

# COMPETENCY STANDARDS

## BUTTERFLY PRODUCTION LEVEL II



### AGRICULTURE, FORESTRY AND FISHERY SECTOR

**TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY**  
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# COMPETENCY STANDARDS FOR BUTTERFLY PRODUCTION LEVEL II

## SECTION 1 DEFINITION

The **BUTTERFLY PRODUCTION LEVEL II** Qualification consists of competencies that a person must achieve to plan and prepare to raise butterfly and moth species, grow healthy host plants, raise butterfly and moth species, perform pest and diseases control activities, and perform harvest operation.

The units of competency comprising this qualification include the following:

<b>Unit Code</b>	<b>BASIC COMPETENCIES</b>
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
<b>Unit Code</b>	<b>COMMON COMPETENCIES</b>
AGR321201	Apply safety measures in farm operations
AGR321202	Use farm tools and equipment
AGR321203	Perform estimation and basic calculation
<b>Unit Code</b>	<b>CORE COMPETENCIES</b>
AB-AFF1704001633301	Plan and prepare to raise butterfly and moth species
AB-AFF1704001633302	Grow healthy host plants
AB-AFF1704001633303	Raise butterfly and moth species
AB-AFF1704001633304	Perform pest and diseases control activities
AB-AFF1704001633305	Perform harvest operation

**A person who has achieved this Competency Standards is competent to be:**

- Butterfly Breeder

## SECTION 2      COMPETENCY STANDARDS

This section gives the details of the contents of the Basic, Common, and Core Units of Competency required for **BUTTERFLY 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.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> 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 <b>appropriate sources</b> 1.2 Effective questioning, active listening, and speaking skills are used to gather and convey information 1.3 Appropriate <b>medium</b> is used to transfer information and ideas 1.4 Appropriate non-verbal communication is used 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed 1.6 Defined workplace procedures for the location and <b>storage</b> of information are used 1.7 Personal interaction is carried out clearly and concisely	1.1 Effective verbal and nonverbal communication 1.2 Different modes of communication 1.3 Medium of communication in the workplace 1.4 Organizational policies 1.5 Communication procedures and systems 1.6 Lines of Communication 1.7 Technology relevant to the enterprise and the individual's work responsibilities 1.8 Workplace etiquette	1.1 Following simple spoken language 1.2 Performing routine workplace duties following simple written notices 1.3 Participating in workplace meetings and discussions 1.4 Preparing work-related documents 1.5 Estimating, calculating and recording routine workplace measures 1.6 Relating/ Interacting with people of various levels in the workplace 1.7 Gathering and providing basic information in response to workplace requirements 1.8 Basic business writing skills 1.9 Interpersonal skills in the workplace

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

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Complete relevant work-related documents	3.1 Range of <b><i>forms</i></b> relating to conditions of employment are completed accurately and legibly 3.2 Workplace data is recorded on standard workplace forms and documents 3.3 Errors in recording information on forms/ documents are identified and acted upon 3.4 Reporting requirements to supervisor are completed according to organizational guidelines	3.1 Effective verbal and non-verbal communication 3.2 Different modes of communication 3.3 Workplace forms and documents 3.4 Organizational/ Workplace policies 3.5 Communication procedures and systems 3.6 Technology relevant to the enterprise and the individual's work responsibilities	3.1 Completing work-related documents 3.2 Applying operations of addition, subtraction, division and multiplication 3.3 Gathering and providing information in response to workplace requirements 3.4 Effective record keeping skills

## RANGE OF VARIABLES

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

## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p><b>Assessment requires evidence that the candidate:</b></p> <ul style="list-style-type: none"> <li>1.1. Prepared written communication following standard format of the organization</li> <li>1.2. Accessed information using workplace communication equipment/systems</li> <li>1.3. Made use of relevant terms as an aid to transfer information effectively</li> <li>1.4. Conveyed information effectively adopting formal or informal communication</li> </ul>
<p>2. Resource Implications</p>	<p><b>The following resources should be provided:</b></p> <ul style="list-style-type: none"> <li>2.1. Fax machine</li> <li>2.2. Telephone</li> <li>2.3. Notebook</li> <li>2.4. Writing materials</li> <li>2.5. Computer with Internet connection</li> </ul>
<p>3. Methods of Assessment</p>	<p><b>Competency in this unit may be assessed through:</b></p> <ul style="list-style-type: none"> <li>3.1. Demonstration with oral questioning</li> <li>3.2. Interview</li> <li>3.3. Written test</li> <li>3.4. Third-party report</li> </ul>
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> <li>4.1. Competency may be assessed individually in the actual workplace or through an accredited institution</li> </ul>



**UNIT OF COMPETENCY** : **WORK IN A 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.

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Describe team roles and scope	1.1 The <b>roles and objectives of the team</b> are identified from available <b>sources of information</b> 1.2 Team parameters, reporting relationships, and responsibilities are identified from team discussions and appropriate external sources	1.1 Group structure 1.2 Group development 1.3 Sources of information	1.1 Communicating with others, appropriately consistent with the culture of the workplace 1.2 Developing ways in improving work structure and performing respective roles in the group or organization
2. Identify one's roles and responsibilities within a team	2.1 Individual roles and responsibilities within the team environment are identified 2.2 Roles and objectives of the team are identified from available <b>sources of information</b> 2.3 Team parameters, reporting relationships, and responsibilities are identified based on team discussions	2.1 Team roles and objectives 2.2 Team structure and parameters 2.3 Team development 2.4 Sources of information	2.1 Communicating with others, appropriately consistent with the culture of the workplace 2.2 Developing ways in improving work structure and performing respective roles in the group or organization

	and appropriate external sources		
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<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
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<p>3. Work as a team member</p>	<p>3.1 Effective and appropriate forms of communications are used and interactions undertaken with team members based on company practices.</p> <p>3.2 Effective and appropriate contributions made to complement team activities and objectives, based on <b>workplace context</b></p> <p>3.3 Protocols in reporting are observed based on standard company practices</p> <p>3.4 Contribute to the development of team work plans based on an understanding of team's role and objectives</p>	<p>3.1 Communication Process</p> <p>3.2 Workplace communication protocol</p> <p>3.3 Team planning and decision making</p> <p>3.4 Team thinking</p> <p>3.5 Team roles</p> <p>3.6 Process of team development</p> <p>3.7 Workplace context</p>	<p>3.1 Communicating appropriately, consistent with the culture of the workplace</p> <p>3.2 Interacting effectively with others</p> <p>3.3 Deciding as an individual and as a group using group think strategies and techniques</p> <p>3.4 Contributing to Resolution of issues and concerns</p>
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### RANGE OF VARIABLES

