# COMPETENCY STANDARDS

## CACAO PRODUCTION LEVEL II



**AGRICULTURE, FORESTRY AND FISHERY SECTOR**

**TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY**
TESDA Complex East Service Road, South Luzon Expressway (SLEX),
Fort Bonifacio, Taguig City

*Technical Education and Skills Development Act of 1994*
*(Republic Act No. 7796)*

Section 22, "Establishment and Administration of the National Trade Skills Standards" of the RA 7796 known as the TESDA Act mandates TESDA to establish national occupational skill standards. The Authority shall develop and implement a certification and accreditation program in which private industry group and trade associations are accredited to conduct approved trade tests, and the local government units to promote such trade testing activities in their respective areas in accordance with the guidelines to be set by the Authority.

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**AGRICULTURE, FORESTRY AND FISHERY SECTOR**

**CACAO PRODUCTION LEVEL II**

# COMPETENCY STANDARDS FOR

# CACAO PRODUCTION LEVEL II

## Section 1    CACAO PRODUCTION LEVEL II QUALIFICATION

The **CACAO PRODUCTION LEVEL II** Qualification consists of competencies that a person must achieve to establish cacao nursery, establish cacao plantation, conduct harvesting activities, prepare wet beans, conduct fermentation, intermittent drying, sorting, bean grading, packing, storage of dried beans, and sell cacao produce.

This Qualification is packaged from the competency map of the Agriculture, Forestry and Fishery Sector as shown in Annex A.

The units of competency comprising this qualification include the following:

| CODE NO. | BASIC COMPETENCIES |
|---|---|
| 400311210 | Participate in workplace communication |
| 400311211 | Work in team environment |
| 400311212 | Solve/address general workplace problems |
| 400311213 | Develop career and life decisions |
| 400311214 | Contribute to workplace innovation |
| 400311215 | Present relevant information |
| 400311216 | Practice occupational safety and health policies and procedures |
| 400311217 | Exercise efficient and effective sustainable practices in the workplace |
| 400311218 | Practice entrepreneurial skills in the workplace |

| CODE NO. | COMMON COMPETENCIES |
|---|---|
| AFF321201 | Apply safety measures in farm operations |
| AFF321202 | Use farm tools and equipment |
| AFF321203 | Perform estimation and basic calculation |

| CODE NO. | CORE COMPETENCIES |
|---|---|
| CS-AFF631307 | Establish cacao nursery |
| CS-AFF631308 | Establish cacao plantation |
| CS-AFF631309 | Conduct harvesting activities |
| CS-AFF631310 | Conduct postharvest activities |
| CS-AFF631311 | Sell cacao produce |

A person who has achieved this Qualification is competent to be:

- ❑ Cacao farmer
- ❑ Cacao propagator
- ❑ Cacao nursery operator
- ❑ Farmhand/ farm worker
- ❑ Piece worker
- ❑ Harvester
- ❑ Postharvest worker
- ❑ Cacao seller

## SECTION 2  COMPETENCY STANDARDS

These guidelines are set to provide the Technical Vocational Education and Training (TVET) providers with information and other important requirements to consider when designing training programs for **CACAO PRODUCTION LEVEL II**.

### BASIC COMPETENCIES

| | | |
|---|---|---|
| **UNIT OF COMPETENCY** | **:** | **PARTICIPATE IN WORKPLACE COMMUNICATION** |
| **UNIT CODE** | **:** | **400311210** |
| **UNIT DESCRIPTOR** | **:** | This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements. |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Obtain and convey workplace information | 1.1 Specific and relevant information is accessed from **appropriate sources**. <br> 1.2 Effective questioning, active listening and speaking skills are used to gather and convey information. <br> 1.3 Appropriate **medium** is used to transfer information and ideas. <br> 1.4 Appropriate non-verbal communication is used. <br> 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed. <br> 1.6 Defined workplace procedures for the location and **storage** of | 1.1 Effective verbal and nonverbal communication <br> 1.2 Different modes of communication <br> 1.3 Medium of communication in the workplace <br> 1.4 Organizational policies <br> 1.5 Communication procedures and systems <br> 1.6 Lines of Communication <br> 1.7 Technology relevant to the enterprise and the individual's work responsibilities <br> 1.8 Workplace etiquette | 1.1 Following simple spoken language <br> 1.2 Performing routine workplace duties following simple written notices <br> 1.3 Participating in workplace meetings and discussions <br> 1.4 Preparing work-related documents <br> 1.5 Estimating, calculating and recording routine workplace measures <br> 1.6 Relating/ Interacting with people of various levels in the workplace <br> 1.7 Gathering and providing basic information in response to |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | information are used.<br>1.7 Personal interaction is carried out clearly and concisely. | | workplace requirements<br>1.8 Basic business writing skills<br>1.9 Interpersonal skills in the workplace<br>1.10 Active-listening skills |
| 2. Perform duties following workplace instructions | 2.1 Written notices and instructions are read and interpreted in accordance with organizational guidelines.<br>2.2 Routine written instruction are followed based on established procedures.<br>2.3 Feedback is given to workplace supervisor based instructions/ information received.<br>2.4 **Workplace interactions** are conducted in a courteous manner.<br>2.5 Where necessary, clarifications about routine workplace procedures and matters concerning conditions of employment are sought and asked from **appropriate sources**.<br>2.6 Meetings outcomes are interpreted and implemented. | 2.1 Effective verbal and non-verbal communication<br>2.2 Different modes of communication<br>2.3 Medium of communication in the workplace<br>2.4 Organizational/ Workplace policies<br>2.5 Communication procedures and systems<br>2.6 Lines of communication<br>2.7 Technology relevant to the enterprise and the individual's work responsibilities<br>2.8 Effective questioning techniques (clarifying and probing)<br>2.9 Workplace etiquette | 2.1 Following simple spoken instructions<br>2.2 Performing routine workplace duties following simple written notices<br>2.3 Participating in workplace meetings and discussions<br>2.4 Completing work- related documents<br>2.5 Estimating, calculating and recording routine workplace measures<br>2.6 Relating/ Responding to people of various levels in the workplace<br>2.7 Gathering and providing information in response to workplace requirements<br>2.8 Basic questioning/ querying<br>2.9 Skills in reading for information<br>2.10 Skills in locating |
| 3. Complete relevant work-related documents | 3.1 Range of **forms** relating to conditions of | 3.1 Effective verbal and non-verbal communication | 3.1 Completing work-related documents |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | employment are completed accurately and legibly. <br> 3.2 Workplace data is recorded on standard workplace forms and documents. <br> 3.3 Errors in recording information on forms/ documents are identified and acted upon. <br> 3.4 Reporting requirements to supervisor are completed according to organizational guidelines. | 3.2 Different modes of communication <br> 3.3 Workplace forms and documents <br> 3.4 Organizational/ Workplace policies <br> 3.5 Communication procedures and systems <br> 3.6 Technology relevant to the enterprise and the individual's work responsibilities | 3.2 Applying operations of addition, subtraction, division and multiplication <br> 3.3 Gathering and providing information in response to workplace requirements <br> 3.4 Effective record keeping skills |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Appropriate sources | May include:<br>1.1 Team members<br>1.2 Supervisor/Department Head<br>1.3 Suppliers<br>1.4 Trade personnel<br>1.5 Local government<br>1.6 Industry bodies |
| 2. Medium | May include:<br>2.1 Memorandum<br>2.2 Circular<br>2.3 Notice<br>2.4 Information dissemination<br>2.5 Follow-up or verbal instructions<br>2.6 Face-to-face communication<br>2.7 Electronic media (disk files, cyberspace) |
| 3. Storage | May include:<br>3.1 Manual filing system<br>3.2 Computer-based filing system |
| 4. Workplace interactions | May include:<br>4.1 Face-to-face<br>4.2 Telephone<br>4.3 Electronic and two-way radio<br>4.4 Written including electronic means, memos, instruction and forms<br>4.5 Non-verbal including gestures, signals, signs and diagrams |
| 5. Forms | May include:<br>5.1 HR/Personnel forms, telephone message forms, safety reports |

**EVIDENCE GUIDE**

| 1. Critical aspects of Competency | **Assessment requires evidence that the candidate:** <br> 1.1 Prepared written communication following standard format of the organization <br> 1.2 Accessed information using workplace communication equipment/systems <br> 1.3 Made use of relevant terms as an aid to transfer information effectively <br> 1.4 Conveyed information effectively adopting formal or informal communication |
|---|---|
| 2. Resource Implications | **The following resources should be provided:** <br> 2.1 Fax machine <br> 2.2 Telephone <br> 2.3 Notebook <br> 2.4 Writing materials <br> 2.5 Computer with Internet connection |
| 3. Methods of Assessment | **Competency in this unit may be assessed through:** <br> 3.1 Demonstration with oral questioning <br> 3.2 Interview <br> 3.3 Written test <br> 3.4 Third-party report |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or through an accredited institution |

**UNIT OF COMPETENCY** **:** **WORK IN TEAM ENVIRONMENT**

**UNIT CODE** **:** **400311211**

**UNIT DESCRIPTOR** **:** This unit covers the skills, knowledge and attitudes to identify one's roles and responsibilities as a member of a team.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Describe team role and scope | 1.1 The *role and objective of the team* is identified from available *sources of information*.<br>1.2 Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources. | 1.1 Group structure<br>1.2 Group development<br>1.3 Sources of information | 1.1 Communicating with others, appropriately consistent with the culture of the workplace<br>1.2 Developing ways in improving work structure and performing respective roles in the group or organization |
| 2. Identify one's role and responsibility within a team | 2.1 Individual roles and responsibilities within the team environment are identified.<br>2.2 Roles and objectives of the team is identified from available *sources of information*.<br>2.3 Team parameters, reporting relationships and responsibilities are identified based on team discussions and appropriate external sources. | 2.1 Team roles and objectives<br>2.2 Team structure and parameters<br>2.3 Team development<br>2.4 Sources of information | 2.1 Communicating with others, appropriately consistent with the culture of the workplace<br>2.2 Developing ways in improving work structure and performing respective roles in the group or organization |
| 3. Work as a team member | 3.1 Effective and appropriate forms of communications are used and interactions undertaken with team members | 3.1 Communication Process<br>3.2 Workplace communication protocol | 3.1 Communicating appropriately, consistent with the culture of the workplace |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | based on company practices.<br>3.2 Effective and appropriate contributions made to complement team activities and objectives, based on *workplace context*.<br>3.3 Protocols in reporting are observed based on standard company practices.<br>3.4 Contribute to the development of team work plans based on an understanding of team's role and objectives. | 3.3 Team planning and decision making<br>3.4 Team thinking<br>3.5 Team roles<br>3.6 Process of team development<br>3.7 Workplace context | 3.2 Interacting effectively with others<br>3.3 Deciding as an individual and as a group using group think strategies and techniques<br>3.4 Contributing to Resolution of issues and concerns |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Role and objective of team | May include:<br>1.1 Work activities in a team environment with enterprise or specific sector<br>1.2 Limited discretion, initiative and judgement maybe demonstrated on the job, either individually or in a team environment |
| 2. Sources of information | May include:<br>2.1 Standard operating and/or other workplace procedures<br>2.2 Job procedures<br>2.3 Machine/equipment manufacturer's specifications and instructions<br>2.4 Organizational or external personnel<br>2.5 Client/supplier instructions<br>2.6 Quality standards<br>2.7 OHS and environmental standards |
| 3. Workplace context | May include:<br>3.1 Work procedures and practices<br>3.2 Conditions of work environments<br>3.3 Legislation and industrial agreements<br>3.4 Standard work practice including the storage, safe handling and disposal of chemicals<br>3.5 Safety, environmental, housekeeping and quality guidelines |

**EVIDENCE GUIDE**

| 1. Critical aspects of Competency | **Assessment requires evidence that the candidate:**<br>1.1 Worked in a team to complete workplace activity<br>1.2 Worked effectively with others<br>1.3 Conveyed information in written or oral form<br>1.4 Selected and used appropriate workplace language<br>1.5 Followed designated work plan for the job |
|---|---|
| 2. Resource Implications | **The following resources should be provided:**<br>2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place<br>2.2 Materials relevant to the proposed activity or tasks |
| 3. Methods of Assessment | **Competency in this unit may be assessed through:**<br>3.1 Role play involving the participation of individual member to the attainment of organizational goal<br>3.2 Case studies and scenarios as a basis for discussion of issues and strategies in teamwork<br>3.3 Socio-drama and socio-metric methods<br>3.4 Sensitivity techniques<br>3.5 Written Test |
| 4. Context for Assessment | 4.1 Competency may be assessed in workplace or in a simulated workplace setting<br>4.2 Assessment shall be observed while task are being undertaken whether individually or in group |

**UNIT OF COMPETENCY** **:** **SOLVE/ADDRESS GENERAL WORKPLACE PROBLEMS**

**UNIT CODE** **:** **400311212**

**UNIT DESCRIPTOR** **:** This unit covers the knowledge, skills and attitudes required to apply problem-solving techniques to determine the origin of problems and plan for their resolution. It also includes addressing procedural problems through documentation, and referral.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Identify routine problems | 1.1 Routine **problems or procedural problem** areas are identified. <br> 1.2 Problems to be investigated are defined and determined. <br> 1.3 Current conditions of the problem are identified and documented. | 1.1 Current industry hardware and software products and services <br> 1.2 Industry maintenance, service and helpdesk practices, processes and procedures <br> 1.3 Industry standard diagnostic tools <br> 1.4 Malfunctions and resolutions | 1.1 Identifying current industry hardware and software products and services <br> 1.2 Identifying current industry maintenance, services and helpdesk practices, processes and procedures. <br> 1.3 Identifying current industry standard diagnostic tools <br> 1.4 Describing common malfunctions and resolutions. <br> 1.5 Determining the root cause of a routine malfunction |
| 2. Look for solutions to routine problems | 2.1 Potential solutions to problem are identified. <br> 2.2 Recommendations about possible solutions are developed, **documented**, ranked and presented to *appropriate* | 2.1 Current industry hardware and software products and services <br> 2.2 Industry service and helpdesk practices, processes and procedures <br> 2.3 Operating systems | 2.1 Identifying current industry hardware and software products and services <br> 2.2 Identifying services and helpdesk practices, |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | *person* for decision. | 2.4 Industry standard diagnostic tools<br>2.5 Malfunctions and resolutions.<br>2.6 Root cause analysis | processes and procedures.<br><br>2.3 Identifying operating system<br>2.4 Identifying current industry standard diagnostic tools<br>2.5 Describing common malfunctions and resolutions.<br>2.6 Determining the root cause of a routine malfunction |
| 3. Recommend solutions to problems | 3.1 Implementation of solutions are **planned**.<br>3.2 Evaluation of implemented solutions are planned.<br>3.3 Recommended solutions are documented and submit to appropriate person for confirmation. | 3.1 Standard procedures<br>3.2 Documentation produce | 3.1 Producing documentation that recommends solutions to problems<br>3.2 Following established procedures |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Problems/Procedural Problem | May include:<br>1.1 Routine/non – routine processes and quality problems<br>1.2 Equipment selection, availability and failure<br>1.3 Teamwork and work allocation problem<br>1.4 Safety and emergency situations and incidents<br>1.5 Work-related problems outside of own work area |
| 2. Appropriate person | May include:<br>2.1 Supervisor or manager<br>2.2 Peers/work colleagues<br>2.3 Other members of the organization |
| 3. Document | May include:<br>3.1 Electronic mail<br>3.2 Briefing notes<br>3.3 Written report<br>3.4 Evaluation report |
| 4. Plan | May include:<br>4.1 Priority requirements<br>4.2 Co-ordination and feedback requirements<br>4.3 Safety requirements<br>4.4 Risk assessment<br>4.5 Environmental requirements |

