Muhammad Aliyu Sani  | National Board for Technical Education, Kaduna. | <a href="mailto:mzaleeyu@gmail.com">mzaleeyu@gmail.com</a>                 |
| 20. | Tukur Tahir Mahmud   | National Board for Technical Education, Kaduna. | <a href="mailto:teekaytaheer@gmail.com">teekaytaheer@gmail.com</a>         |
| 21. | Yusuf Abdulazeez     | National Board for Technical Education, Kaduna. | <a href="mailto:yusufabdulazeez@gmail.com">yusufabdulazeez@gmail.com</a>   |
| 22. | Salima Muhammad Wada | National Board for Technical Education, Kaduna. | <a href="mailto:salimamuhammad66@gmail.com">salimamuhammad66@gmail.com</a> |
| 23. | Musa M. Sani         | National Board for Technical Education, Kaduna. | <a href="mailto:musamsani@gmail.com">musamsani@gmail.com</a>               |