VARIABLE	RANGE
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1. Roles and objectives of the team	<p>May include:</p> <ol style="list-style-type: none"> <li>1.1. Work activities in a team environment with enterprise or specific sector</li> <li>1.2. Limited discretion, initiative, and judgement may be demonstrated on the job, either individually or in a team environment</li> </ol>
2. Sources of information	<p>May include:</p> <ol style="list-style-type: none"> <li>2.1. Standard operating and/or other workplace procedures</li> <li>2.2. Job procedures</li> <li>2.3. Machine/equipment manufacturer's specifications and instructions</li> <li>2.4. Organizational or external personnel</li> <li>2.5. Client/supplier instructions</li> <li>2.6. Quality standards</li> <li>2.7. OHS and environmental standards</li> </ol>
3. Workplace context	<p>May include:</p> <ol style="list-style-type: none"> <li>3.1. Work procedures and practices</li> <li>3.2. Conditions of work environments</li> <li>3.3. Legislation and industrial agreements</li> <li>3.4. Standard work practice including the storage, safe handling and disposal of chemicals</li> <li>3.5. Safety, environmental, housekeeping, and quality guidelines</li> </ol>

## EVIDENCE GUIDE

1. Critical aspects of Competency	<p><b>Assessment requires evidence that the candidate:</b></p> <ul style="list-style-type: none"> <li>1.1. Worked in a team to complete workplace activity</li> <li>1.2. Worked effectively with others</li> <li>1.3. Conveyed information in written or oral form</li> <li>1.4. Selected and used appropriate workplace language</li> <li>1.5. Followed designated work plan for the job</li> </ul>
2. Resource Implications	<p><b>The following resources should be provided:</b></p> <ul style="list-style-type: none"> <li>2.1. Access to relevant workplace or appropriately simulated environment where assessment can take place</li> <li>2.2. Materials relevant to the proposed activity or tasks</li> </ul>
3. Methods of Assessment	<p><b>Competency in this unit may be assessed through:</b></p> <ul style="list-style-type: none"> <li>3.1 Role play involving the participation of individual member to the attainment of organizational goal</li> <li>3.3. Case studies and scenarios as a basis for discussion of issues and strategies in teamwork</li> <li>3.4 Socio-drama and socio-metric methods</li> <li>3.5 Sensitivity techniques</li> <li>3.6 Written Test</li> </ul>
4. Context for Assessment	<ul style="list-style-type: none"> <li>4.1. Competency may be assessed in workplace or in a simulated workplace setting</li> <li>4.2. Assessment shall be observed while tasks are being undertaken whether individually or in group</li> </ul>

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

**UNIT CODE** : **PROBLEMS**  
**UNIT DESCRIPTOR** : **400311212**  
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.

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Identify routine problems	1.1 Routine <b><i>problems or procedural problem</i></b> areas are identified 1.2 Problems to be investigated are defined and determined 1.3 Current conditions of the problem are identified and documented	1.1 Current industry hardware and software products and services 1.2 Industry maintenance, service and helpdesk practices, processes and procedures 1.3 Industry standard diagnostic tools 1.4 Malfunctions and resolutions	1.1 Identifying current industry hardware and software products and services 1.2 Identifying current industry maintenance, services and helpdesk practices, processes and procedures. 1.3 Identifying current industry standard diagnostic tools 1.4 Describing common malfunctions and resolutions. 1.5 Determining the root cause of a routine malfunction

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Look for solutions to routine problems	2.1 Potential solutions to problem are identified 2.2 Recommendations about possible solutions are developed, <b>documented</b> , ranked, and presented to <b>appropriate person</b> for decision	2.1 Current industry hardware and software products and services 2.2 Industry service and helpdesk practices, processes and procedures 2.3 operating systems 2.4 Industry-standard diagnostic tools 2.5 Malfunctions and resolutions 2.6 Root cause analysis	2.1 Identifying current industry hardware and software products and services 2.2 Identifying services and helpdesk practices, processes and procedures 2.3 Identifying operating system 2.4 Identifying current industry standard diagnostic tools 2.5 Describing common malfunctions and resolutions 2.6 Determining the root cause of a routine malfunction
3. Recommend solutions to problems	3.1 Implementation of solutions are <b>planned</b> 3.2 Evaluation of implemented solutions are planned 3.3 Recommended solutions are documented and submit to appropriate person for confirmation	3.1 Standard procedures 3.2 Documentation produce	3.1 Producing documentation that recommends solutions to problems 3.2 Following established procedures

## RANGE OF VARIABLES

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



## EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Determined the root cause of a routine problem 1.2 Identified solutions to procedural problems. 1.3 Produced documentation that recommends solutions to problems. 1.4 Followed established procedures. 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: 3.1 Case Formulation 3.2 Life Narrative Inquiry 3.3 Standardized 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 : 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.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Manage one’s emotion	1.1 <b>Self-management strategies</b> are identified 1.2 Skills to work independently and to show initiative, to be conscientious, and persevering in the face of setbacks and frustrations are developed 1.3 Techniques for effectively handling negative emotions and <b>unpleasant situation</b> 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) 1.2 Enablers and barriers in achieving personal and career goals 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 1.2 Developing self-discipline, working independently and showing initiative to achieve personal and career goals 1.3 Showing confidence, and resilience in the face of setbacks and frustrations and other negative emotions and unpleasant situations in the workplace

<p>2. Develop reflective practice</p>	<p>2.1 Personal strengths and achievements, based on self-assessment strategies and teacher feedback are contemplated</p> <p>2.2 Progress when seeking and responding to feedback from teachers to assist them in consolidating strengths, addressing weaknesses and fulfilling their potential are monitored</p> <p>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</p>	<p>2.1 Basic SWOT analysis</p> <p>2.2 Strategies to improve one's attitude in the workplace</p> <p>2.3 Gibbs' Reflective Cycle/Model (Description, Feelings, Evaluation, Analysis, Conclusion, and Action plan)</p>	<p>2.1 Using the basic SWOT analysis as self-assessment strategy</p> <p>2.2 Developing reflective practice through realization of limitations, likes/ dislikes; through showing of self confidence</p> <p>2.3 Demonstrating self-acceptance and being able to accept challenges</p>
<p>3. Boost self-confidence and develop self-regulation</p>	<p>3.1 Efforts for continuous self-improvement are demonstrated</p> <p>3.2 Counter-productive tendencies at work are eliminated</p> <p>3.3 Positive outlook in life are maintained.</p>	<p>3.1 Four components of self-regulation based on Self-Regulation Theory (SRT)</p> <p>3.2 Personality development concepts</p> <p>3.3 Self-help concepts (e. g., 7 Habits by Stephen Covey, transactional</p>	<p>3.1 Performing effective communication skills—reading, writing, conversing skills</p> <p>3.2 Showing affective skills—flexibility, adaptability, etc.</p> <p>3.3 Self-assessment for determining one's strengths and weaknesses</p>