**EVIDENCE GUIDE**

| 1. Critical aspects of Competency | **Assessment requires evidence that the candidate:**<br>1.1 Determined the root cause of a routine problem<br>1.2 Identified solutions to procedural problems.<br>1.3 Produced documentation that recommends solutions to problems.<br>1.4 Followed established procedures.<br>1.5 Referred unresolved problems to support persons. |
|---|---|
| 2. Resource Implications | 2.1 Assessment will require access to a workplace over an extended period, or a suitable method of gathering evidence of operating ability over a range of situations. |
| 3. Methods of Assessment | **Competency in this unit may be assessed through:**<br>3.1 Case Formulation<br>3.2 Life Narrative Inquiry<br>3.3 Standardized test<br>The unit will be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual workplace and will include walk through of the relevant competency components. |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions. |

**UNIT OF COMPETENCY** **:** **DEVELOP CAREER AND LIFE DECISIONS**

**UNIT CODE** **:** **400311213**

**UNIT DESCRIPTOR** **:** This unit covers the knowledge, skills, and attitudes in managing one's emotions, developing reflective practice, and boosting self-confidence and developing self-regulation.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Manage one's emotion | 1.1 ***Self-management strategies*** are identified. <br> 1.2 Skills to work independently and to show initiative, to be conscientious, and persevering in the face of setbacks and frustrations are developed. <br> 1.3 Techniques for effectively handling negative emotions and ***unpleasant situation*** in the workplace are examined. | 1.1 Self-management strategies that assist in regulating behavior and achieving personal and learning goals (e.g. Nine self-management strategies according to Robert Kelley) <br> 1.2 Enablers and barriers in achieving personal and career goals <br> 1.3 Techniques in handling negative emotions and unpleasant situation in the workplace such as frustration, anger, worry, anxiety, etc. | 1.1 Managing properly one's emotions and recognizing situations that cannot be changed and accept them and remain professional <br> 1.2 Developing self-discipline, working independently and showing initiative to achieve personal and career goals <br> 1.3 Showing confidence, and resilience in the face of setbacks and frustrations and other negative emotions and unpleasant situations in the workplace |
| 2. Develop reflective practice | 2.1 Personal strengths and achievements, based on self-assessment strategies and teacher feedback are contemplated. <br> 2.2 Progress when seeking and responding to | 2.1 Basic SWOT analysis <br> 2.2 Strategies to improve one's attitude in the workplace <br> 2.3 Gibbs' Reflective Cycle/Model (Description, Feelings, | 2.1 Using the basic SWOT analysis as self-assessment strategy <br> 2.2 Developing reflective practice through realization of limitations, likes/ |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | feedback from teachers to assist them in consolidating strengths, addressing weaknesses and fulfilling their potential are monitored.<br>2.3 Outcomes of personal and academic challenges by reflecting on previous problem solving and decision making strategies and feedback from peers and teachers are predicted. | Evaluation, Analysis, Conclusion, and Action plan) | dislikes; through showing of self-confidence<br>2.3 Demonstrating self-acceptance and being able to accept challenges |
| 3. Boost self-confidence and develop self-regulation | 3.1 Efforts for continuous self-improvement are demonstrated.<br>3.2 Counter-productive tendencies at work are eliminated.<br>3.3 Positive outlook in life are maintained. | 3.1 Four components of self-regulation based on Self-Regulation Theory (SRT)<br>3.2 Personality development concepts<br>3.3 Self-help concepts (e. g., 7 Habits by Stephen Covey, transactional analysis, psycho-spiritual concepts) | 3.1 Performing effective communication skills – reading, writing, conversing skills<br>3.2 Showing affective skills – flexibility, adaptability, etc.<br>3.3 Self-assessment for determining one's strengths and weaknesses |

## RANGE OF VARIABLES

| VARIABLE | RANGE |
|---|---|
| 1. Self-management strategies | May include: <br> 1.1 Seeking assistance in the form of job coaching or mentoring <br> 1.2 Continuing dialogue to tackle workplace grievances <br> 1.3 Collective negotiation/bargaining for better working conditions <br> 1.4 Share your goals to improve with a trusted co-worker or supervisor <br> 1.5 Make a negativity log of every instance when you catch yourself complaining to others <br> 1.6 Make lists and schedules for necessary activities |
| 2. Unpleasant situation | May include: <br> 2.1 Job burn-out <br> 2.2 Drug dependence <br> 2.3 Sulking |

## EVIDENCE GUIDE

| 1. Critical aspects of Competency | **Assessment requires evidence that the candidate:** <br> 1.1 Express emotions appropriately <br> 1.2 Work independently and show initiative <br> 1.3 Consistently demonstrate self-confidence and self-discipline |
|---|---|
| 2. Resource Implications | **The following resources should be provided:** <br> 2.1 Access to workplace and resources <br> 2.2 Case studies |
| 3. Methods of Assessment | **Competency in this unit may be assessed through:** <br> 3.1 Demonstration or simulation with oral questioning <br> 3.2 Case problems involving work improvement and sustainability issues <br> 3.3 Third-party report |
| 4. Context for Assessment | 4.1 Competency assessment may occur in workplace or any appropriately simulated environment |

**UNIT OF COMPETENCY** **:** **CONTRIBUTE TO WORKPLACE INNOVATION**

**UNIT CODE** **:** **400311214**

**UNIT DESCRIPTOR** **:** This unit covers the knowledge, skills and attitudes required to make a pro-active and positive contribution to workplace innovation.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Identify opportunities to do things better | 1.1 *Opportunities for improvement* are identified proactively in own area of work.<br>1.2 *Information* are gathered and reviewed which may be relevant to ideas and which might assist in gaining support for idea. | 1.1 Roles of individuals in suggesting and making improvements.<br>1.2 Positive impacts and challenges in innovation.<br>1.3 Types of changes and responsibility.<br>1.4 Seven habits of highly effective people. | 1.1 Identifying opportunities to improve and to do things better. Involvement<br>1.2 Identifying the positive impacts and the challenges of change and innovation<br>1.3 Identifying examples of the types of changes that are within and outside own scope of responsibility |
| 2. Discuss and develop ideas with others | 2.1 *People who could provide input* to ideas for improvements are identified.<br>2.2 Ways of approaching people to begin sharing ideas are selected.<br>2.3 Meeting is set with relevant people.<br>2.4 Ideas for follow up are review and selected based on feedback.<br>2.5 *Critical inquiry method* is used to discuss and develop ideas with others. | 2.1 Roles of individuals in suggesting and making improvements<br>2.2 Positive impacts and challenges in innovation<br>2.3 Types of changes and responsibility.<br>2.4 Seven habits of highly effective people | 2.1 Identifying opportunities to improve and to do things better. Involvement<br>2.2 Identifying the positive impacts and the challenges of change and innovation<br>2.3 Providing examples of the types of changes that are within and outside own scope of responsibility<br>2.4 Communicating ideas for change through small group |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | | | discussions and meetings |
| 3. Integrate ideas for change in the workplace | 3.1 Critical inquiry method is used to integrate different ideas for change of key people.<br>3.2 Summarizing, analyzing and generalizing skills are used to extract salient points in the pool of ideas.<br>3.3 *Reporting skills* are likewise used to communicate results.<br>3.4 *Current Issues and concerns* on the systems, processes and procedures, as well as the need for simple innovative practices are identified. | 3.1 Roles of individuals in suggesting and making improvements<br>3.2 Positive impacts and challenges in innovation<br>3.3 Types of changes and responsibility<br>3.4 Seven habits of highly effective people<br>3.5 Basic research skills | 3.1 Identifying opportunities to improve and to do things better. Involvement<br>3.2 Identifying the positive impacts and the challenges of change and innovation<br>3.3 Providing examples of the types of changes that are within and outside own scope of responsibility<br>3.4 Communicating ideas for change through small group discussions and meetings<br>3.5 Demonstrating skills in analysis and interpretation of data |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Opportunities for improvement | May include:<br>1.1 Systems<br>1.2 Processes<br>1.3 Procedures<br>1.4 Protocols<br>1.5 Codes<br>1.6 Practices |
| 2. Information | May include:<br>2.1 Workplace communication problems<br>2.2 Performance evaluation results<br>2.3 Team dynamics issues and concerns<br>2.4 Challenges on return of investment<br>2.5 New tools, processes and procedures<br>2.6 New people in the organization |
| 3. People who could provide input | May include:<br>3.1 Leaders<br>3.2 Managers<br>3.3 Specialists<br>3.4 Associates<br>3.5 Researchers<br>3.6 Supervisors<br>3.7 Staff<br>3.8 Consultants (external)<br>3.9 People outside the organization in the same field or similar expertise/industry<br>3.10 Clients |
| 4. Critical inquiry method | May include:<br>4.1 Preparation<br>4.2 Discussion<br>4.3 Clarification of goals<br>4.4 Negotiate towards a Win-Win outcome<br>4.5 Agreement<br>4.6 Implementation of a course of action<br>4.7 Effective verbal communication. See our pages: Verbal Communication and Effective Speaking<br>4.8 Listening<br>4.9 Reducing misunderstandings is a key part of effective negotiation<br>4.10 Rapport Building<br>4.11 Problem Solving<br>4.12 Decision Making<br>4.13 Assertiveness<br>4.14 Dealing with Difficult Situations |
| 5. Reporting skills | May include:<br>5.1 Data management<br>5.2 Coding<br>5.3 Data analysis and interpretation |

| VARIABLE | RANGE |
|---|---|
| | 5.4 Coherent writing |
| | 5.5 Speaking |

**EVIDENCE GUIDE**

| 1. Critical aspects of Competency | **Assessment requires evidence that the candidate:**<br>1.1 Identified opportunities to do things better.<br>1.2 Discussed and developed ideas with others on how to contribute to workplace innovation.<br>1.3 Integrated ideas for change in the workplace.<br>1.4 Analyzed and reported rooms for innovation and learning in the workplace. |
|---|---|
| 2. Resource Implications | **The following resources should be provided:**<br>2.1 Pens, papers and writing implements<br>2.2 Cartolina<br>2.3 Manila papers |
| 3. Methods of Assessment | **Competency in this unit may be assessed through:**<br>3.1 Psychological and behavioral Interviews<br>3.2 Performance Evaluation<br>3.3 Life Narrative Inquiry<br>3.4 Review of portfolios of evidence and third-party workplace reports of on-the-job performance<br>3.5 Sensitivity analysis<br>3.6 Organizational analysis<br>3.7 Standardized assessment of character strengths and virtues applied |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions. |

**UNIT OF COMPETENCY** **:** **PRESENT RELEVANT INFORMATION**

**UNIT CODE** **:** **400311215**

**UNIT DESCRIPTOR** **:** This unit of covers the knowledge, skills and attitudes required to present data/information appropriately.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Gather data/ information | 1.1 Evidence, facts and information are collected.<br>1.2 Evaluation, terms of reference and conditions are reviewed to determine whether data/information falls within project scope. | 1.1 Organisational protocols<br>1.2 Confidentiality<br>1.3 Accuracy<br>1.4 Business mathematics and statistics<br>1.5 Data analysis techniques/proce dures<br>1.6 Reporting requirements to a range of audiences<br>1.7 Legislation, policy and procedures relating to the conduct of evaluations<br>1.8 Organisational values, ethics and codes of conduct | 1.1 Describing organisational protocols relating to client liaison<br>1.2 Protecting confidentiality<br>1.3 Describing accuracy<br>1.4 Computing business mathematics and statistics<br>1.5 Describing data analysis techniques/ procedures<br>1.6 Reporting requirements to a range of audiences<br>1.7 Stating legislation, policy and procedures relating to the conduct of evaluations<br>1.8 Stating organisational values, ethics and codes of conduct |
| 2. Assess gathered data/ information | 2.1 Validity of data/ information is assessed.<br>2.2 Analysis techniques are applied to assess data/ information. | 2.1 Business mathematics and statistics<br>2.2 Data analysis techniques/ procedures<br>2.3 Reporting requirements to a | 2.1 Computing business mathematics and statistics<br>2.2 Describing data analysis techniques/ procedures |

| ELEMENT | PERFORMANCE CRITERIA<br>*Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | 2.3 Trends and anomalies are identified.<br><br>2.4 ***Data analysis techniques*** and procedures are documented.<br>2.5 Recommendations are made on areas of possible improvement. | range of audiences<br><br>2.4 Legislation, policy and procedures relating to the conduct of evaluations<br>2.5 Organisational values, ethics and codes of conduct | 2.3 Reporting requirements to a range of audiences<br>2.4 Stating legislation, policy and procedures relating to the conduct of evaluations<br>2.5 Stating organisational values, ethics and codes of conduct |
| 3. Record and present information | 3.1 Studied data/ information are recorded.<br>3.2 Recommendations are analysed for action to ensure they are compatible with the project's scope and terms of reference.<br>3.3 Interim and final reports are analysed and outcomes are compared to the criteria established at the outset.<br>3.4 Findings are presented to stakeholders. | 3.1 Data analysis techniques/ procedures<br>3.2 Reporting requirements to a range of audiences<br>3.3 Legislation, policy and procedures relating to the conduct of evaluations<br>3.4 Organisational values, ethics and codes of conduct | 3.1 Describing data analysis techniques/ procedures<br>3.2 Reporting requirements to a range of audiences<br>3.3 Stating legislation, policy and procedures relating to the conduct of evaluations<br>3.4 Stating organisational values, ethics and codes of conduct practices |

## RANGE OF VARIABLES

| VARIABLE | RANGE |
|---|---|
| 1. Data analysis techniques | May include:<br>1.1 Domain analysis<br>1.2 Content analysis<br>1.3 Comparison technique |

## EVIDENCE GUIDE

| | |
|---|---|
| 1. Critical aspects of Competency | **Assessment requires evidence that the candidate:**<br>1.1 Determine data / information<br>1.2 Studied and applied gathered data/information<br>1.3 Recorded and studied data/information<br><br>These aspects may be best assessed using a range of scenarios what ifs as a stimulus with a walk through forming part of the response. These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened. |
| 2. Resource Implications | **Specific resources for assessment**<br>2.1 Evidence of competent performance should be obtained by observing an individual in an information management role within the workplace or operational or simulated environment. |
| 3. Methods of Assessment | **Competency in this unit may be assessed through:**<br>3.1 Written Test<br>3.2 Interview<br>3.3 Portfolio<br><br>The unit will be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual workplace and will include walk through of the relevant competency components. |
| 4. Context for Assessment | 4.1 In all workplace, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units. |