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**RANGE OF VARIABLES**

VARIABLE	RANGE
1. Self-management strategies	May include but no limited to: 1.1 Seeking assistance in the form of job coaching or mentoring 1.2 Continuing dialogue to tackle workplace grievances 1.3 Collective negotiation/bargaining for better working conditions 1.4 Share your goals to improve with a trusted co-worker or supervisor 1.5 Make a negativity log of every instance when you catch yourself complaining to others 1.6 Make lists and schedules for necessary activities
2. Unpleasant situation	May include but no limited to: 2.1 Job burn-out 2.2 Drug dependence 2.3 Sulking

## EVIDENCE GUIDE

1. Critical aspects of Competency	<b>Assessment requires evidence that the candidate:</b> 1.1 Expressed emotions appropriately 1.2 Worked independently and show initiative 1.3 Consistently demonstrated self-confidence and self-discipline
2. Resource Implications	<b>The following resources should be provided:</b> 2.1. Access to workplace and resources 2.2. Case studies
3. Methods of Assessment	<b>Competency in this unit may be assessed through:</b> 3.1 Demonstration or simulation with oral questioning 3.2 Case problems involving work improvement and sustainability issues 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 proactive and positive contribution to workplace innovation.

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Identify opportunities to do things better	1.1 <b><i>Opportunities for improvement</i></b> are identified proactively in their own area of work 1.2 <b><i>Information</i></b> is 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 1.2 Positive impacts and challenges in innovation 1.3 Types of changes and responsibility 1.4 Seven habits of highly effective people	1.1 Identifying opportunities to improve and to do things better; involvement 1.2 Identifying the positive impacts and the challenges of change and innovation 1.3 Identifying examples of the types of changes that are within and outside own scope of responsibility

<p>2. Discuss and develop ideas with others</p>	<p>2.1 <b>People who could provide input</b> to ideas for improvements are identified</p> <p>2.2 Ways of approaching people to begin sharing ideas are selected</p> <p>2.3 Meeting is set with relevant people</p> <p>2.4 Ideas for follow up are reviewed and selected based on feedback</p> <p>2.5 <b>Critical inquiry method</b> is used to discuss and develop ideas with others</p>	<p>2.1 Roles of individuals in suggesting and making improvements</p> <p>2.2 Positive impacts and challenges in innovation</p> <p>2.3 Types of changes and responsibility</p> <p>2.4 “The 7 Habits of Highly Effective People” by Stephen Covey</p>	<p>2.1 Identifying opportunities to improve and to do things better; involvement</p> <p>2.2 Identifying the positive impacts and the challenges of change and innovation.</p> <p>2.3 Providing examples of the types of changes that are within and outside own scope of responsibility</p> <p>2.4 Communicating ideas for change through small group discussions and meetings</p>
<p>3. Integrate ideas for change in the work-place</p>	<p>3.1 Critical inquiry method is used to integrate different ideas for change of key people</p> <p>3.2 Summarizing, analyzing, and generalizing skills are used to extract salient points in the pool of ideas</p> <p>3.3 <b>Reporting skills</b> are likewise used to communicate results</p> <p>3.4 Current issues and concerns in the systems, processes and procedures, as well as the need for simple innovative practices are identified</p>	<p>3.1 Roles of individuals in suggesting and making improvements</p> <p>3.2 Positive impacts and challenges in innovation</p> <p>3.3 Types of changes and responsibility</p> <p>3.4 “The 7 Habits of Highly Effective People” by Stephen Covey</p> <p>3.5 Basic research skills.</p>	<p>3.1 Identifying opportunities to improve and to do things better; Involvement</p> <p>3.2 Identifying the positive impacts and the challenges of change and innovation</p> <p>3.3 Providing examples of the types of changes that are within and outside their own scope of responsibility</p> <p>3.4 Communicating ideas for change through small group discussions and meetings</p> <p>3.5 Demonstrating skills in analysis and interpretation of data</p>

## RANGE OF VARIABLES

VARIABLES	RANGE
1. Opportunities for improvement	May include: 1.1 Systems 1.2 Processes 1.3 Procedures 1.4 Protocols 1.5 Codes 1.6 Practices
2. Information	May include: 2.1 Workplace communication problems 2.2 Performance evaluation results 2.3 Team dynamics issues and concerns 2.4 Challenges on return of investment 2.5 New tools, processes and procedures 2.6 New people in the organization
3. People who could provide input	May include: 3.1 Leaders 3.2 Managers 3.3 Specialists 3.4 Associates 3.5 Researchers 3.6 Supervisors 3.7 Staff 3.8 Consultants (external) 3.9 People outside the organization in the same field or similar expertise/industry 3.10 Clients



4. Critical inquiry method	<p>May include:</p> <ul style="list-style-type: none"> <li>4.1 Preparation</li> <li>4.2 Discussion</li> <li>4.3 Clarification of goals</li> <li>4.4 Negotiate towards a Win-Win outcome</li> <li>4.5 Agreement</li> <li>4.6 Implementation of a course of action</li> <li>4.7 Effective verbal communication. See our pages: Verbal Communication and Effective Speaking</li> <li>4.8 Listening</li> <li>4.9 Reducing misunderstandings is a key part of effective negotiation</li> <li>4.10 Rapport Building</li> <li>4.11 Problem Solving</li> <li>4.12 Decision Making</li> <li>4.13 Assertiveness</li> <li>4.14 Dealing with Difficult Situations</li> </ul>
5. Reporting skills	<p>May include:</p> <ul style="list-style-type: none"> <li>5.1 Data management</li> <li>5.2 Coding</li> <li>5.3 Data analysis and interpretation</li> <li>5.4 Coherent writing</li> <li>5.5 Speaking</li> </ul>

## EVIDENCE GUIDE

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

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

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

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

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
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<p>1. Gather data/information</p>	<p>1.1 Evidence, facts and information are collected</p> <p>1.2 Evaluation, terms of reference, and conditions are reviewed to determine whether data/information falls within project scope</p>	<p>1.1 Organizational protocols</p> <p>1.2 Confidentiality</p> <p>1.3 Accuracy</p> <p>1.4 Business mathematics and statistics</p> <p>1.5 Data analysis techniques/procedures</p> <p>1.6 Reporting requirements to a range of audiences</p> <p>1.7 Legislation, policy and procedures relating to the conduct of evaluations</p> <p>1.8 Organizational values, ethics and codes of conduct</p>	<p>1.1 Describing organizational protocols relating to client liaison</p> <p>1.2 Protecting confidentiality</p> <p>1.3 Describing accuracy</p> <p>1.4 Computing business mathematics and statistics</p> <p>1.5 Describing data analysis techniques/procedures</p> <p>1.6 Reporting requirements to a range of audiences</p> <p>1.7 Stating legislation, policy and procedures relating to the conduct of evaluations</p> <p>1.8 Stating organizational values, ethics and codes of conduct</p>
<p>2. Assess gathered data/information</p>	<p>2.1 Validity of data/information is assessed</p> <p>2.2 Analysis techniques are applied to assess data/information.</p> <p>2.3 Trends and anomalies are identified</p> <p>2.4 <b>Data analysis techniques</b> and procedures are documented</p> <p>2.5 Recommendations are made on areas of possible improvement.</p>	<p>2.1 Business mathematics and statistics</p> <p>2.2 Data analysis techniques/procedures</p> <p>2.3 Reporting requirements to a range of audiences</p> <p>2.4 Legislation, policy and procedures relating to the conduct of evaluations</p> <p>2.5 Organizational values, ethics and codes of</p>	<p>2.1 Computing business mathematics and statistics</p> <p>2.2 Describing data analysis techniques/procedures</p> <p>2.3 Reporting requirements to a range of audiences</p> <p>2.4 Stating legislation, policy and procedures relating to the conduct of evaluations</p> <p>2.5 Stating</p>

		conduct	organizational values, ethics and codes of conduct
3. Record and present information	<p>3.1 Studied data/information are recorded.</p> <p>3.2 Recommendations are analyzed for action to ensure they are compatible with the project's scope and terms of reference.</p> <p>3.3 Interim and final reports are analyzed and outcomes are compared to the criteria established at the outset.</p> <p>3.4 Findings are presented to stakeholders.</p>	<p>3.1 Data analysis techniques/procedures</p> <p>3.2 Reporting requirements to a range of audiences</p> <p>3.3 Legislation, policy and procedures relating to the conduct of evaluations</p> <p>3.4 Organizational values, ethics and codes of conduct</p>	<p>3.1 Describing data analysis techniques/procedures</p> <p>3.2 Reporting requirements to a range of audiences</p> <p>3.3 Stating legislation, policy and procedures relating to the conduct of evaluations</p> <p>3.4 Stating organizational values, ethics and codes of conduct practices</p>

### RANGE OF VARIABLES

VARIABLES	RANGE
1. Data analysis techniques	<p>May include but not limited to:</p> <p>1.1. Domain analysis</p> <p>1.2. Content analysis</p> <p>1.3. Comparison technique</p>

## EVIDENCE GUIDE

1. Critical aspects of Competency	<p><b>Assessment requires evidence that the candidate:</b></p> <ul style="list-style-type: none"><li>1.1 Determined data / information</li><li>1.2 Studied and applied gathered data/information</li><li>1.3 Recorded and studied data/information</li></ul> <p>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.</p>
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2. Resource Implications	<p><b>Specific resources for assessment</b></p> <p>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.</p>
3. Methods of Assessment	<p><b>Competency in this unit may be assessed through:</b></p> <p>3.1. Written Test 3.2. Interview 3.3. Portfolio</p> <p>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</p>
4. Context for Assessment	<p>4.1. In all workplaces, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units.</p>

**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, and perform tasks in accordance with relevant OSH policies and procedures

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



	accordance with OSH work standards		
3. Perform tasks in accordance with relevant OSH policies and procedures	<p>3.1 Relevant OSH work procedures are identified in accordance with workplace policies and procedures</p> <p>3.2 Work activities are executed in accordance with OSH work standards</p> <p>3.3 <b>Non-compliance work activities</b> are reported to <i>appropriate personnel</i></p>	<p>3.1 OSH work standards</p> <p>3.2 Industry related work activities</p> <p>3.3 General OSH principles</p> <p>3.4 OSH Violations Non-compliance work activities</p>	<p>3.1 Communication skills</p> <p>3.3 Interpersonal skills</p> <p>3.4 Troubleshooting skills</p> <p>3.5 Critical thinking skills</p> <p>3.6 Observation skills</p>

### RANGE OF VARIABLES

VARIABLE	RANGE
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<p>1. OSH Requirements, Regulations, Policies and Procedures</p>	<p>May include:</p> <ul style="list-style-type: none"> <li>1.1 Clean Air Act</li> <li>1.2 Building code</li> <li>1.3 National Electrical and Fire Safety Codes</li> <li>1.4 Waste management statutes and rules</li> <li>1.5 Permit to Operate</li> <li>1.6 Philippine Occupational Safety and Health Standards</li> <li>1.7 Department Order No. 13 (Construction Safety and Health)</li> <li>1.8 ECC regulations</li> </ul>
<p>2. Appropriate Personnel</p>	<p>May include:</p> <ul style="list-style-type: none"> <li>2.1 Manager</li> <li>2.2 Safety Officer</li> <li>2.3 EHS Offices</li> <li>2.4 Supervisors</li> <li>2.5 Team Leaders</li> <li>2.6 Administrators</li> <li>2.7 Stakeholders</li> <li>2.8 Government Official</li> <li>2.9 Key Personnel</li> <li>2.10 Specialists</li> <li>2.11 Himself</li> </ul>
<p>3. OSH Preventive and Control Requirements</p>	<p>May include:</p> <ul style="list-style-type: none"> <li>3.1 Resources needed for removing hazard effectively</li> <li>3.2 Resources needed for substitution or replacement</li> <li>3.3 Resources needed to establishing engineering controls</li> <li>3.4 Resources needed for enforcing administrative controls</li> <li>3.5 Personal Protective equipment</li> </ul>
<p>4. Non OSH-Compliance Work Activities</p>	<p>May include non-compliance or observance of the following safety measures:</p> <ul style="list-style-type: none"> <li>4.1 Violations that may lead to serious physical harm or death</li> <li>4.2 Fall Protection</li> <li>4.3 Hazard Communication</li> <li>4.4 Respiratory Protection</li> <li>4.5 Power Industrial Trucks</li> <li>4.6 Lockout/Tag-out</li> <li>4.7 Working at heights (use of ladder, scaffolding)</li> <li>4.8 Electrical Wiring Methods</li> <li>4.9 Machine Guarding</li> </ul>
	<ul style="list-style-type: none"> <li>4.10 Electrical General Requirements</li> <li>4.11 Asbestos work requirements</li> <li>4.12 Excavations work requirements</li> </ul>

**EVIDENCE GUIDE**

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

**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

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Identify the efficiency and effectiveness of resource utilization	1.1 Required resource utilization in the workplace is measured using appropriate techniques 1.2 Data are recorded in accordance with workplace protocol 1.3 Recorded data are compared to determine the efficiency and effectiveness of resource utilization according to established <b><i>environmental work procedures</i></b>	1.1. Importance of Environmental Literacy 1.2 Environmental Work Procedures 1.3 Waste Minimization 1.4 Efficient Energy Consumptions	1.1 Recording Skills 1.2 Writing Skills 1.3 Innovation Skills