**UNIT OF COMPETENCY** **:** **PRACTICE OCCUPATIONAL SAFETY AND HEALTH POLICIES AND PROCEDURES**

**UNIT CODE** **:** **400311216**

**UNIT DESCRIPTOR** **:** This unit covers the knowledge, skills and attitudes required to identify OSH compliance requirements, prepare OSH requirements for compliance, perform tasks in accordance with relevant OSH policies and procedures.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Identify OSH compliance requirements | 1.1 Relevant *OSH requirements, regulations, policies and procedures* are identified in accordance with workplace policies and procedures.<br>1.2 OSH activity non-conformities are conveyed to *appropriate personnel*.<br>1.3 *OSH preventive and control requirements* are identified in accordance with OSH work policies and procedures. | 1.1 OSH preventive and control requirements<br>1.2 Hierarchy of Controls<br>1.3 Hazard Prevention and Control<br>1.4 General OSH principles<br>1.5 Work standards and procedures<br>1.6 Safe handling procedures of tools, equipment and materials<br>1.7 Standard emergency plan and procedures in the workplace | 1.1 Communication skills<br>1.2 Interpersonal skills<br>1.3 Critical thinking skills<br>1.4 Observation skills |
| 2. Prepare OSH requirements for compliance | 2.1 OSH work activity material, tools and equipment requirements are identified in accordance with workplace policies and procedures.<br>2.2 Required OSH materials, tools and equipment are acquired in accordance with workplace policies and procedures. | 2.1 Resources necessary to execute hierarchy of controls<br>2.2 General OSH principles<br>2.3 Work standards and procedures<br>2.4 Safe handling procedures of tools, equipment and materials<br>2.5 Different OSH control measures | 2.1 Communication skills<br>2.2 Estimation skills<br>2.3 Interpersonal skills<br>2.4 Critical thinking skills<br>2.5 Observation skills<br>2.6 Material, tool and equipment identification skills |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | 2.3 Required OSH materials, tools and equipment are arranged/ placed in accordance with OSH work standards. | | |
| 3. Perform tasks in accordance with relevant OSH policies and procedures | 3.1 Relevant OSH work procedures are identified in accordance with workplace policies and procedures.<br>3.2 Work Activities are executed in accordance with OSH work standards.<br>3.3 **Non-compliance work activities** are reported to *appropriate personnel*. | 3.1 OSH work standards<br>3.2 Industry related work activities<br>3.3 General OSH principles<br>3.4 OSH Violations Non-compliance work activities | 3.1 Communication skills<br>3.2 Interpersonal skills<br>3.3 Troubleshooting skills<br>3.4 Critical thinking skills<br>3.5 Observation skills |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. OSH Requirements, Regulations, Policies and Procedures | May include:<br>1.1 Clean Air Act<br>1.2 Building code<br>1.3 National Electrical and Fire Safety Codes<br>1.4 Waste management statutes and rules<br>1.5 Permit to Operate<br>1.6 Philippine Occupational Safety and Health Standards<br>1.7 Department Order No. 13 (Construction Safety and Health)<br>1.8 ECC regulations |
| 2. Appropriate Personnel | May include:<br>2.1 Manager<br>2.2 Safety Officer<br>2.3 EHS Offices<br>2.4 Supervisors<br>2.5 Team Leaders<br>2.6 Administrators<br>2.7 Stakeholders<br>2.8 Government Official<br>2.9 Key Personnel<br>2.10 Specialists<br>2.11 Himself |
| 3. OSH Preventive and Control Requirements | May include:<br>3.1 Resources needed for removing hazard effectively<br>3.2 Resources needed for substitution or replacement<br>3.3 Resources needed to establishing engineering controls<br>3.4 Resources needed for enforcing administrative controls<br>3.5 Personal Protective equipment |
| 4. Non OSH-Compliance Work Activities | May include non-compliance or observance of the following safety measures:<br>4.1 Violations that may lead to serious physical harm or death<br>4.2 Fall Protection<br>4.3 Hazard Communication<br>4.4 Respiratory Protection<br>4.5 Power Industrial Trucks<br>4.6 Lockout/Tag-out<br>4.7 Working at heights (use of ladder, scaffolding)<br>4.8 Electrical Wiring Methods<br>4.9 Machine Guarding<br>4.10 Electrical General Requirements<br>4.11 Asbestos work requirements<br>4.12 Excavations work requirements |

**EVIDENCE GUIDE**

| 1. Critical aspects of Competency | **Assessment requires evidence that the candidate:**<br>1.1 Convey OSH work non-conformities to appropriate personnel<br>1.2 Identify OSH preventive and control requirements in accordance with OSH work policies and procedures<br>1.3 Identify OSH work activity material, tools and equipment requirements in accordance with workplace policies and procedures<br>1.4 Arrange/Place required OSH materials, tools and equipment in accordance with OSH work standards<br>1.5 Execute work activities in accordance with OSH work standards<br>1.6 Report OSH activity non-compliance work activities to appropriate personnel |
|---|---|
| 2. Resource Implications | **The following resources should be provided:**<br>2.1 Facilities, materials tools and equipment necessary for the activity |
| 3. Methods of Assessment | **Competency in this unit may be assessed through:**<br>3.1 Observation/Demonstration with oral questioning<br>3.2 Third party report |
| 4. Context for Assessment | 4.1 Competency may be assessed in the work place or in a simulated work place setting |

**UNIT OF COMPETENCY** **:** **EXERCISE EFFICIENT AND EFFECTIVE SUSTAINABLE PRACTICES IN THE WORKPLACE**

**UNIT CODE** **:** **400311217**

**UNIT DESCRIPTOR** **:** This unit covers knowledge, skills and attitude to identify the efficiency and effectiveness of resource utilization, determine causes of inefficiency and/or ineffectiveness of resource utilization and Convey inefficient and ineffective environmental practices.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Identify the efficiency and effectiveness of resource utilization | 1.1 Required resource utilization in the workplace is measured using appropriate techniques.<br>1.2 Data are recorded in accordance with workplace protocol.<br>1.3 Recorded data are compared to determine the efficiency and effectiveness of resource utilization according to established *environmental work procedures*. | 1.1 Importance of Environmental Literacy<br>1.2 Environmental Work Procedures<br>1.3 Waste Minimization<br>1.4 Efficient Energy Consumptions | 1.1 Recording Skills<br>1.2 Writing Skills<br>1.3 Innovation Skills |
| 2. Determine causes of inefficiency and/or ineffectiveness of resource utilization | 2.1 Potential causes of inefficiency and/or ineffectiveness are listed.<br>2.2 Causes of inefficiency and/or ineffectiveness are identified through deductive reasoning.<br>2.3 Identified causes of inefficiency and/or ineffectiveness are validated thru established environmental procedures. | 2.1 Causes of environmental inefficiencies and ineffective-ness | 2.1 Deductive Reasoning Skills<br>2.2 Critical thinking<br>2.3 Problem Solving<br>2.4 Observation Skills |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 3. Convey inefficient and ineffective environmental practices | 3.1 Efficiency and effectiveness of resource utilization are reported to *appropriate personnel*. <br> 3.2 Concerns related resource utilization are discussed with appropriate personnel. <br> 3.3 Feedback on information/ concerns raised are clarified with appropriate personnel. | 3.1 Appropriate Personnel to address the environmental hazards <br> 3.2 Environmental corrective actions | 3.1 Written and Oral Communication Skills <br> 3.2 Critical thinking <br> 3.3 Problem Solving <br> 3.4 Observation Skills <br> 3.5 Practice Environmental Awareness |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Environmental Work Procedures | May include:<br>1.1 Utilization of Energy, Water, Fuel Procedures<br>1.2 Waster Segregation Procedures<br>1.3 Waste Disposal and Reuse Procedures<br>1.4 Waste Collection Procedures<br>1.5 Usage of Hazardous Materials Procedures<br>1.6 Chemical Application Procedures<br>1.7 Labeling Procedures |
| 2. Appropriate Personnel | May include:<br>2.1 Manager<br>2.2 Safety Officer<br>2.3 EHS Offices<br>2.4 Supervisors<br>2.5 Team Leaders<br>2.6 Administrators<br>2.7 Stakeholders<br>2.8 Government Official<br>2.9 Key Personnel<br>2.10 Specialists<br>2.11 Himself |

**EVIDENCE GUIDE**

| | |
|---|---|
| 1. Critical aspects of Competency | **Assessment requires evidence that the candidate:**<br>1.1 Measured required resource utilization in the workplace using appropriate techniques<br>1.2 Recorded data in accordance with workplace protocol<br>1.3 Identified causes of inefficiency and/or ineffectiveness through deductive reasoning<br>1.4 Validate the identified causes of inefficiency and/or ineffectiveness thru established environmental procedures<br>1.5 Report efficiency and effectives of resource utilization to appropriate personnel<br>1.6 Clarify feedback on information/concerns raised with appropriate personnel |
| 2. Resource Implications | **The following resources should be provided:**<br>2.1 Workplace<br>2.2 Tools, materials and equipment relevant to the tasks<br>2.3 PPE<br>2.4 Manuals and references |
| 3. Methods of Assessment | **Competency in this unit may be assessed through:**<br>3.1 Demonstration<br>3.2 Oral questioning<br>3.3 Written examination |
| 4. Context for Assessment | 4.1 Competency assessment may occur in workplace or any appropriately simulated environment<br>4.2 Assessment shall be observed while task are being undertaken whether individually or in-group |

**UNIT OF COMPETENCY** **:** **PRACTICE ENTREPRENEURIAL SKILLS IN THE WORKPLACE**

**UNIT CODE** **:** **400311218**

**UNIT DESCRIPTOR** **:** This unit covers the outcomes required to apply entrepreneurial workplace best practices and implement cost-effective operations.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Apply entrepreneurial workplace best practices | 1.1 ***Good practices*** relating to workplace operations are observed and selected following workplace policy. <br> 1.2 Quality procedures and practices are complied with according to workplace requirements. <br> 1.3 Cost-conscious habits in ***resource utilization*** are applied based on industry standards. | 1.1 Workplace best practices, policies and criteria <br> 1.2 Resource utilization <br> 1.3 Ways in fostering entrepreneurial attitudes: <br> • Patience <br> • Honesty <br> • Quality-consciousness <br> • Safety-consciousness <br> • Resourceful-ness | 1.1 Communication skills <br> 1.2 Complying with quality procedures |
| 2. Communicate entrepreneurial workplace best practices | 2.1 Observed good practices relating to workplace operations are communicated to **appropriate person**. <br> 2.2 Observed quality procedures and practices are communicated to appropriate person. <br> 2.3 Cost-conscious habits in resource utilization are communicated based on industry standards. | 2.1 Workplace best practices, policies and criteria <br> 2.2 Resource utilization <br> 2.3 Ways in fostering entrepreneurial attitudes: <br> • Patience <br> • Honesty <br> • Quality-consciousness <br> • Safety-consciousness <br> • Resourceful-ness | 2.1 Communication skills <br> 2.2 Complying with quality procedures <br> 2.3 Following workplace communication protocol |
| 3. Implement cost-effective operations | 3.1 Preservation and optimization of workplace | 3.1 Optimization of workplace resources | 3.1 Implementing preservation and optimizing |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | resources is implemented in accordance with enterprise policy. <br> 3.2 Judicious use of workplace tools, equipment and materials are observed according to manual and work requirements. <br> 3.3 Constructive contributions to office operations are made according to enterprise requirements. <br> 3.4 Ability to work within one's allotted time and finances is sustained. | 3.2 5S procedures and concepts <br> 3.3 Criteria for cost-effectiveness <br> 3.4 Workplace productivity <br> 3.5 Impact of entrepreneurial mindset to workplace productivity <br> 3.6 Ways in fostering entrepreneurial attitudes: <br> • Quality-consciousness <br> • Safety-consciousness | workplace resources <br> 3.2 Observing judicious use of workplace tools, equipment and materials <br> 3.3 Making constructive contributions to office operations <br> 3.4 Sustaining ability to work within allotted time and finances |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Good practices | May include: <br> 1.1 Economy in use of resources <br> 1.2 Documentation of quality practices |
| 2. Resources utilization | May include: <br> 2.1 Consumption/ use of consumables <br> 2.2 Use/Maintenance of assigned equipment and furniture <br> 2.3 Optimum use of allotted /available time |

**EVIDENCE GUIDE**

| | |
|---|---|
| 1. Critical aspects of Competency | **Assessment requires evidence that the candidate:** <br> 1.1 Demonstrated ability to identify and sustain cost-effective activities in the workplace <br> 1.2 Demonstrated ability to practice entrepreneurial knowledge, skills and attitudes in the workplace. |
| 2. Resource Implications | **The following resources should be provided:** <br> 2.1 Simulated or actual workplace <br> 2.2 Tools, materials and supplies needed to demonstrate the required tasks <br> 2.3 References and manuals <br>      2.3.1 Enterprise procedures manuals <br>      2.3.2 Company quality policy |
| 3. Methods of Assessment | **Competency in this unit should be assessed through:** <br> 3.1 Interview <br> 3.2 Third-party report |
| 4. Context for Assessment | 4.1 Competency may be assessed in workplace or in a simulated workplace setting <br> 4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group |