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Determine causes of inefficiency and/or ineffectiveness of resource utilization	2.1 Potential causes of inefficiency and/or ineffectiveness are listed 2.2 Causes of inefficiency and/or ineffectiveness are identified through deductive reasoning 2.3 Identified causes of inefficiency and/or ineffectiveness are validated through established environmental procedures	2.1 Causes of environmental inefficiencies and ineffectiveness	2.1 Deductive Reasoning Skills 2.2 Critical thinking 2.3 Problem Solving 2.4 Observation Skills
3. Convey inefficient and ineffective environmental practices	3.1 Efficiency and effectiveness of resource utilization are reported to <b>appropriate personnel</b> 3.2 Concerns related to resource utilization are discussed with appropriate personnel 3.3 Feedback on information/concerns raised are clarified with appropriate personnel	3.1 Appropriate Personnel to address the environmental hazards 3.2 Environmental corrective actions	3.1 Written and Oral Communication Skills 3.2 Critical thinking 3.3 Problem Solving 3.4 Observation Skills 3.5 Practice Environmental Awareness

## RANGE OF VARIABLES

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

## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p><b>Assessment requires evidence that the candidate:</b></p> <ul style="list-style-type: none"> <li>1.1 Measured required resource utilization in the workplace using appropriate techniques</li> <li>1.2 Recorded data in accordance with workplace protocol</li> <li>1.3 Identified causes of inefficiency and/or ineffectiveness through deductive reasoning</li> <li>1.4 Validate the identified causes of inefficiency and/or ineffectiveness thru established environmental procedures</li> <li>1.5 Report efficiency and effectiveness of resource utilization to appropriate personnel</li> <li>1.6 Clarify feedback on information/concerns raised with appropriate personnel</li> </ul>
<p>2. Resource Implications</p>	<p><b>The following resources should be provided:</b></p> <ul style="list-style-type: none"> <li>2.1 Workplace</li> <li>2.2 Tools, materials and equipment relevant to the tasks</li> <li>2.3 PPE</li> <li>2.4 Manuals and references</li> </ul>
<p>3. Methods of Assessment</p>	<p><b>Competency in this unit may be assessed through:</b></p> <ul style="list-style-type: none"> <li>3.1 Demonstration</li> <li>3.2 Oral questioning</li> <li>3.3 Written examination</li> </ul>
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> <li>4.1 Competency assessment may occur in workplace or any appropriately simulated environment</li> <li>4.2 Assessment shall be observed while task are being undertaken whether individually or in-group</li> </ul>

**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

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Apply entrepreneurial workplace best practices	1.1 <b>Good practices</b> relating to workplace operations are observed and selected following workplace policy. 1.2 Quality procedures and practices are complied with according to workplace requirements. 1.3 Cost-conscious habits in <b>resource utilization</b> are applied based on industry standards.	1.1 Workplace best practices, policies and criteria 1.2 Resource utilization 1.3 Ways in fostering entrepreneurial attitudes:	1.1 Communication skills 1.2 Complying with quality procedures



<p>2. Communicate entrepreneurial workplace best practices</p>	<p>2.1 Observed good practices relating to workplace operations are communicated to the appropriate person.</p> <p>2.2 Observed quality procedures and practices are communicated to appropriate person</p> <p>2.3 Cost-conscious habits in resource utilization are communicated based on industry standards.</p>	<p>2.1 Workplace best practices, policies and criteria</p> <p>2.2 Resource utilization</p> <p>2.3 Ways in fostering entrepreneurial attitudes:</p>	<p>2.1 Communication skills</p> <p>2.2 Complying with quality procedures</p> <p>2.3 Following workplace communication protocol</p>
<p>3. Implement cost effective operations</p>	<p>3.1 Preservation and optimization of workplace resources is implemented in accordance with enterprise policy</p> <p>3.2 Judicious use of workplace tools, equipment and materials are observed according to manual and work requirements.</p> <p>3.3 Constructive contributions to office operations are made according to enterprise requirements</p> <p>3.4 Ability to work within one's allotted time and finances is sustained.</p>	<p>3.1 Optimization of workplace resources</p> <p>3.2 5S procedures and concepts</p> <p>3.3 Criteria for cost-effectiveness</p> <p>3.4 Workplace productivity</p> <p>3.5 Impact of entrepreneurial mindset to workplace productivity</p> <p>3.6 Ways in fostering entrepreneurial attitudes</p>	<p>3.1 Implementing preservation and optimizing workplace resources</p> <p>3.2 Observing judicious use of workplace tools, equipment and materials</p> <p>3.3 Making constructive contributions to office operations</p> <p>3.4 Sustaining ability to work within allotted time and finances</p>

## RANGE OF VARIABLES

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

## EVIDENCE GUIDE

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

## COMMON COMPETENCIES

<b>UNIT TITLE</b>	:	<b>APPLY SAFETY MEASURES IN FARM OPERATIONS</b>
<b>UNIT CODE</b>	:	<b>AGR321201</b>
<b>UNIT DESCRIPTOR</b>	:	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.

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms are elaborated in the Range of Variables</i>	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Determine areas of concern for safety measures	1.1 <b>Work tasks</b> are identified in line with farm operations 1.2 <b>Place</b> for safety measures are determined in line with farm operations 1.3 <b>Time</b> for safety measures are determined in line with farm operations 1.4 Appropriate <b>tools, materials and outfits</b> are prepared in line with job requirements	1.1 Different work tasks in farm operations 1.2 Place and time for implementation of safety measures 1.3 Different hazards in the workplace 1.4 Types of tools, materials and outfits 1.5 Preparation of tools, materials and outfits	1.1 Identifying work tasks in farm operations 1.2 Determining place and time for implementation of safety measures 1.3 Reading labels, manuals and other basic safety information 1.4 Identifying effective/function al tools, materials and outfit 1.5 Preparing tools, materials and outfits 1.6 Discarding defective tools, and materials

<p>2. Apply appropriate safety measures</p>	<p>2.1 Tools and materials are used according to specifications and procedures</p> <p>2.2 Outfits are worn according to farm requirements</p> <p>2.3 Effectivity/shelf life/expiration of materials are strictly observed</p> <p>2.4 <b>Emergency procedures</b> are known and followed to ensure a safe work requirement</p> <p>2.5 <b>Hazards</b> in the workplace are identified and reported in line with farm guidelines</p>	<p>2.1 Uses and functions of tools</p> <p>2.2 Outfits and how to wear them.</p> <p>2.3 Expiration/shelf life of materials</p> <p>2.4 Proper disposal of expired materials</p> <p>2.5 Environmental rules and regulations</p> <p>2.6 Emergency procedures</p> <p>2.7 Hazards identification and reporting</p> <p>2.8 Communication skills</p> <p>2.9 OSHS</p>	<p>2.1 Using tools and materials in the workplace</p> <p>2.2 Wearing of outfits</p> <p>2.3 Observing expiration/ shelf life of materials</p> <p>2.4 Disposing of expired materials</p> <p>2.5 Following emergency procedures</p> <p>2.6 Identifying and reporting hazards in the workplace area.</p>
<p>3. Safe keep/ dispose tools, materials and outfit</p>	<p>3.1 Used tools and outfit are cleaned after use and stored in designated areas</p> <p>3.2 Unused materials are properly labeled and stored according to manufacturer's recommendation and farm requirements</p> <p>3.3 Waste materials are disposed according to manufacturers, government and farm requirements</p>	<p>3.1 Procedures of cleaning used tools and outfits</p> <p>3.2 Label and storage unused materials</p> <p>3.3 Disposal of wastes materials</p> <p>3.4 Manufacturers recommendation on keeping materials</p> <p>3.5 Environmental rules and regulations</p>	<p>3.1 Cleaning used tools and outfit</p> <p>3.2 Labelling and storing unused materials</p> <p>3.3 Disposing waste materials</p>