# COMMON COMPETENCIES

**UNIT OF COMPETENCY** **:** **APPLY SAFETY MEASURES IN FARM OPERATIONS**

**UNIT CODE** **:** **AFF321201**

**UNIT DESCRIPTOR** **:** This unit covers the knowledge, skills and attitudes required to perform safety measures effectively and efficiently. It includes identifying areas, tools, materials, time and place in performing safety measures.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Determine areas of concern for safety measures | 1.1 **Work *tasks*** are identified in line with farm operations.<br>1.2 ***Place*** for safety measures are determined in line with farm operations.<br>1.3 ***Time*** for safety measures are determined in line with farm operations.<br>1.4 Appropriate ***tools, materials and outfits*** are prepared in line with job requirements. | 1.1 Different work tasks in farm operations<br>1.2 Place and time for implementation of safety measures<br>1.3 Different hazards in the workplace<br>1.4 Types of tools, materials and outfits<br>1.5 Preparation of tools, materials and outfits | 1.1 Identifying work tasks in farm operations<br>1.2 Determining place and time for implementation of safety measures<br>1.3 Reading labels, manuals and other basic safety information<br>1.4 Identifying effective/ functional tools, materials and outfit<br>1.5 Preparing tools, materials and outfits<br>1.6 Discarding defective tools, and materials |
| 2. Apply appropriate safety measures | 2.1 Tools and materials are used according to specifications and procedures.<br>2.2 Outfits are worn according to farm requirements.<br>2.3 Effectivity/shelf life/expiration of | 2.1 Uses and functions of tools<br>2.2 Outfits and how to wear it<br>2.3 Expiration/shelf life of materials<br>2.4 Proper disposal of expired materials | 2.1 Using tools and materials in the workplace<br>2.2 Wearing of outfits<br>2.3 Observing expiration/shelf life of materials |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | materials are strictly observed. 2.4 ***Emergency procedures*** are known and followed to ensure a safework requirement. 2.5 Hazards in the workplace are identified and reported in line with farm guidelines. | 2.5 Environmental rules and regulations 2.6 Emergency procedures 2.7 Hazards identification and reporting 2.8 Communication skills 2.9 OSHS | 2.4 Disposing of expired materials 2.5 Following emergency procedures 2.6 Identifying and reporting of hazards in workplace area |
| 3. Safekeep /dispose tools, materials and outfit | 3.1 Used tools and outfit are cleaned after use and stored in designated areas. 3.2 Unused materials are properly labeled and stored according to manufacturer's recommendation and farm requirements. 3.3 Waste materials are disposed according to manufacturers, government and farm requirements. | 3.1 Procedures of cleaning used tools and outfits 3.2 Label and storage unused materials 3.3 Disposal of wastes materials 3.4 Manufacturers' recommendation on keeping materials 3.5 Environmental rules and regulations | 3.1 Cleaning used tools and outfit 3.2 Labeling and storing unused materials 3.3 Disposing waste materials |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Work tasks | Work task may be selected from any of the subsectors:<br>1.1 Crop Production<br>1.2 Post-harvest<br>1.3 Agri-marketing<br>1.4 Farm Equipment |
| 2. Place | 2.1 Stock room/storage areas/warehouse<br>2.2 Field/farm/orchard |
| 3. Time | 3.1 Fertilizer and pesticides application<br>3.2 Feed mixing and feeding<br>3.3 Harvesting and hauling |
| 4. Tools, materials and outfits | 4.1 Tools<br>    4.1.1 Wrenches<br>    4.1.2 Screw driver<br>    4.1.3 Pliers<br>4.2 Outfit<br>    4.2.1 Masks<br>    4.2.2 Gloves<br>    4.2.3 Boots<br>    4.2.4 Overall coats<br>    4.2.5 Hat<br>    4.2.6 Eye goggles |
| 5. Emergency procedures | 5.1 Location of first aid kit<br>5.2 Evacuation<br>5.3 Agencies contract<br>5.4 Farm emergency procedures |
| 6. Hazards | 6.1 Chemical<br>6.2 Electrical<br>6.3 Falls |

**EVIDENCE GUIDE**

| | |
|---|---|
| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:<br>1.1 Determined areas of concern for safety measures<br>1.2 Applied appropriate safety measures according to industry requirements<br>1.3 Prepared tools, materials and outfit needed<br>1.4 Performed proper disposal of used materials<br>1.5 Cleaned and stored tools, materials and outfit in designated facilities |
| 2. Resource Implications | The following resources should be provided:<br>2.1 Farm location<br>2.2 Tools, equipment and outfits appropriate in applying safety measures |
| 3. Methods of Assessment | Competency in this unit may be assessed through:<br>3.1 Practical demonstration<br>3.2 Third Party Report |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions. |

**UNIT OF COMPETENCY** : **USE FARM TOOLS AND EQUIPMENT**

**UNIT CODE** : **AFF321202**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills and attitudes required to use farm tools and equipment. It includes selection, operation and preventive maintenance of farm tools and equipment.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Select and use farm tools | 1.1 Appropriate farm tools are identified according to requirement/use.<br>1.2 Farm tools are checked for faults and defective tools reported in accordance with farm procedures.<br>1.3 Appropriate tools are safely used according to job requirements and manufacturers conditions. | 1.1 Types and uses of farm tools<br>1.2 Characteristics of functional tools<br>1.3 Checking tools for defects/faults<br>1.4 Segregation and reporting defective tools<br>1.5 Uses of tools | 1.1 Identifying farm tools for the work<br>1.2 Checking the conditions of tools<br>1.3 Reporting defective tools<br>1.4 Using tools |
| 2. Select and operate farm equipment | 2.1 Identify appropriate *farm equipment*.<br>2.2 Instructional manual of the farm tools and equipment are carefully read prior to operation.<br>2.3 Pre-operation check-up is conducted in line with manufacturers manual.<br>2.4 Faults in farm equipment are identified and reported in line with farm procedures.<br>2.5 Farm equipment is used according to its function.<br>2.6 Safety procedures are followed. | 2.1 Types and operations of farm equipment<br>2.2 Standards operating procedures of farm equipment<br>2.3 Instructional manual of equipment<br>2.4 Pre-operation check-up<br>2.5 Equipment Specification<br>2.6 Procedures in calibrating and use of equipment<br>2.7 Equipment faults identification and reporting<br>2.8 Operation of equipment | 2.1 Identifying appropriate farm equipment for the work<br>2.2 Reading instructional manual<br>2.3 Conducting pre-operation check-up<br>2.4 Identifying faults/defects of farm equipment<br>2.5 Reporting on defective farm equipment<br>2.6 Operating farm equipment<br>2.7 Following safety procedures |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | | 2.9 Codes and Regulations on environmental protection<br>2.10 Safety and keeping of equipment every after use<br>2.11 Safety measures | |
| 3. Perform preventive maintenance | 3.1 Tools and equipment are cleaned immediately after use in line with farm procedures.<br>3.2 Routine check-up and maintenance are performed.<br>3.3 Tools and equipment are stored in designated areas in line with farm procedures. | 3.1 Cleaning procedures of tools and equipment<br>3.2 Maintenance procedures of farm equipment<br>3.3 Storage of tools and equipment<br>3.4 Designated storage areas | 3.1 Cleaning tools and equipment<br>3.2 Performing routinely check-up of tools and equipment<br>3.3 Maintaining farm equipment<br>3.4 Storing tools and equipment |

## RANGE OF VARIABLES

| VARIABLE | RANGE |
|---|---|
| 1. Farm equipment | May include:<br>1.1 Engine<br>1.2 Pumps<br>1.3 Generators<br>1.4 Sprayers |
| 2. Farm tools | May include:<br>2.1 Sickle<br>2.2 Cutters<br>2.3 Weighing scales<br>2.4 Hand tools<br>2.5 Measuring tools<br>2.6 Garden tools |
| 3. Pre-operation check-up | May include:<br>3.1 Tires<br>3.2 Brake fluid<br>3.3 Fuel<br>3.4 Water<br>3.5 Oil<br>3.6 Lubricants<br>3.7 Battery |

## EVIDENCE GUIDE

| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:<br>1.1 Correctly identified appropriate farm tools and equipment<br>1.2 Operated farm equipment according to manual specification<br>1.3 Performed preventive maintenance |
|---|---|
| 2. Resource Implications | The following resources should be provided:<br>2.1 Service/operational manual of farm tools and equipment<br>2.2 Tools and equipment<br>2.3 Farm implements |
| 3. Methods of Assessment | Competency in this unit may be assessed through:<br>3.1 Direct observation<br>3.2 Practical demonstration<br>3.3 Third Party Report |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions. |

**UNIT OF COMPETENCY** : **PERFORM ESTIMATION AND BASIC CALCULATION**

**UNIT CODE** : **AFF321203**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills and attitudes required to perform basic workplace calculations.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Perform estimation | 1.1 Job requirements are identified from written or oral communications. <br> 1.2 Quantities of materials and resources required to complete a work task are estimated. <br> 1.3 The time needed to complete a work activity is estimated. <br> 1.4 Accurate estimate for work completion are made. <br> 1.5 Estimate of materials and resources are reported to appropriate person. | 1.1 Job requirements/ labor needs <br> 1.2 Calculation of quantities of materials and resources required <br> 1.3 Calculation of time for job completion <br> 1.4 Preparation of estimate report <br> 1.5 Basic mathematical operations <br> 1.6 Percentage and ratios <br> 1.7 Unit Conversion | 1.1 Identifying job requirements/ labor <br> 1.2 Estimating quantities of materials and resources required <br> 1.3 Estimating time for job completion <br> 1.4 Performing basic calculation <br> 1.5 Compute percentage <br> 1.6 Convert English to metric systems of measurement <br> 1.7 Preparing estimate report |
| 2. Perform basic workplace calculation | 1.1 ***System and units of measurement*** to be followed are ascertained. <br> 1.2 Calculation needed to complete work tasks are performed using the ***four basic mathematical operation***. <br> 1.3 Calculate whole fraction, percentage and mixed when are used to complete the instructions. | 2.1 Four basic mathematical operation <br> 2.2 System and units of measurement <br> 2.3 Fraction, percentage and ratio <br> 2.4 Material take-off <br> 2.5 Materials costing | 2.1 Compute bill of materials <br> 2.2 Compute project cost |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
|  | 1.4 Number computed is checked following work requirements |  |  |

## RANGE OF VARIABLES

| VARIABLE | RANGE |
|---|---|
| 1. Four basic mathematical operation | Includes:<br>1.1 Addition<br>1.2 Subtraction<br>1.3 Multiplication<br>1.4 Division |
| 2. System of measurement | Includes:<br>2.1 English<br>2.2 Metric |
| 3. Units of measurement | Includes:<br>3.1 Area<br>3.2 Volume<br>3.3 Weight<br>3.4 Length |

## EVIDENCE GUIDE

| 1. Critical aspects of Competency | Assessment requires evidence that the candidate:<br>1.1 Performed estimation<br>1.2 Performed basic workplace calculation<br>1.3 Applied corrective measures as maybe necessary |
|---|---|
| 2. Resource Implications | The following resources should be provided:<br>2.1 Relevant tools and equipment for basic calculation<br>2.2 Recommended data |
| 3. Methods of Assessment | Competency in this unit may be assessed through:<br>3.1 Practical demonstration<br>3.2 Written examination |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions. |

# CORE COMPETENCIES

**UNIT OF COMPETENCY** **:** **ESTABLISH CACAO NURSERY**

**UNIT CODE** **:** **CS-AFFXXXXXX**

**UNIT DESCRIPTOR** **:** This unit covers the knowledge, skills, and attitude required to perform nursery operation. It includes selecting site for nursery operations, identify and prepare tools, supplies and materials, perform seed sowing, maintain plant nursery and perform plant cacao propagation.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Select nursery site | 1.1 Access to transportation is determined based on industry practices.<br>1.2 *Drainage* is inspected based on industry practices.<br>1.3 *Pests and diseases* are determined based on industry practices.<br>1.4 *Source of water* is determined based on industry practices.<br>1.5 *Climatic variables* are determined based on-industry practices.<br>1.6 *Documentation* is performed following industry practices. | **SCIENCE**<br>1.1 Pests and diseases in Cacao<br>1.2 Climatic variables<br><br>**TECHNOLOGY**<br>1.3 Nursery site selection<br>1.4 Site inspection and validation<br>1.5 Measurement of site<br>1.6 Drainage inspection<br>1.7 Water source<br>1.8 Partition<br>1.9 Comprehensive Land Use Plan<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>1.10 Department of Agriculture (DA) color-coded suitability map<br>1.11 Awareness on Republic Act No. 11068, as amended by Republic Act No. 11511 or the "Organic | 1.1 Conducting site inspection and validation<br>1.2 Determining suitability of area<br>1.3 Obtaining updates and information on climatic condition<br>1.4 Inspecting drainage<br>1.5 Determining pests and diseases<br>1.6 Determining source of water<br>1.7 Performing documentation |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | | Agriculture Act of 2010" 1.12 Awareness on business permit requirements<br><br>**MATHEMATICS** 1.13 Basic arithmetic | |
| 2. Prepare tools, equipment, and materials | 2.1 ***Tools, equipment, and materials*** are identified per work requirements.<br>2.2 ***Equipment*** are checked based on manufacturer's manual.<br>2.3 ***Personal Protective Equipment (PPEs)*** are identified based on work requirements.<br>2.4 ***Composition of potting media*** is mixed based on recommended ratio.<br>2.5 ***Sterilization of potting media*** is performed following industry practice.<br>2.6 Safety practices are applied following OSHS. | **TECHNOLOGY** 2.1 Preparation of tools equipment and materials 2.2 Sharpening of tools 2.3 Mixing of potting media 2.4 Sterilization of potting media 2.5 PPEs<br><br>**MATHEMATICS** 2.6 Ratio and proportion 2.7 Rate of application<br><br>**ENVIRONMENT AND OTHER RELATED LAWS** 2.8 Occupational Safety and Health Standards (OSHS) 2.9 Awareness on RA 6969 An Act to control toxic substances and hazardous and nuclear wastes, providing penalties for violations | 2.1 Identifying tools, equipment, and materials 2.2 Checking equipment 2.3 Identifying PPES 2.4 Mixing potting media 2.5 Sterilizing potting media 2.6 Applying safety practices |
| 3. Prepare nursery | 3.1 ***Clearing operation*** is performed following industry practice.<br>3.2 Layouting is performed according to | **SCIENCE** 3.1 Nursery orientation in relation to source of light<br><br>**TECHNOLOGY** | 3.1 Performing clearing operation 3.2 Lay-outing nursery 3.3 Staking nursery |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | volume of seedling production.<br>3.3 Staking is performed following the established layout.<br>3.4 *Irrigation* and *drainage* system are set for water management.<br>3.5 Area is secured through fencing following industry practices.<br>3.6 Garden *nets* and posts are installed following industry practices.<br>3.7 *Tools, equipment and materials* are used following manufacturer's manual.<br>3.8 *PPEs* are used following safety procedures.<br>3.9 Safety practices are applied following OSHS. | 3.2 Irrigation and drainage system<br>3.3 Layouting and staking nursery<br>3.4 Different nets and their functions<br>  3.4.1 Mosquito net<br>  3.4.2 Shading net<br>  3.4.3 UV treated PE film<br>  3.4.4 Laminated sack<br>3.5 Installation of net and posts<br>3.6 Installation of fence<br>3.7 Proper use of tools, equipment, and materials<br>3.8 Proper use of PPEs<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>3.9 Awareness on DENR Administrative Order No.2021-11 Guidelines in the Processing and Issuing of Permits for the Cutting, Removal and Relocation of Naturally Growing Trees<br>3.10 Occupational Safety and Health Standards (OSHS)<br><br>**MATHEMATICS**<br>3.11 Computation of:<br>  3.11.1 Distance<br>  3.11.2 Dimension<br>  3.11.3 Scaling | 3.4 Establishing drainage canal<br>3.5 Installing fences<br>3.6 Installing garden nets and posts<br>3.7 Using tools, equipment, and materials<br>3.8 Used PPEs<br>3.9 Applying safety practices<br>3.10 Calculation and measurement skills |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 4. Prepare cacao seeds | 4.1 Ripe pods are selected following industry practice.<br>4.2 Pod breaking is performed following industry practice.<br>4.3 Seeds are extracted following industry practice.<br>4.4 Mucilage is removed using *mucilage remover* following industry practice.<br>4.5 Good seeds are *selected* according to industry practice.<br>4.6 Selected seeds are *treated* according to manufacturer's recommendation.<br>4.7 Good seeds are pre-germinated following *pre-germination procedure*.<br>4.8 Germinated seeds are selected following industry practice.<br>4.9 *PPEs* are used following safety procedures.<br>4.10 Safety practices are applied following OSHS. | **SCIENCE**<br>4.1 Physiologically matured and visual indicators of ripe pods<br>4.2 Stages of germination<br><br>**TECHNOLOGY**<br>4.3 Pod breaking and seed extraction<br>4.4 Methods of removing mucilage<br>4.5 Methods of selecting good seeds<br>4.6 Treatment of selected seeds<br>  4.6.1 Organic-based<br>  4.6.2 Inorganic<br>4.7 Pre-germination procedure<br>4.8 Manufacturer's instruction<br>4.9 PPEs<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>4.10 Occupational Safety and Health Standards (OSHS)<br>4.11 Awareness on RA 6969 An Act to control toxic substances and hazardous and nuclear wastes, providing penalties for violations<br><br>**MATHEMATICS**<br>4.12 Averaging of seeds per pod<br>4.13 Estimation | 4.1 Selecting ripe pods<br>4.2 Breaking pods<br>4.3 Extracting seeds<br>4.4 Removing mucilage<br>4.5 Selecting good seeds<br>4.6 Treating selected seeds<br>4.7 Performing seeds pre-germination<br>4.8 Selecting germinated seeds<br>4.9 Using PPEs<br>4.10 Applying safety practices |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | | 4.14 Ratio and proportion<br>4.15 Conversion | |
| 5. Perform sowing | 5.1 Soil bagging is performed following industry practice.<br>5.2 Soil-filled bags are arranged in nursery facility following industry practice.<br>5.3 Germinated seed is placed into moistened soil-filled bags with radicles facing downward following industry practice.<br>5.4 Germinated seed is partially covered with soil following industry practice.<br>5.5 *Net management* is employed following industry practice.<br>5.6 *Documentation* is performed following established industry practice.<br>5.7 *Tools* are used following manufacturer's manual.<br>5.8 *Wastes* are disposed following Ecological Solid Waste Management.<br>5.9 *PPEs* are worn following safety procedures.<br>5.10 Safety practices are applied following OSHS. | **SCIENCE**<br>5.1 Germination of seeds<br><br>**TECHNOLOGY**<br>5.2 Seed sowing<br>5.3 Layout and arrangement of soil-filled bags<br>5.4 Sorting of seedlings<br>5.5 Cacao Production Guide of the Department of Agriculture<br>5.6 Net management<br>5.7 PPEs<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>5.8 Occupational Safety and Health Standards (OSHS)<br>5.9 Ecological Solid Waste Management<br><br>**MATHEMATICS**<br>5.10 Estimation<br><br>**COMMUNICATION**<br>5.11 Documentation | 5.1 Performing soil bagging<br>5.2 Arranging soil filled bags<br>5.3 Placing germinated seed moistened soil-filled bags with radicles facing downward<br>5.4 Covering partially the germinated seed<br>5.5 Employing net management<br>5.6 Performing documentation<br>5.7 Using tools<br>5.8 Disposing wastes<br>5.9 Wearing PPEs<br>5.10 Applying safety practices |
| 6. Maintain nursery facility | 6.1 *Fertilizer* is applied based on industry practice.<br>6.2 Watering is performed following | **SCIENCE**<br>6.1 Importance of fertilization or nutrient management | 6.1 Applying fertilizer<br>6.2 Applying fungicide and insecticide |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | prescribed method and schedule.<br>6.3 *Preventive and corrective measures* are applied based on nursery requirement.<br>6.4 Seedlings are *segregated* according to industry practice.<br>6.5 *Shading management* is employed based on industry practice.<br>6.6 *Documentation* is performed based on industry practice.<br>6.7 *Tools* and *materials* are used following industry practice.<br>6.8 *PPEs* are worn following safety procedures.<br>6.9 Safety practices are applied following OSHS. | 6.2 Importance of water management<br>6.3 Different pests and diseases of cacao<br>6.4 Symptoms of pests and diseases of cacao<br>6.5 Role of sunlight on the growth and development of seedlings<br>6.6 Responsible use of chemicals<br><br>**TECHNOLOGY**<br>6.7 Application of fertilizer<br>6.8 Application of fungicide and insecticide<br>6.9 Segregation of seedlings:<br>  6.9.1 Stunted<br>  6.9.2 Defective<br>  6.9.3 Healthy<br>6.10 Shading management<br>6.11 Water management<br>6.12 Weeding management<br>6.13 PPEs<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>6.14 Occupational Safety and Health Standards (OSHS)<br>6.15 Awareness on RA 6969 An Act to control toxic substances and hazardous and nuclear wastes, providing | 6.3 Performing water management<br>6.4 Applying weeding management<br>6.5 Applying preventive and corrective measures<br>6.6 Segregating seedlings<br>6.7 Employing shading management<br>6.8 Performing documentation<br>6.9 Using tools and equipment<br>6.10 Wearing PPEs<br>6.11 Applying safety practices |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | | penalties for violations