## RANGE OF VARIABLES

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

## EVIDENCE GUIDE

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

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

**UNIT CODE** : **AGR321202**

**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.

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



	<p>2.4 Faults in farm equipment are identified and reported in line with farm procedures</p> <p>2.5 Farm equipment used according to its function</p> <p>2.6 Safety procedures</p>	<p>2.6 Procedures in calibrating and use of equipment</p> <p>2.7 Equipment faults identification and reporting</p> <p>2.8 Operation of equipment</p> <p>2.9 Codes and Regulations on environmental protection</p> <p>2.10 Safety and keeping of equipment every after use</p> <p>2.11 Safety measures</p>	<p>2.5 Reporting on defective farm equipment</p> <p>2.6 Operating farm equipment</p> <p>2.7 Following safety procedures.</p>
3. Perform preventive maintenance	<p>3.1 Tools and equipment are cleaned immediately after use in line with farm procedures</p> <p>3.2 Routine check-up and maintenance are performed</p> <p>3.3 Tools and equipment are stored in designated areas in line with farm procedures</p>	<p>3.1 Cleaning procedures of tools and equipment</p> <p>3.2 Maintenance procedures of farm equipment</p> <p>3.3 Storage of tools and equipment</p> <p>3.4 Designated storage areas</p>	<p>3.1 Cleaning tools and equipment</p> <p>3.2 Performing routinary check-up of tools and equipment</p> <p>3.3 Maintaining farm equipment</p> <p>3.4 Storing tools and equipment</p>

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Farm equipment	Farm equipment include: 1.1 Engine 1.2 Pumps 1.3 Generators 1.4 Sprayers
2. Farm tools	Farm tools includes: 2.1 Sickle 2.2 Cutting tools (Pruning shear and Bolo) 2.3 Weighing scale 2.4 Hand tools (Hammer, pull-push rule, saw) 2.5 Measuring tool (Weighing scale) 2.6 Garden tools (Trowel, rake, spading fork, digging bar)
3. Pre-operation check-up	Pre-operation check-up includes: 3.1 Tires 3.2 Brake fluid 3.3 Fuel 3.4 Water 3.5 Oil 3.6 Lubricants 3.7 Battery

## EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Correctly identified appropriate farm tools and equipment 1.2 Operated farm equipment according to manual specification 1.3 Performed preventive maintenance
2. Resource Implications	The following resources should be provided: 2.1 Service/operational manual of farm tools and equipment 2.2 Tools and equipment 2.3 Farm implements
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Direct observation 3.2 Practical demonstration 3.3 Third Party Report
4. Context of Assessment	4.1 Competency may be assessed in the actual workplace or at the designated TESDA Accredited Assessment Center.

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

**UNIT CODE :**                      **AGR321203**

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

<b>ELEMENTS</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized terms</i> are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Perform estimation	1.1 Job requirements are identified from written or oral communications 1.2 Quantities of materials and resources required to complete a work task are estimated. 1.3 The time needed to complete a work activity is estimated. 1.4 Accurate estimates for work completion are made. 1.5 Estimates of materials and resources are reported to appropriate person.	1.1 Job requirements/labor needs 1.2 Calculation of quantities of materials and resources required 1.3 Calculation of time for job completion 1.4 Preparation of estimate report 1.5 Basic mathematical operations 1.6 Percentage and ratios 1.7 Unit Conversion	1.1 Identifying job requirements/labor 1.2 Estimating quantities of materials and resources required 1.3 Estimating time for job completion 1.4 Performing basic calculation 1.5 Computing percentage 1.6 Converting English to Metric systems of measurement 1.7 Preparing estimate report

<p>2. Perform basic workplace calculation</p>	<p>2.1 <b>System and units of measurement</b> to be followed are ascertained.</p> <p>2.2 Calculations needed to complete work tasks are performed using the <b>four basic mathematical operations</b>.</p> <p>2.3 Calculate the whole fraction, percentage and mixed when they are used to complete the instructions.</p> <p>2.4 Number computed is checked following work requirements</p>	<p>2.1 Four basic mathematical operation</p> <p>2.2 System and units of measurement</p> <p>2.3 Fraction, percentage and ratio</p> <p>2.4 Material take-off</p> <p>2.5 Materials costing</p>	<p>2.1 Computing bill of materials</p> <p>2.2 Computing project cost</p>
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## RANGE OF VARIABLES

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

## EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Performed estimation 1.2 Performed basic workplace calculation 1.3 Applied corrective measures as maybe necessary
2. Resource Implications	The following resources should be provided: 2.1 Relevant tools and equipment for basic calculation 2.2 Recommended data
3. Method of Assessment	Competency in this unit must be assessed through: 3.1 Practical demonstration 3.2 Written examination
4. Context of Assessment	4.1 Competency may be assessed in actual workplace or at the designated TESDA Accredited Assessment Center

## CORE COMPETENCIES

**UNIT OF COMPETENCY :** PLAN AND PREPARE TO RAISE BUTTERFLY AND MOTH SPECIES

**UNIT CODE :** AB-AFF1704001633301

**UNIT DESCRIPTOR :** This unit covers the knowledge, skills, and attitudes required select butterfly and moth species, select plants and flowers, select area and prepare flight cage and larval-rearing cabinet.