**MATHEMATICS**
6.16 Computation of fertilizer's ratio and proportion
6.17 Computation of dosage of pesticide
6.18 Estimation of shading

**COMMUNICATION**
6.19 Schedule of application of insecticides, fungicides, and fertilizer | |
| 7. Perform cacao asexual propagation | 7.1 *Tools* for propagation are *checked* in accordance with OSHS.
7.2 *Tools* and *materials* are used based on work requirement.
7.3 Ready for grafting seedling is identified according to *physiological characteristics of plants*.
7.4 Scion of recommended *varieties* is selected based on *good scion characteristics*.
7.5 Cleft grafting technique is applied based on industry practice.
7.6 *Ready to plant grafted materials* are checked based on industry practice. | **SCIENCE**
7.1 Cacao varieties/ clones
   7.1.1 Criollo
   7.1.2 Forastero
   7.1.3 Trinitario (NSIC recommend-ded variety)
7.2 Characteristics of good scion
7.3 Characteristics of ready to plant grafted materials
7.4 Physiological characteristics of plants
7.5 Weather condition in relation to propagation

**TECHNOLOGY**
7.6 Cleft grafting technique
7.7 Increasing survival of grafted seedlings
7.8 PPEs

**MATHEMATICS** | 7.1 Checking of tools for propagation
7.2 Using of tools and materials
7.3 Identifying ready for grafting seedling
7.4 Selecting scion of recommended varieties
7.5 Applying cleft grafting technique
7.6 Checking the characteristics of ready to plant grafted materials
7.7 Wearing PPEs
7.8 Applying safety practices |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
|  | 7.7 **PPEs** are worn following safety procedures. 7.8 Safety practices are applied following OSHS. | 7.9 Percentage of grafting success 7.10 Counting of number of days to open |  |
| 8. Conduct post activities | 8.1 **Wastes** are disposed following Solid Waste Management Procedure. 8.2 **Tools, equipment, and materials** are stored based on industry practice. 8.3 Inventory of **tools, equipment, and materials** is performed based on industry practice. 8.4 **Tools** are sanitized based on industry practice. | **TECHNOLOGY** 8.1 Use of tools, equipment and materials **ENVIRONMENT AND OTHER RELATED LAWS** 8.2 Waste management 8.3 Occupational Safety and Health Standards (OSHS) 8.4 PNS/BAFPS 58:2019 - Cacao or cocoa beans - specifications and grading | 8.1 Disposing wastes 8.2 Storing tools, equipment and materials 8.3 Inventory skills 8.4 Sanitation skills |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Drainage | Drainage includes:<br>1.1 Open<br>1.2 Depth<br>1.3 Well-drained<br>1.4 Canal |
| 2. Pests and diseases | Pests and diseases may include:<br><br>2.1 Pests<br>    2.1.1 Aphids<br>    2.1.2 Mites<br>    2.1.3 Termites<br>    2.1.4 Mealybugs<br>    2.1.5 Ants<br>    2.1.6 Rodents<br><br>2.2 Diseases<br>    2.2.1 Leaf disease<br>    2.2.2 Vascular Streak Dieback (VSD) |
| 3. Source of water | Source of water includes:<br>3.1 Well<br>3.2 Water pump<br>3.3 Open source<br>    3.3.1 River<br>    3.3.2 Pond<br>3.4 Local water distributor |
| 4. Climatic variables | Climatic variables include:<br>4.1 Rainfall<br>4.2 Wind<br>4.3 Temperature<br>4.4 Sunlight |
| 5. Documentation | Documentation includes:<br>5.1 Recording<br>5.2 Accomplished form<br>5.3 Photo documentation<br>5.4 Video documentation<br>5.5 Monitoring board |
| 6. Tools | Tools may include:<br><br>6.1 For nursery preparation<br>    6.1.1 Trowel<br>    6.1.2 Shovel<br>    6.1.3 Bolo<br>    6.1.4 Garden hoe<br>    6.1.5 Digging bar<br>    6.1.6 Garden rake<br>    6.1.7 Measuring tape<br>    6.1.8 Hammer |

| VARIABLE | RANGE |
|---|---|
| | 6.1.9   Saw<br>6.1.10 Pick mattock<br>6.1.11 Soil pH meter<br><br>6.2   For Sowing<br>    6.2.1   Shovel<br>    6.2.2   Bolo<br>    6.2.3   Thermometer<br><br>6.3   For maintenance of nursery:<br>    6.3.1   Sprinkler<br>    6.3.2   Hose<br>    6.3.3   Knapsack sprayer<br>    6.3.4   Shovel<br>    6.3.5   Bolo<br>    6.3.6   Pail<br>    6.3.7   Pruning shear (*must be sanitized)<br><br>6.4   For Propagation<br>    6.4.1   Grafting knife (*must be sanitized)<br>    6.4.2   Pruning shear |
| 7.   Equipment | Equipment may include:<br>7.1   Wheelbarrow<br>7.2   Grass cutter |
| 8.   Materials | Materials may include:<br><br>8.1   Land preparation:<br>    8.1.1   Stake (bamboo, cacao, etc.)<br>    8.1.2   Wire<br>    8.1.3   Rope (nylon, abaca)<br>    8.1.4   Nails<br><br>8.2   Sowing seed:<br>    8.2.1   Fish net<br>    8.2.2   Polybag<br><br>8.3   Maintenance of nursery<br>    8.3.1   Pesticide<br>    8.3.2   Fertilizer<br>    8.3.3   Containers<br>    8.3.4   Polybag<br><br>8.4   Propagation<br>    8.4.1 Plastic tape |
| 9.   PPEs | PPEs may include:<br>9.1   Hand gloves<br>9.2   Boots<br>9.3   Safety goggles<br>9.4   Long sleeves |

| VARIABLE | RANGE |
|---|---|
| | 9.5   Hat<br>9.6   Mask |
| 10. Composition of potting media | Composition of potting media may include:<br>10.1 Top soil<br>10.2 Rice hull<br>      10.2.1 Carbonized<br>      10.2.2 Decomposed<br><br>10.3 Vermicast<br>10.4 Dried manure<br>      10.4.1 Cow<br>      10.4.2 Chicken<br><br>10.5 Compost<br>10.6 Saw dust |
| 11. Sterilization of potting media | Sterilization of potting media may include:<br>11.1 Solarization<br>11.2 Soil baking method<br>11.3 Application of sodium hypochlorite (chlorine)<br>11.4 Drenching method of fungicide and insecticide |
| 12. Clearing operation | Clearing operation may include:<br>12.1 Clearing of existing vegetation<br>12.2 Uprooting and removal of stump<br>12.3 Removal of debris |
| 13. Irrigation | Irrigation may include:<br>13.1 Manual<br>13.2 Sprinkler<br>13.3 Overhead |
| 14. Nets | Nets may include:<br>14.1 Mosquito net<br>14.2 Shading net |
| 15. Mucilage remover | Mucilage remover may include:<br>15.1 Sawdust<br>15.2 Fresh rice hull<br>15.3 Fine sand |
| 16. Selection of good seeds | Selection of good seeds may include:<br>16.1 Floatation method<br>16.2 Visual method<br>16.3 Middle of the pod |
| 17. Treatment of selected seeds | Treatment of selected seeds may include:<br>17.1 Organic-based<br>17.2 Inorganic |
| 18. Pre-germination procedure | Pre-germination procedure includes:<br>18.1 Placing of seeds on jute sack<br>18.2 Cover with moistened newspaper<br>18.3 Daily sprinkling of water |
| 19. Net management | Net management may include:<br>19.1 Covering of sown seed with net<br>19.2 Sprinkling of water |

| VARIABLE | RANGE |
|---|---|
| | 19.3 Removal of net after prescribed duration |
| 20. Wastes | Wastes may include:<br>20.1 Plastic<br>20.2 Cellophane<br>20.3 Polyethylene<br>20.4 Mucilage<br>20.5 Discarded seeds<br>20.6 Empty chemical containers<br>20.7 Used saw dust |
| 21. Fertilizer | Fertilizer may include:<br>21.1 Granular<br>21.2 Foliar |
| 22. Preventive and corrective measures | Preventive and corrective measures may include:<br>22.1 Preventive<br>     22.1.1 Monitor disease occurrence, infestation, and weeds<br>     22.1.2 Application of insecticide and fungicide<br>     22.1.3 Manual weeding<br>     22.1.4 Clean and sanitation of nursery facility<br><br>22.2 Corrective<br>     22.2.1 Application of insecticide and fungicide<br>     22.2.2 Repair of shade and fence<br>     22.2.3 Repair of drainage<br>     22.2.4 Repair of water line |
| 23. Segregation of seedling | Segregation of seedling may include:<br>23.1 Stunted seedling<br>23.2 Defective seedling |
| 24. Shading management | Shading management may include:<br>24.1 Gradual decrease of shading<br>24.2 Transfer of seedling for hardening |
| 25. Checking of tools for propagation | Checking of tools for propagation may include:<br>25.1 Functionality<br>25.2 Sanitation |
| 26. Physiological characteristics of plants | Physiological characteristics of plants may include:<br>26.1 Pencil size in diameter<br>26.2 With 2-3 whorl leaves |
| 27. Varieties of scion | Varieties of scion may include:<br>27.1 Criollo<br>27.2 Forastero<br>27.3 Trinitario (NSIC recommended variety) |
| 28. Good scion characteristics | Good scion characteristics may include:<br>28.1 Active scion from matured fan branch<br>28.2 Not shaded upward branch<br>28.3 NSIC recommended clones/varieties |
| 29. Ready to plant grafted materials | Ready to plant grafted materials may include:<br>29.1 Hardening of seedling<br>29.2 Presence of 8 matured leaves |

**EVIDENCE GUIDE**

| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate: |
|---|---|
| | 1.1 Selected nursery site.<br>    1.1.1 Determined access to transportation.<br>    1.1.2 Inspected drainage.<br>    1.1.3 Determined pests and diseases.<br>    1.1.4 Determined source of water.<br><br>1.2 Prepared tools, equipment, and materials.<br>    1.2.1 Mixed potting media.<br>    1.2.2 Performed sterilization of potting media.<br>    1.2.3 Applied safety practices.<br><br>1.3 Prepared nursery.<br>    1.3.1 Performed clearing operation.<br>    1.3.2 Performed layouting.<br>    1.3.3 Performed staking.<br>    1.3.4 Set irrigation and drainage system.<br>    1.3.5 Secured area.<br>    1.3.6 Installed garden nets and posts.<br><br>1.4 Prepared cacao seeds.<br>    1.4.1 Selected ripe pods.<br>    1.4.2 Performed pods breaking.<br>    1.4.3 Extracted seeds.<br>    1.4.4 Removed mucilage.<br>    1.4.5 Selected good seeds.<br>    1.4.6 Disinfected selected seeds.<br>    1.4.7 Pre-germinated good seeds.<br>    1.4.8 Selected germinated seeds.<br><br>1.5 Performed sowing.<br>    1.5.1 Performed soil bagging.<br>    1.5.2 Arranged soil-filled bags.<br>    1.5.3 Placed germinated seed into moistened soil-filled bags with radicles facing downward.<br>    1.5.4 Partially covered germinated seed with soil.<br>    1.5.5 Employed net management.<br><br>1.6 Maintained nursery facility.<br>    1.6.1 Applied fertilizer.<br>    1.6.2 Performed watering.<br>    1.6.3 Applied preventive and corrective measures.<br>    1.6.4 Segregated seedlings.<br>    1.6.5 Employed shading management.<br>    1.6.6 Performed documentation.<br>    1.6.7 Used tools and materials.<br>    1.6.8 Applied safety practices. |

| | 1.6.9 Worn PPEs. |
|---|---|
| | 1.7 Performed cacao asexual propagation.<br>    1.7.1 Checked tools for propagation.<br>    1.7.2 Used tools and materials.<br>    1.7.3 Identified ready for grafting seedling.<br>    1.7.4 Selected scion of recommended varieties.<br>    1.7.5 Applied cleft grafting technique.<br>    1.7.6 Checked ready to plant grafted materials.<br><br>1.8 Conducted post activities.<br>    1.8.1 Disposed wastes.<br>    1.8.2 Stored tools, equipment, and materials.<br>    1.8.3 Performed inventory of tools, equipment, and materials.<br>    1.8.4 Sanitized tools. |
| 2. Resource Implications | The following resources MUST be provided:<br>2.1 Actual or simulated workplace<br>2.2 Tools, equipment, and materials required to perform the required task<br>2.3 Manuals and references, forms and plans<br>2.4 PPEs |
| 3. Methods of Assessment | Competency in this unit may be assessed through:<br>3.1 Direct observation<br>3.2 Demonstration<br>3.3 Oral questioning<br>3.4 Written test |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions |

**UNIT OF COMPETENCY : ESTABLISH CACAO PLANTATION**

**UNIT CODE : CS-AFFXXXXXX**

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills and attitudes required to establish a cacao plantation. It includes site selection for planting/plantation, land preparation and plant cacao seedling, watering cacao plant/ irrigation, weed management, fertilizer application, pruning practices, pests and disease management, and clonal rehabilitation.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Select site for plantation | 1.1 Site is selected based on *cacao planting requirements*. <br> 1.2 Plantation design is performed based on *cropping systems*. <br> 1.3 *Tools, equipment and materials* for lay-outing are identified based on work requirements. <br> 1.4 *Records* are kept and maintained following industry practice. <br> 1.5 Waste management procedures are followed based on industry standard. | **SCIENCE** <br> 1.1 Science of Cacao Production <br> 1.2 Crop suitability and planting requirements (Climatic and Edaphic factors) <br><br> **TECHNOLOGY** <br> 1.3 Cropping systems <br> 1.4 Use of tools, equipment and materials <br><br> **ENVIRONMENT AND OTHER RELATED LAWS** <br> 1.5 Environmental Health and Safety Standards (EHS) <br> 1.6 Waste management procedure <br> 1.7 Awareness on Zonal Law (LGU) <br> 1.8 Awareness on RA 2874 – The Public Land Act <br> 1.9 Awareness on EUDR 2023/1115 - Regulation on Deforestation-free products | 1.1 Selecting site <br> 1.2 Performing plantation design <br> 1.3 Identifying tools, equipment and materials for lay-outing <br> 1.4 Keeping and maintaining records <br> 1.5 Following waste management procedures |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | | **MATHEMATICS**<br>1.10 Computation of:<br>   1.10.1 Distance<br>   1.10.2 Dimension<br>   1.10.3 Scaling<br><br>**COMMUNICATION**<br>1.11 Recordkeeping | |
| 2. Perform land preparation | 2.1 ***Soil requirements*** for plantation are identified based on the ***cacao planting requirements***.<br>2.2 Soil is collected for soil analysis following ***soil sampling methods***.<br>2.3 Plantation lay-out is carried out based on ***cropping systems*** and in accordance with industry practice.<br>2.4 ***Tools, equipment and materials*** are used based on land preparation requirements.<br>2.5 Land is set following ***land preparation methods***.<br>2.6 Staking is performed based on industry practice.<br>2.7 Holing is performed following industry practice.<br>2.8 ***PPEs*** are worn following safety procedures. | **SCIENCE**<br>2.1 Soil sampling<br>2.2 Different soil types<br>2.3 Cacao planting requirements<br><br>**TECHNOLOGY**<br>2.4 Soil collection<br>2.5 Soil sampling methods<br>2.6 Plantation lay-out<br>2.7 Cropping system<br>2.8 Use of tools, equipment and materials<br>2.9 PPEs<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>2.10 Occupational Safety and Health Standards (OSHS)<br><br>**MATHEMATICS**<br>2.11 Computation of:<br>   2.11.1 Distance<br>   2.11.2 Dimension<br>   2.11.3 Scaling | 2.1 Identifying soil requirements for plantation<br>2.2 Collecting soil for soil analysis<br>2.3 Plantation lay-outing<br>2.4 Using tools, equipment and materials<br>2.5 Setting land<br>2.6 Performing holing<br>2.7 Wearing PPEs |
| 3. Plant cacao seedlings | 3.1 ***Cropping systems*** are applied based on industry practice.<br>3.2 Planting starting on the onset of rainy | **SCIENCE**<br>3.1 Cacao Cropping systems<br>3.2 Cacao Plant: Varieties, Compatibilities | 3.1 Select appropriate cropping system<br>3.2 Apply appropriate planting method |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | season is done based on the industry practice. 3.3 ***Tools, materials and equipment*** are used in accordance to the industry practice. 3.4 ***Fertilizer*** is applied based on industry practice. 3.5 Cacao clones are planted schematically based on industry practice. 3.6 ***Quality seedlings*** are planted based on industry practice. 3.7 ***Shading*** is provided on individual planted seedlings based on industry practice. 3.8 ***PPEs*** are worn following safety procedures. | and planting systems 3.3 Cacao clones characteristics<br><br>**TECHNOLOGY** 3.4 Use of tools, equipment and materials 3.5 Planting orientation 3.6 Planting QPMs 3.7 PPEs<br><br>**ENVIRONMENT AND OTHER RELATED LAWS** 3.8 Occupational Safety and Health Standards (OSHS)<br><br>**MATHEMATICS** 3.9 Fertilizer computation 3.10 Ratio and proportion<br><br>**COMMUNICATION** 3.11 Record keeping | 3.3 Select appropriate planting system 3.4 Apply fertilizer 3.5 Wearing PPEs |
| 4. Perform plant care and maintenance | 4.1 ***Water management*** is employed according to industry practice. 4.2 ***Fertilizer*** is applied to plants according to industry practice. 4.3 ***Pest management*** is applied to ***common pests*** based on industry practice. 4.4 ***Pruning*** is performed based on industry practice. | **SCIENCE** 4.1 Asexual propagation 4.2 Cacao water requirements 4.3 Cacao nutrition 4.4 Cacao pests and management 4.5 Significance of pruning 4.6 Cacao rehabilitation 4.7 Shading of cacao plants<br><br>**TECHNOLOGY** 4.8 Grafting techniques | 4.1 Watering of plants 4.2 Applying fertilizer 4.3 Applying pest management 4.4 Pruning skills 4.5 Applying rehabilitation techniques 4.6 Wearing PPEs |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | 4.5 **Rehabilitation techniques** are applied based on industry practice.<br>4.6 **PPEs** are worn following safety procedures. | 4.9 Pruning methods<br>4.10 Fertilizer application<br>4.11 Pest control and management<br>4.12 PPEs<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>4.13 Occupational Safety and Health Standards (OSHS)<br>4.14 Awareness on RA 6969 - An Act to control toxic substances and hazardous and nuclear wastes, providing penalties for violations<br>4.15 LGU Ordinances on waste segregation<br><br>**MATHEMATICS**<br>4.16 Fertilizer computation<br>4.17 Ratio and proportion<br>4.18 Pesticide calibration<br><br>**COMMUNICATION**<br>4.19 Record keeping | |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Cacao planting requirements | Cacao planting requirements may include:<br>1.1 Climatic factors<br>1.2 Type of soil<br>1.3 Elevation<br>1.4 Topography<br>    1.4.1 Access to road<br>    1.4.2 Water and electricity source<br><br>1.5 Must not be planted in overly shaded area |
| 2. Cropping systems | Cropping systems may include:<br>2.1 Mono-cropping<br>2.2 Inter-cropping<br>2.3 Multi-cropping |
| 3. Tools | Tools may include:<br>3.1 Bolo/Scythe<br>3.2 Spade/Shovel<br>3.3 Garden hoe<br>3.4 Soil auger<br>3.5 Hole digger<br>3.6 Grass cutter<br>3.7 Rake<br>3.8 Hedge shear<br>3.9 Pruning shear<br>3.10 Pruning pole<br>3.11 Ladder |
| 4. Equipment | Equipment may include:<br>4.1 Knapsack sprayer<br>4.2 Water pump<br>4.3 Soil moisture meter |
| 5. Materials | Materials may include:<br>5.1 Pail and dipper<br>5.2 Measuring tape<br>5.3 Cacao seedlings<br>5.4 Stake<br>5.5 Sharpening stone<br>5.6 Weed killer (herbicides)<br>5.7 Hose<br>5.8 Sprinkler<br>5.9 Disinfectant<br>5.10 Wax/Paint<br>5.11 Compass<br>5.12 Rope |
| 6. Records | Records may include:<br>6.1 Inventory<br>6.2 Activity report<br>6.3 Financial records<br>6.4 Accidental report |

| VARIABLE | RANGE |
|---|---|
| 7. Soil requirements | Soil requirements may include:<br>7.1 Soil texture<br>7.2 Soil pH<br>7.3 Soil moisture<br>7.4 Availability of nutrients |
| 8. Soil sampling methods | Soil sampling methods may include:<br>8.1 Stratified<br>8.2 Randomized |
| 9. Land preparation methods | Land preparation methods may include:<br>9.1 Zero tillage<br>9.2 Primary tillage<br>9.3 Secondary tillage |
| 10. PPEs | PPEs may include:<br>10.1 Hand gloves<br>10.2 Boots<br>10.3 Safety goggles<br>10.4 Long sleeves<br>10.5 Hat<br>10.6 Mask |
| 11. Fertilizer | Fertilizer may include:<br>11.1 Urea<br>11.2 Complete fertilizer<br>11.3 Muriate of potash<br>11.4 Ammonium sulfate<br>11.5 Solophos<br>11.6 Organic fertilizer<br>11.7 Foliar fertilizer |
| 12. Quality seedling | Quality seedling may include:<br>12.1 Size<br>12.2 Number leaves<br>12.3 Height<br>12.4 Age<br>12.5 Disease-free<br>12.6 Kinds of clones |
| 13. Shading | Shading may include:<br>13.1 Coconut Frond<br>13.2 Plastic sack |
| 14. Water management | Water management may include<br>14.1 Rainfed<br>14.2 Irrigated<br>    14.2.1 Manual<br>    14.2.2 Drip<br>    14.2.3 Furrow<br>    14.2.4 Sprinkler<br><br>14.3 Water conservation<br>    14.3.1 Mulching<br>    14.3.2 Cover cropping |

| VARIABLE | RANGE |
|---|---|
| 15. Pest management | Pest management may include:<br>15.1 Cultural Method<br>15.2 Mechanical Method<br>15.3 Biological Method<br>15.4 Physical Method<br>15.5 Chemical Method<br>15.6 Host Plant Resistance |
| 16. Common pests | Common pests may include:<br>16.1 Insect Pests:<br>     16.1.1 Cacao pod borer<br>     16.1.2 Cacao Mirid Bug<br>     16.1.3 Scarab beetles<br>     16.1.4 Mealybugs<br>     16.1.5 Aphids<br>     16.1.6 Stem borer<br>     16.1.7 Tussock Moth<br><br>16.2 Diseases:<br>     16.2.1 Cacao pod rot<br>     16.2.2 Trunk/Stem canker<br>     16.2.3 Vascular Streak Die-back<br>     16.2.4 Pink Disease<br>     16.2.5 Cherelle wilt<br><br>16.3 Weeds:<br>     16.3.1 Broad leaves<br>     16.3.2 Sedges<br>     16.3.3 Grasses<br><br>16.4 Vertebrae pests:<br>     16.4.1 Rat<br>     16.4.2 Squirrel |
| 17. Pruning | Pruning may include:<br>17.1 Chupon<br>17.2 Tip pruning<br>17.3 Corrective<br>17.4 Formative<br>17.5 Production<br>17.6 Maintenance |
| 18. Rehabilitation techniques | Rehabilitation techniques may include:<br>18.1 Chupon cleft grafting<br>18.2 Side grafting<br>18.3 Under planting<br>18.4 Partial replanting<br>18.5 Total replanting |

## EVIDENCE GUIDE

| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate: <br><br>1.1 Selected site for plantation. <br>    1.1.1 Selected site. <br>    1.1.2 Performed plantation design. <br>    1.1.3 Identified tools, equipment and materials for lay-outing. <br><br>1.2 Performed land preparation. <br>    1.2.1 Identified soil requirements for plantation. <br>    1.2.2 Collected soil for soil analysis. <br>    1.2.3 Carried out plantation lay-out. <br>    1.2.4 Performed holing. <br>    1.2.5 Worn PPEs. <br><br>1.3 Planted cacao seedlings. <br>    1.3.1 Applied cropping systems. <br>    1.3.2 Applied fertilizer. <br>    1.3.3 Planted clones schematically. <br>    1.3.4 Planted quality seedlings. <br>    1.3.5 Provided shading. <br>    1.3.6 Worn PPEs. <br><br>1.4 Performed plant care and maintenance. <br>    1.4.1 Performed watering. <br>    1.4.2 Applied fertilizer. <br>    1.4.3 Applied pest management to common pests. <br>    1.4.4 Performed pruning. <br>    1.4.5 Applied rehabilitation techniques. <br>    1.4.6 Worn PPEs. |
|---|---|
| 2. Resource Implications | The following resources MUST be provided: <br>2.1 Actual or simulated workplace <br>2.2 Tools and equipment required to perform the required task <br>2.3 Manuals and references, forms and plans <br>2.4 PPEs |
| 3. Methods of Assessment | Competency in this unit may be assessed through: <br>3.1 Direct observation <br>3.2 Demonstration <br>3.3 Oral questioning <br>3.4 Written test |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions |

**UNIT OF COMPETENCY** **:** **CONDUCT HARVESTING ACTIVITIES**

**UNIT CODE** **:** **CS-AFFXXXXXX**

**UNIT DESCRIPTOR** **:** This unit covers the knowledge, skills and attitudes required to harvest pods. It includes determination of maturity indices, pod breaking, segregation of good beans, preparation of wet beans, and record keeping.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Perform pre-harvest activities | 1.1 ***Harvesting preparations*** are performed based on industry practice. <br> 1.2 ***Tools, equipment and materials*** are prepared based on farm practice. <br> 1.3 Pod maturity is determined based on ***maturity index***. <br> 1.4 ***PPEs*** are prepared following OHS. | **SCIENCE** <br> 1.1 Pod maturity index <br> 1.2 Cacao pest and disease diagnostics <br><br> **TECHNOLOGY** <br> 1.3 Use of harvesting tools, equipment and materials. <br> 1.4 Methods of assessing maturity of pods <br> 1.5 Harvesting preparations <br> 1.6 PPEs <br><br> **ENVIRONMENT AND OTHER RELATED LAWS** <br> 1.7 Occupational Safety and Health Standards (OSHS) <br><br> **MATHEMATICS** <br> 1.8 Computation of cost of materials and labor <br> 1.9 Projection <br><br> **COMMUNICATION** <br> 1.10 Recording of projected trees to be harvested | 1.1 Performing harvest preparations <br> 1.2 Preparing tools, equipment and materials <br> 1.3 Determining pod maturity <br> 1.4 Preparing PPEs |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 2. Harvest pods | 2.1 Harvested pods are hauled to pod breaking area according to industry practice. <br> 2.2 *PPEs* are worn following safety procedures. <br> 2.3 Safety practices are applied following OHS procedure. | **SCIENCE** <br> 2.1 Cacao pod maturity <br><br> **TECHNOLOGY** <br> 2.2 Approaches of cacao pod harvesting <br> 2.3 Use of tools, equipment and materials <br> 2.4 Hauling approaches <br><br> **ENVIRONMENTAL AND OTHER RELATED LAWS** <br> 2.5 Use of PPEs <br> 2.6 OSHS <br> 2.7 Waste management <br> 2.8 Awareness on Gender and Development (GAD) <br> 2.9 Awareness RA 7658 – An Act Prohibiting the Employment of Children Below 15 Years of Age in Public and Private Undertakes, Amending for This Purpose Section 12, Article VIII of R.A. 7610 <br><br> **MATHEMATICS** <br> 2.10 Estimation <br> 2.11 Averaging | 2.1 Hauling harvested pod <br> 2.2 Wearing PPEs <br> 2.3 Applying safety practices |
| 3. Perform post activities | 3.1 Pods are washed according to industry practice. <br> 3.2 Pod breaking and bean extraction are conducted | **SCIENCE** <br> 3.1 Cacao pest and disease diagnostics <br><br> **TECHNOLOGY** | 3.1 Washing pods <br> 3.2 Conducting pod breaking and bean extraction |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | according to industry practice.<br>3.3 Good beans are segregated from *defective beans* according to industry practice.<br>3.4 *Preparation of wet beans* is performed according to industry practice.<br>3.5 *Defective pods* and cellophane are disposed according to industry practice.<br>3.6 *Tools and equipment* are cleaned following industry practice.<br>3.7 *Tools, equipment and materials* are stored following industry practice.<br>3.8 *Recordkeeping* is performed according to industry practice.<br>3.9 Safety practices are applied following OHS procedure. | 3.2 Pod breaking<br>  3.2.1 Steps in washing pods<br>3.3 Bean segregation<br>3.4 Use of tools, equipment and materials<br>3.5 Manufacturer's manual<br>3.6 Procedure in cleaning and storing tools and equipment<br>3.7 Procedure in storing materials<br>3.8 Procedures in preparing wet beans<br><br>**ENVIRONMENTAL AND OTHER RELATED LAWS**<br>3.9 Occupational Safety and Health Standards (OSHS)<br>3.10 Waste management<br><br>**MATHEMATICS**<br>3.11 Weighing of wet beans<br><br>**COMMUNICATION**<br>3.12 Recordkeeping | 3.3 Segregating good beans from defective beans<br>3.4 Performing preparation of wet beans<br>3.5 Disposing defective pods and cellophane<br>3.6 Cleaning tools and equipment<br>3.7 Storing tools, equipment and materials<br>3.8 Performing recordkeeping<br>3.9 Applying safety practices |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Harvesting preparations | Harvesting preparations may include:<br>1.1 Labor<br>1.2 Number of days<br>1.3 Schedule of harvest<br>1.4 Costing<br>1.5 Number of trees<br>1.6 Availability of tools, equipment and materials |
| 2. Tools, equipment and materials | Tools, equipment and materials may include:<br><br>2.1 Tools:<br>    2.1.1 Pruning shear<br>    2.1.2 Long pole with hook "karit"<br>    2.1.3 Wheel barrow<br>    2.1.4 Pod breaker<br><br>2.2 Materials:<br>    2.2.1 Sacks<br>    2.2.2 Tarpaulin (Trapal)<br>    2.2.3 Plastic crates<br>    2.2.4 Record book<br>    2.2.5 Twine<br><br>2.3 Equipment:<br>    2.3.1 Hand tractor farm trailer |
| 3. Maturity index | Maturity index may include:<br>3.1 Color<br>    3.1.1 Green (vegetative) to yellow (maturity)<br>    3.1.2 Red (vegetative) to yellow orange (maturity)<br>    3.1.3 Maroon (vegetative) to orange (maturity)<br><br>3.2 Percentage of maturity<br>    3.2.1 Immature: 25%<br>    3.2.2 Mature: 50% to 75%<br>    3.2.3 Overripe: 100% |
| 4. PPEs | PPEs may include:<br>4.1 Hand gloves<br>4.2 Boots<br>4.3 Hat<br>4.4 Field wear |
| 5. Defective beans | Defective beans may include:<br>5.1 Germinated beans<br>5.2 Infected beans<br>5.3 Infested beans |
| 6. Preparation of wet beans | Preparation of wet beans may include:<br>6.1 For market delivery<br>    6.1.1 Packing<br>    6.1.2 Weighing |

| VARIABLE | RANGE |
|---|---|
| | 6.1.3   Recording of wet bean weights<br>6.1.4   Delivery<br><br>6.2   For fermentation<br>6.2.1   Weighing<br>6.2.2   Delivery to fermentation facility |
| 7.  Defective pods | Defective pods include:<br>7.1   Insect-damaged<br>7.2   Rat-infested<br>7.3   Pod infected<br>7.4   Immature pods |
| 8.  Recordkeeping | Recordkeeping may include:<br>8.1   Date<br>8.2   Duration<br>8.3   Number of labors<br>8.4   Total cost incurred<br>8.5   Pod volume<br>    8.5.1   Good pods<br>    8.5.2   Defective pods |

**EVIDENCE GUIDE**

| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:<br><br>1.1 Performed pre-harvest activities.<br>    1.1.1 Performed harvesting preparations.<br>    1.1.2 Determined pod maturity.<br><br>1.2 Harvested pods.<br>    1.2.1 Hauled harvested pods to pod breaking area.<br><br>1.3 Performed post activities.<br>    1.3.1 Conducted pod breaking and bean extraction.<br>    1.3.2 Segregated good beans from defective beans.<br>    1.3.3 Performed preparation of wet beans.<br>    1.3.4 Disposed defective pods and cellophane.<br>    1.3.5 Cleaned tools and equipment.<br>    1.3.6 Stored tools, equipment and materials.<br>    1.3.7 Performed recordkeeping. |
|---|---|
| 2. Resource Implications | The following resources MUST be provided:<br>2.1 Actual or simulated workplace<br>2.2 Tools, equipment and materials required to perform the required task<br>2.3 PPEs |
| 3. Methods of Assessment | Competency in this unit may be assessed through:<br>3.1 Direct observation<br>3.2 Demonstration<br>3.3. Oral questioning<br>3.4 Written test |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions |

**UNIT OF COMPETENCY    :    CONDUCT POSTHARVEST ACTIVITIES**

**UNIT CODE    :    CS-AFFXXXXXX**

**UNIT DESCRIPTOR    :    This unit covers the knowledge, skills and attitudes required to conduct post-harvest activities. It includes fermentation, intermittent drying, sorting, bean grading, packing, and storage of dried beans.**

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Prepare for post-harvest activities | 1.1 ***Tools, equipment and materials*** are prepared based on industry practice.<br>1.2 Functionality of ***equipment*** is checked based on manufacturer's manual.<br>1.3 ***Dryers*** are prepared following industry practice.<br>1.4 ***PPEs*** are prepared following OHS. | **TECHNOLOGY**<br>1.1 Preparation of tools, equipment and materials<br>1.2 Types of dryers<br>1.3 Manufacturer's manual<br>1.4 PPEs<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>1.5 Occupational Safety and Health Standards (OSHS) | 1.1 Preparing equipment and materials<br>1.2 Checking functionality of equipment<br>1.3 Preparing dryers<br>1.4 Preparing PPEs |
| 2. Perform fermentation | 2.1 Good beans are ***checked*** according to industry practice.<br>2.2 Good beans are weighed according to industry practice.<br>2.3 Good beans are placed in ***fermentation box*** with ***covering materials*** according to industry practice.<br>2.4 Temperature is daily monitored based on industry practice.<br>2.5 Bean turning is performed following industry practice.<br>2.6 Beans are unloaded from | **SCIENCE**<br>2.1 Cacao fermentation<br>   2.1.1 Anaerobic fermentation<br>   2.1.2 Aerobic fermentation<br>2.2 Physical development of beans during fermentation<br><br>**TECHNOLOGY**<br>2.3 Selection of good beans for fermentation<br>2.4 Techniques in Cacao Fermentation<br>2.5 Different fermentation box | 2.1 Checking good beans<br>2.2 Weighing good beans<br>2.3 Placing good beans in fermentation box with covering materials<br>2.4 Daily monitoring of temperature<br>2.5 Performing bean turning<br>2.6 Unloading beans from fermentation box<br>2.7 Placing fermented beans in a container<br>2.8 Performing recordkeeping of fermented beans |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | *fermentation box* based on industry practice.<br>2.7 Fermented beans are placed in a container based on industry practice.<br>2.8 ***Recordkeeping of fermented beans*** is performed based on industry practice.<br>2.9 Safety practices are applied following OSHS. | and covering materials<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>2.6 Occupational Safety and Health Standards (OSHS)<br>2.7 PNS/ BAFPS 104:2011 – Code of Practice for Philippine Cacao Beans<br><br>**COMMUNICATION**<br>2.8 Recording of temperature | 2.9 Applying safety practices |
| 3. Perform intermittent bean drying | 3.1 ***Dryers*** are used following industry practice.<br>3.2 Beans are thinly spread on dryer following industry practice.<br>3.3 Bean and ambient temperatures are ***monitored*** following industry practice.<br>3.4 Beans are ***mixed*** for uniform drying following industry practice.<br>3.5 Beans are ***protected*** from rain and excessive heat following industry practice.<br>3.6 Moisture content is determined following industry standard.<br>3.7 Beans are stored following industry practice.<br>3.8 ***PPEs*** are used following OSHS. | **SCIENCE**<br>3.1 Intermittent drying<br>3.2 Effect of excessive heat on the release of acids<br><br>**TECHNOLOGY**<br>3.3 Awareness on the use of mechanical dryer on intermittent bean drying<br>3.4 Awareness on alternative method on determining moisture content (feel method)<br>3.5 Location for intermittent drying<br>3.6 Bean drying<br>3.7 Determining ambient temperature with the use of infrared thermometer<br>3.8 Techniques in mixing beans | 3.1 Using dryers<br>3.2 Spreading beans thinly on dryer<br>3.3 Monitoring bean and ambient temperatures<br>3.4 Mixing beans for uniform drying<br>3.5 Protecting beans from rain and excessive heat<br>3.6 Determining moisture content<br>3.7 Storing beans<br>3.8 Using PPEs |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | | 3.9 Determination of moisture content using moisture tester<br>3.10 Handling and storing of dried beans<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>3.11 Occupational Safety and Health Standards (OSHS)<br>3.12 PNS BAFPS 104:2011 - Code of practice for Philippine cacao beans<br><br>**COMMUNICATION**<br>3.13 Recordkeeping | |
| 4. Perform bean sorting | 4.1 Beans are classified manually following industry practice.<br>4.2 Beans are segregated according to *sizes* following industry practice.<br>4.3 Beans are determined based on *physical quality*.<br>4.4 Good beans are placed in clean jute sacks following the industry practice. | **SCIENCE**<br>4.1 Varietal differences of bean size<br><br>**TECHNOLOGY**<br>4.2 Manual classification of fermented beans<br>4.3 Identification of good and defective beans<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>4.4 Hygiene and sanitation<br><br>**MATHEMATICS**<br>4.5 Bean count<br>4.6 Percentage of good and defective beans<br>4.7 Percent of wet to dry bean recovery | 4.1 Classifying beans manually<br>4.2 Segregating beans according to sizes<br>4.3 Determining quality beans<br>4.4 Placing good beans in clean jute sacks |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | | **COMMUNICATION** 4.8 Recordkeeping | |
| 5. Perform grading of fermented beans | 5.1 ***Tools and equipment*** are prepared based on industry practice. <br> 5.2 Beans are randomly collected for grading according to industry standard. <br> 5.3 Bean count is performed according to industry standard. <br> 5.4 Bean cut test is performed based on industry standard. <br> 5.5 ***Defective beans*** are segregated based on the result of bean cut test. <br> 5.6 Beans are classified according to industry standard. | **SCIENCE** 5.1 Significance of fissuring <br> 5.2 Bean grade classification <br><br> **TECHNOLOGY** 5.3 Bean cut test <br><br> **ENVIRONMENT AND OTHER RELATED LAWS** 5.4 PNS-BAFPS 58:2019 - Cacao or cocoa beans- specification and grading <br><br> **MATHEMATICS** 5.5 Bean count <br> 5.6 Basic arithmetic <br><br> **COMMUNICATION** 5.7 Recordkeeping | 5.1 Preparing tools and equipment <br> 5.2 Collecting beans randomly for grading <br> 5.3 Performing bean count <br> 5.4 Performing bean cut test <br> 5.5 Segregating defective beans <br> 5.6 Classifying beans |
| 6. Store dried beans | 6.1 Beans are packed based on industry practice. <br> 6.2 Packed beans are kept following industry standard. <br> 6.3 ***Recordkeeping of dried beans*** is performed based on industry practice. <br> 6.4 Storage area is ***maintained*** following industry practice. <br> 6.5 Safety and sanitation is monitored following industry practice. | **SCIENCE** 6.1 Pest and diseases <br> 6.2 Physiological processes <br><br> **TECHNOLOGY** 6.3 Procedure in packing dried beans <br> 6.4 Management and control of pest and diseases <br> 6.5 Recommended practices in cacao bean storage <br><br> **ENVIRONMENTAL AND OTHER RELATED LAWS** 6.6 Occupational | 6.1 Packing beans <br> 6.2 Keeping packed beans <br> 6.3 Performing recordkeeping of dried beans <br> 6.4 Maintaining storage area <br> 6.5 Monitoring safety and sanitation |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---------|---------|---------|---------|
|  |  | Safety and Health Standards (OSHS)<br>6.7 PNS-BAFPS 58:2019 - Cacao or cocoa beans-specification and grading<br><br>**MATHEMATICS**<br>6.8 Basic arithmetic<br><br>**COMMUNICATION**<br>6.9 Recordkeeping |  |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Tools | Tools may include:<br>1.1 Fermentation<br>    1.1.1 Lollipop thermometer<br>    1.1.2 Pod breaker<br>    1.1.3 Wooden ladle<br><br>1.2 Intermittent bean drying<br>    1.2.1 Non-corrosive rake<br>    1.2.2 Non-corrosive shovel<br><br>1.3 Bean grading<br>    1.3.1 Guillotine<br>    1.3.2 Knife/ cutter |
| 2. Equipment | Equipment may include:<br>2.1 Fermentation<br>    2.1.1 Weighing scale<br><br>2.2 Intermittent bean drying<br>    2.2.1 Infrared thermometer<br>    2.2.2 Moisture meter<br>    2.2.3 Mechanical dryer<br><br>2.3 Bean grading<br>    2.3.1 Weighing scale |
| 3. Materials | Materials may include:<br>3.1 Fermentation<br>    3.1.1 Fermentation box<br>    3.1.2 Covering materials<br>    3.1.3 Plastic crates<br>    3.1.4 Scoop<br><br>3.2 Intermittent bean drying<br>    3.2.1 Tarp (Trapal)<br>    3.2.2 Insulator<br>    3.2.3 Nets<br>    3.2.4 Jute sacks<br>    3.2.5 Plastic twine<br><br>3.3 Storage<br>    3.3.1 Packaging material<br>        3.3.1.1 Jute sack<br>        3.3.1.2 Food grade container<br>        3.3.1.3 Food grade plastic bag |
| 4. Dryer | Dryer may include:<br>4.1 Drying bed<br>4.2 UV Plastic dryer |
| 5. PPEs | PPEs may include: |