ELEMENT	PERFORMANCE CRITERIA ( <i>Italicized</i> terms are elaborated in the Range of Variables)	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Select butterfly and moth species	1.1 Butterflies and moths are identified based on <b><i>butterfly family</i></b> 1.2 Butterfly species are selected based on <b><i>industry demand</i></b> 1.3 Moth species are selected according to industry demand 1.4 <b><i>Breeding stocks</i></b> are selected based on identified species 1.5 Legal basis of <b><i>endemism</i></b> is obtained 1.6 List of endemic butterfly and moth species in Marinduque is obtained from relevant agencies 1.7 Conservation activities are determined based on applicable law	1.1 Life cycle of butterflies and moths 1.2 Anatomy of butterflies and moths 1.3 Behavior of male and female butterflies 1.4 Behavior of male and female moths 1.5 Historical and ecological factors of endemism 1.6 Classification of various butterfly families 1.7 Selection of butterflies and moths according to industry demand 1.8 Materials for selection of species 1.9 Chart interpretation 1.10 Mounted species 1.11 Note-taking 1.12 Record keeping 1.13 DENR AO 2002-19 1.14 Healthy environment for	1.1 Identifying butterfly family 1.2 Identifying parts of butterflies and moths using magnifying glass 1.3 Distinguishing butterflies from moths using pictograph 1.4 Identifying and selecting good breeding stock 1.5 Conserving endemic butterflies and moth species 1.6 Identifying endemic butterflies and moths 1.7 Gathering Information



		butterflies and moth	
2. Select plants and flowers	<p>2.1 <b>Species of plants and flowers</b> are identified according to applicable host plants</p> <p>2.2 <b>Propagating materials</b> are selected in accordance with industry standards</p> <p>2.3 <b>Potting media</b> are prepared in accordance with enterprise procedure</p> <p>2.4 Seedlings/cuttings are prepared based on industry practice</p>	<p>2.1 Classification of plant families where host plants of butterflies and moths belong</p> <p>2.2 Characteristics and propagation practices of host plants</p> <p>2.3 Maturity indices of host plants</p> <p>2.4 Characteristics of potting media</p> <p>2.5 Selection procedures according to industry practices</p> <p>2.6 Preparation of planting materials</p> <p>2.7 Propagation techniques</p> <p>2.8 Ratio and proportion of potting media</p> <p>2.9 Chart interpretation for plants and flowers</p> <p>2.10 Recordkeeping and inventory</p> <p>2.11 Management of plant debris</p> <p>2.12 6s of Good Housekeeping practices</p>	<p>2.1 Familiarizing of plants species</p> <p>2.2 Plant propagation skills</p> <p>2.3 Preparing of potting media</p> <p>2.4 Basic mathematical skills</p> <p>2.5 Gathering of data</p> <p>2.6 Data organization skills</p> <p>2.7 Programming Plant Propagation</p>

<p>3. Select area</p>	<p>3.1 Site for production of butterflies and moths are identified according industry standards</p> <p>3.2 Suitable area for rearing butterflies and moths is selected according industry standards</p> <p>3.3 The area is laid out according to industry practice</p>	<p>3.1 Nature of butterflies and moths</p> <p>3.2 Correct temperature</p> <p>3.3 Distribution of sunlight</p> <p>3.4 Clearing procedures</p> <p>3.5 Lay outing procedure</p> <p>3.6 Measurement of area</p> <p>3.8 Inventory</p> <p>3.9 DENR AO 2002-19</p> <p>3.10 6's</p>	<p>3.1 Identifying appropriate site</p> <p>3.2 Lay outing of suitable area</p>
<p>4. Prepare flight cage and larval-rearing cabinet</p>	<p>4.1 <b>Location</b> for flight cage and larval-rearing cabinet is identified according to industry practice</p> <p>4.2 Flight Cage and larval-rearing <b>cabinet</b> is prepared according to industry practice</p> <p>4.3 The flight cage and larval-rearing cabinet is put in a safe place according to industry standards</p>	<p>4.1 Design and techniques in the preparation of flight cage and larval-rearing cabinet</p> <p>4.2 Determination of the location of flight cage and larval-rearing cabinet</p> <p>4.3 Ratio and proportion</p> <p>4.4 Recordkeeping</p> <p>4.5 Waste Management</p> <p>4.6 6s of Good Housekeeping</p>	<p>4.1 Determining the location of flight cage and larval-rearing cabinet</p> <p>4.2 Preparing flight cage and larval-rearing cabinet</p> <p>4.3 Locating flight cage and larval-rearing cabinet</p>

## RANGE OF VARIABLES

VARIABLE	RANGE
1. Butterfly family	May include: 1.1 Pieridae 1.2 Papilionidae 1.3 Lycaenidae 1.4 Riodinadae 1.5 Nymphalidae 1.6 Hesperidae 1.7 Hedylidae
2. Industry demand	May include: 2.1 Quality 2.2 Quantity 2.3 Market value 2.4 Aberration
3. Breeding stock	May include: 3.1 Quantity of eggs and larvae 3.2 Quality of breeding stock
4. Endemism	May include: 4.1 Rates of dispersal of endemic species 4.2 Endemic species in the area
5. Species of plants and flowers	May include: 5.1 Species of Plants 5.1.1 Citrus (pomelo, lemon, calamansi) 5.1.2 Guyabano 5.1.3 Avocado 5.1.4 Guava 5.1.5 Santol 5.1.6 Atis 5.1.7 Lagaylay 5.1.8 Kaytana 5.1.9 Milkweed 5.1.10 Cherry 5.1.11 Plum 5.1.12 Taro 5.1.13 Kamote 5.1.14 Tapyas 5.1.15 Gaylay 5.1.16 Basket-basket 5.1.17 Sili-sili 5.1.18 Tulo-gatas 5.1.19 Tayngahang sylvia 5.1.20 Tayngahang biblis

	<p>5.2 Species of Flowers</p> <p>5.2.1 Violets</p> <p>5.2.2 Lantana</p> <p>5.2.3 Santan</p> <p>5.2.4 Gumamela</p>
6. Propagating materials	<p>May include:</p> <p>6.1 Seeds</p> <p>6.2 Stem cuttings</p> <p>6.3 Root cuttings</p>
7. Potting media	<p>May include:</p> <p>7.1 Garden soil</p> <p>7.2 Animal manure</p> <p>7.3 Vermicast</p> <p>7.4 Carbonized rice hull</p> <p>7.5 Coco coir dust</p>
8. Suitable area	<p>May include:</p> <p>8.1 Partly shaded</p> <p>8.2 Partly sunlit</p> <p>8.3 Accessible</p> <p>8.4 Protected from predators</p>
9. Location	<p>9.1. Host plants</p> <p>9.2 Set-up facility</p>
10. Larval-rearing cabinet	<p>May include:</p> <p>10.1 Net</p> <p>10.2 Wood or steel</p> <p>10.3 Nylon</p> <p>10.4 Pair of scissors</p>

## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Selected butterfly and moth species as breeding stocks</li> <li>1.2 Selected species of plants as host plants</li> <li>1.3 Selected suitable area for production of butterflies and moths</li> <li>1.4 Prepared larvae cabinet</li> </ul>
<p>2. Resource Implications</p>	<p>The following resources <b>SHOULD</b> be provided:</p> <ul style="list-style-type: none"> <li>2.1 Copy of DENR AO 2002-19</li> <li>2.2 Chart of plants and flowers</li> <li>2.3 Chart of butterflies and moths</li> <li>2.4 Mounted butterflies and moths</li> <li>2.5 Nylon/Tie</li> <li>2.6 Pull-push rule</li> <li>2.7 Wood peg</li> <li>2.8 Net</li> <li>2.9 Wood/Steel</li> <li>2.10 Pair of scissors</li> <li>2.11 Sponge</li> <li>2.12 Oil</li> <li>2.13 Larval cabinet</li> </ul>
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>3.1 Direct observation</li> <li>3.2 Demonstration with oral questioning</li> <li>3.3 Written examination</li> <li>3.4 Interview</li> </ul>
<p>4. Context for Assessment</p>	<p>4.1 Competency may be assessed in the actual workplace or simulated environment.</p>