| VARIABLE | RANGE |
|---|---|
| | 5.1 Gloves<br>5.2 Hat<br>5.3 Boots |
| 6. Checking of good beans | Checking of good beans may include:<br>6.1 Removal of:<br>    6.1.1 Defective beans<br>    6.1.2 Germinated beans<br>    6.1.3 Infected beans<br>    6.1.4 Infested beans<br>    6.1.5 Placenta |
| 7. Fermentation box | Fermentation box may include:<br>7.1 Wooden trees except<br>    7.1.1 Resin-emitting trees<br>    7.1.2 Palm trees<br><br>7.2 Fruit-based woods |
| 8. Covering materials | Covering materials may include:<br>8.1.1 Banana leaves<br>8.1.2 Jute sacks<br>8.1.3 Plastic sheets |
| 9. Recordkeeping of fermented beans | Recordkeeping of fermented beans may include:<br>9.1 Moisture content<br>9.2 Bean count<br>9.3 Defective beans<br>    9.3.1 Slaty<br>    9.3.2 Moldy<br>    9.3.3 Waste/ flat beans<br>    9.3.4 Infested<br>    9.3.5 Insect damage<br>    9.3.6 Germinated<br><br>9.4 Grading<br>    9.4.1 1A<br>    9.4.2 1B<br>    9.4.3 1C<br>    9.4.4 SS (Sub-standard) |
| 10. Monitoring of bean and ambient temperature | Monitoring of bean and ambient temperature may include:<br>10.1 Initial monitoring<br>10.2 Rise of temperature<br>    10.2.1 Must not exceed to 40 degrees Celsius<br><br>10.3 Every 10 to 20 minutes temperature monitoring<br>10.4 Ambient temperature continuously rises beyond 40 degrees Celsius |
| 11. Mixing of beans | Mixing of beans may include:<br>11.1 Use of net<br>11.2 Use of rake |
| 12. Protection of beans | Protection of beans may include: |

| VARIABLE | RANGE |
|---|---|
| | 12.1 Putting drying bed under shade<br>12.2 Use of trapal |
| 13. Size of beans | Size of beans may include:<br>13.1 Large<br>13.2 Medium<br>13.3 Small |
| 14. Physical quality of beans | Physical quality of beans may include:<br>14.1 Good<br>14.2 Defective<br>      14.2.1 Germinated<br>      14.2.2 Infested<br>      14.2.3 Infected<br>      14.2.4 Flat beans |
| 15. Defective beans from bean cut test | Defective beans from the bean cut test result may include:<br>15.1 Slaty<br>15.2 Moldy<br>15.3 Germinated<br>15.4 Insect damage |
| 16. Recordkeeping of dried beans | Recordkeeping of dried beans may include:<br>16.1 Date<br>16.2 Duration<br>16.3 Number of labors<br>16.4 Total cost incurred<br>16.5 Pod volume<br>      16.5.1 Good pods<br>      16.5.2 Defective pods |
| 17. Maintenance of storage area | Maintenance of storage area may include:<br>17.1 Ventilation<br>17.2 Pest and rodent free<br>17.3 Sanitation and safety signages |

**EVIDENCE GUIDE**

| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate: |
|---|---|
| | 1.1 Prepared for post-harvest activities.<br>    1.1.1 Prepared tools, equipment and materials.<br>    1.1.2 Checked functionality of equipment.<br>    1.1.3 Prepared dryers.<br>    1.1.4 Prepared PPEs.<br><br>1.2 Performed fermentation.<br>    1.2.1 Checked good beans.<br>    1.2.2 Weighed good beans.<br>    1.2.3 Placed good beans in fermentation box with covering materials.<br>    1.2.4 Monitored temperature daily.<br>    1.2.5 Performed bean turning.<br>    1.2.6 Unloaded beans from fermentation box.<br><br>1.3 Performed intermittent bean drying.<br>    1.3.1 Used dryers.<br>    1.3.2 Thinly spread beans on dryer.<br>    1.3.3 Monitored bean and ambient temperatures.<br>    1.3.4 Mixed beans for uniform drying.<br>    1.3.5 Protected beans from rain and excessive heat.<br>    1.3.6 Determined moisture content.<br>    1.3.7 Stored beans.<br><br>1.4 Performed bean sorting.<br>    1.4.1 Classified beans.<br>    1.4.2 Segregated beans.<br>    1.4.3 Determined beans.<br>    1.4.4 Placed good beans in clean jute sacks.<br><br>1.5 Performed grading of fermented beans.<br>    1.5.1 Collected beans randomly.<br>    1.5.2 Performed bean count.<br>    1.5.3 Performed bean cut test.<br>    1.5.4 Segregated defective beans.<br>    1.5.5 Classified beans.<br><br>1.6 Stored dried beans.<br>    1.6.1 Packed beans.<br>    1.6.2 Kept packed beans.<br>    1.6.3 Performed recordkeeping of dried beans.<br>    1.6.4 Maintained storage area.<br>    1.6.5 Monitored safety and sanitation. |
| 2. Resource Implications | The following resources MUST be provided:<br>2.1 Actual or simulated workplace |

| | 2.2 Tools, equipment and materials required to perform the required task<br>2.3 PPEs |
|---|---|
| 3. Methods of Assessment | Competency in this unit may be assessed through:<br>3.1 Direct observation<br>3.2 Demonstration<br>3.3. Oral questioning<br>3.4 Written test |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions |

**UNIT OF COMPETENCY** **:** **SELL CACAO PRODUCE**

**UNIT CODE** **:** **CS-AFFXXXXXX**

**UNIT DESCRIPTOR** **:** This unit covers the knowledge, skills and attitudes required to collect information on business operations and potential markets, apply marketing strategies and sell produce.

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| 1. Collect information on business operations and potential markets | 1.1 Prices of *cacao produce* are monitored according to industry practice.<br>1.2 *Potential buyers* are determined according to industry practice.<br>1.3 *Market details* are recorded according to industry practice.<br>1.4 Market plan is prepared according to industry practice.<br>1.5 Cost and return analysis is conducted following industry practice. | **SCIENCE**<br>1.1 Harvesting period<br><br>**TECHNOLOGY**<br>1.2 Different social media<br>1.3 Types and locations of potential buyers<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>1.4 Awareness on RA 7394 - Consumer Act<br>1.5 Awareness on RA 10173 - Data Privacy Act<br><br>**MATHEMATICS**<br>1.6 Supply and demand in relation to price movements<br>1.7 Actual operational cost<br><br>**COMMUNICATION**<br>1.8 Recordkeeping<br>1.9 Market details | 1.1 Monitoring of cacao prices<br>1.2 Determining potential buyers<br>1.3 Recording market details<br>1.4 Preparing market plan<br>1.5 Conducting cost and return analysis |
| 2. Apply marketing strategies | 2.1 *Market details* are used in *strategizing to optimize sales and profit* according to standard marketing procedure. | **TECHNOLOGY**<br>2.1 Effective promotional and marketing strategies<br>2.2 Simple trading approaches | 2.1 Using market details<br>2.2 Applying quality control standards<br>2.3 Consolidating produce and group marketing |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | 2.2 **Quality control standards** are applied to increase sales and profit based on market plan.<br>2.3 Consolidation of produce and group marketing is done following industry practice. | 2.3 Significance of value adding in relation to marketing<br><br>**ENVIRONMENT AND OTHER RELATED LAWS**<br>2.4 Awareness on RA 10667 - Philippine Competition Act<br>2.5 Awareness on RA 9184 – PhilGEPs<br>2.6 Awareness on RA 7394 - Consumer Act<br><br>**MATHEMATICS**<br>2.7 Basic computation<br>2.8 Computation on volume<br><br>**COMMUNICATION**<br>2.9 Recording | |
| 3. Sell produce | 3.1 Negotiations with buyers are performed according to industry practice.<br>3.2 Sales terms and conditions are established and agreed following marketing practices.<br>3.3 **Preparation of cacao produce** for selling is checked according to market requirements.<br>3.4 Cacao produce are delivered to buyers based on agreement.<br>3.5 Marketing operation is assessed based on marketing practices. | **TECHNOLOGY**<br>3.1 Selling strategies<br>3.2 Principles and practices of selling<br>3.3 Logistical requirements<br><br>**ENVIRONMENTAL AND OTHER RELATED LAWS**<br>3.4 Awareness on City Ordinance No. 0227-17, Series of 2017 - Amended Truck Ban.<br>3.5 Awareness on RA 10611 - Food Safety<br><br>**MATHEMATICS**<br>3.6 Basic computation | 3.1 Negotiation skills<br>3.2 Establishing sales terms and conditions<br>3.3 Checking preparation of cacao produce for selling<br>3.4 Delivering cacao produce<br>3.5 Assessment skills<br>3.6 Recording skills |

| ELEMENT | PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables | REQUIRED KNOWLEDGE | REQUIRED SKILLS |
|---|---|---|---|
| | 3.6 *Details of marketing transaction* are recorded and kept as reference following industry practice. | **COMMUNICATION** 3.7 Recording of sales | |

**RANGE OF VARIABLES**

| VARIABLE | RANGE |
|---|---|
| 1. Cacao produce | Cacao produce may include: <br> 1.1 Cacao seedlings <br> 1.2 Wet beans <br> 1.3 Dried fermented beans |
| 2. Potential buyers | Potential buyers may include: <br> 2.1 Traders <br>      2.1.1 Local <br>      2.1.2 Consolidators <br><br> 2.2 Growers <br> 2.3 Processors <br> 2.4 Government agencies/ units <br>      2.4.1 Local government units <br>      2.4.2 Department of Agriculture <br>      2.4.3 Higher Education Institutions <br>      2.4.4 Department of Trade and Industry <br>      2.4.5 Department of Environment and Natural Resources <br>      2.4.6 Department of Agrarian Reform <br><br> 2.5 Non-governmental organizations |
| 3. Market details | Market details may include: <br> 3.1 Buyers <br> 3.2 Price <br> 3.3 Volume <br> 3.4 Location <br> 3.5 Terms of payment <br> 3.6 Mode of delivery <br> 3.7 Schedule of delivery |
| 4. Strategies to optimize sales and profit | Strategies to optimize sales and profit may include: <br> 4.1 Promotional advertisement <br>      4.1.1 Social media <br>      4.1.2 Printed advertisement <br>      4.1.3 Product information <br><br> 4.2 Price negotiation |
| 5. Quality control standards | Quality control standards may include: <br> 5.1 Quality Control Certifications <br>      5.1.1 batch number <br>      5.1.2 lot number <br><br> 5.2 BPI accredited seedlings <br> 5.3 Tagging in seedlings <br> 5.4 Packaging |
| 6. Preparation of cacao produce | Preparation of cacao produce may include: <br> 6.1 Packing <br> 6.2 Piling |

| VARIABLE | RANGE |
|---|---|
| | 6.3   Loading and unloading |
| 7.  Details of marketing transaction | Details of marketing transaction may include:<br>7.1   Product deliveries<br>7.2   Sales<br>7.3   Costs<br>7.4   Profit |

**EVIDENCE GUIDE**

| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:<br><br>1.1 Collected information on business operations and potential markets.<br>    1.1.1 Monitored prices of cacao produce.<br>    1.1.2 Determined potential buyers.<br>    1.1.3 Recorded market details.<br>    1.1.4 Prepared market plan.<br>    1.1.5 Conducted cost and return analysis.<br><br>1.2 Applied marketing strategies.<br>    1.2.1 Used market details in strategizing to optimize sales and profit.<br>    1.2.2 Applied quality control standards.<br><br>1.3 Sold produce.<br>    1.3.1 Performed negotiations with buyers.<br>    1.3.2 Established and agreed sales terms and conditions.<br>    1.3.3 Checked preparation of cacao produce for selling.<br>    1.3.4 Delivered cacao produce to buyers.<br>    1.3.5 Recorded and kept details of marketing transaction as reference. |
|---|---|
| 2. Resource Implications | The following resources MUST be provided:<br>2.1 Actual or simulated workplace<br>2.2 Tools, equipment and materials required to perform the required task<br>2.3 Manuals and references, forms and plans |
| 3. Methods of Assessment | Competency in this unit may be assessed through:<br>3.1 Direct observation<br>3.2 Demonstration<br>3.3 Oral questioning<br>3.4 Written test |
| 4. Context for Assessment | 4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions |

**GLOSSARY OF TERMS**

| 1) AEROBIC FERMENTATION | Is a metabolic process that metabolize sugar via fermentation in the presence of oxygen. |
|---|---|
| 2) ANAEROBIC FERMENTATION | Is a metabolic process done by bacteria and eukaryotes in the absence of air to convert carbohydrates into the products like gases, alcohol, and acids. |
| 3) DRIED BEANS | Fermented beans at maximum 7.5% moisture content. |
| 4) FERMENTED BEANS | Beans that underwent fermentation. |
| 5) INTERMITTENT DRYING | A process that alternates drying periods with of rest or relaxation periods. |
| 6) RADICLE | refers to pigtail- root of germinated cacao seed; aka future root. |
| 7) SOLARIZATION | a method of soil-disinfection based on its solar heating by mulching a soil with a transparent polyethylene during the hot season, thereby controlling soilborne pests. |
| 8) SOIL-FILLED BAGS | Also known as growing media or potting media. |
| 9) WET BEANS | Beans removed after pod breaking. |

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