**UNIT OF COMPETENCY** : **GROW HEALTHY HOST PLANTS**

**UNIT CODE** : **AB-AFF1704001633302**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills and attitudes required to establish plant nursery, perform plant care and management, set-up host plants for direct feeding and harvest host plants for feeding.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Establish plant nursery	1.1 <b>Propagating materials</b> are selected in accordance with industry standards. 1.2 <b>Potting media</b> are mixed in accordance with industry procedure. 1.3 Care and maintenance of <b>plant nursery</b> is done in accordance with industry practice.	1.1 Plant species 1.2 Propagating Materials 1.3 Potting Media 1.4 Planting materials 1.5 Potting media preparation and procedure 1.6 Interpreting Manuals 1.7 Following Instructions 1.8 Basic mathematical operations 1.9 Unit conversion 1.10 Simple/basic calculation 1.11 RA 6969 1.12 Practice 3Rs and 5s 1.13 Occupational Health and Safety 1.14 DENR AO 2002-19	1.1 Preparing of seedbed 1.2 Proper handling of seedlings and plants 1.3 Preparing land 1.4 Basic carpentry
2. Perform plant care and management	2.1 Host plants are watered based on plant water requirements 2.2 <b>Effective control measures</b> are determined on specific pest and diseases as	2.1 Host plant requirements for butterflies and moths 2.2 Plant water requirement 2.3 Pest and Diseases	2.1 Watering practices 2.2 Managing pest and disease 2.3 Rejuvenating plant 2.4 Applying

	<p>described under the “pest, disease management” of the DENR AO 2002-19</p> <p>2.3 Plant <b>rejuvenation/</b> rationing is performed based on industry practice</p> <p>2.4 Fertilizers are applied in accordance with plant requirements</p> <p>2.5 Hilling up or minimal cultivation is performed based on plant care requirements</p>	<p>2.4 Types of fertilizer used in plant rejuvenation</p> <p>2.5 Pest and diseases control</p> <p>2.6 Methods and techniques in plant rejuvenation</p> <p>2.7 Methods and technique in applying fertilizer</p> <p>2.8 Fertilizer Computation</p> <p>2.9 Interpreting of DENR Manuals, instructions and labels</p> <p>2.10 6’S of good Housekeeping</p> <p>2.11 Solid waste management</p>	<p>fertilizer</p>
<p>3. Set-Up host plants for direct feeding</p>	<p>3.1 <b>Host plants</b> are enclosed with net according to industry practice</p> <p>3.2 Host plants are <b>secured</b> according to industry practice</p> <p>3.3 Host plants are maintained according to <b>industry practice</b></p>	<p>3.1 Material requirements for setting-up of host plants</p> <p>3.2 Techniques in setting-up of host plants</p> <p>3.3 Ratio of sponge to host plants</p> <p>3.4 Inventory</p> <p>3.5 Recordkeeping</p> <p>3.6 Waste Management</p>	<p>3.1 Covering of host plants with net as protection from pests and other diseases</p> <p>3.2 Tying of sponge soaked in oil around food plant stems</p>
<p>4. Harvest host plants for feeding</p>	<p>4.1 Harvesting of host plants is determined using <b>maturity indices</b> according to requirements of butterfly and moth larvae</p> <p>4.2 Appropriate harvesting tools and materials are used according to industry practice.</p> <p>4.3 Production record is accomplished according to industry</p>	<p>4.1 Maturity Indices</p> <p>4.2 Food requirements of butterfly and moth larvae</p> <p>4.3 Use of appropriate tools and materials</p> <p>4.4 Host plant harvest operations</p> <p>4.5 Recordkeeping</p> <p>4.6 6’s</p>	<p>4.1 Determining maturity indices</p> <p>4.2 Practicing recordkeeping</p> <p>4.3 Harvesting operations</p>



	procedures.		
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## RANGE OF VARIABLES

VARIABLE	RANGE
1. Propagating Materials	May include: 2.1 Plant cuttings 2.2 Seeds
2. Potting media	May include: 2.3 Garden soil 2.4 Animal manure 2.5 Vermicast 2.6 Carbonized Rice Hull (CRH) 2.7 Coco coir dust
3. Plant nursery	May include: 3.1 Seedlings 3.2 Potted plants 3.3 Host plant cuttings 3.4 Nectar plants cuttings
4. Effective control measures	May include: 4.1 Dweeding 4.2 Hilling up 4.3 Pruning 4.4 Thinning 4.5 Organic Insecticide application 4.6 Organic Fertilizer application
5. Secured	May include; 5.1 Sponge with soaked oil 5.2 Elevated plant stand with water dish 5.3 Plant nursery
6. Industry practice	May include: 6.1 Hardening 6.2 Seedling care and maintenance requirement 6.3 Soaking 6.4 Securing and maintaining host plant seed bank

7. Host plants	<p>May include:</p> <ul style="list-style-type: none"> <li>7.1 Species of Plants <ul style="list-style-type: none"> <li>7.1.1 Citrus (pomelo, lemon, calamansi)</li> <li>7.1.2 Guyabano</li> <li>7.1.3 Avocado</li> <li>7.1.4 Guava</li> <li>7.1.5 Santol</li> <li>7.1.6 Atis</li> <li>7.1.7 Lagaylay</li> <li>7.1.8 Kaytana</li> <li>7.1.9 Milkweed</li> <li>7.1.10 Cherry</li> <li>7.1.11 Plum</li> <li>7.1.12 Taro</li> <li>7.1.13 Kamote</li> <li>7.1.14 Tapyas</li> <li>7.1.15 Gaylay</li> <li>7.1.16 Basket-basket</li> <li>7.1.17 Sili-sili</li> <li>7.1.18 Tulo-gatas</li> <li>7.1.19 Tayngahang sylvia</li> <li>7.1.20 Tayngahang biblis</li> </ul> </li> <li>7.2 Species of Flowers <ul style="list-style-type: none"> <li>7.2.1 Violets</li> <li>7.2.2 Lantana</li> <li>7.2.3 Santan</li> <li>7.2.4 Gumamela</li> </ul> </li> </ul>
8. Rejuvenation	<p>May include:</p> <ul style="list-style-type: none"> <li>8.1 Outdoor-netted breeding</li> <li>8.2 "Kumpay" System</li> </ul>
9. Maturity indices	<p>May include:</p> <ul style="list-style-type: none"> <li>9.1 Size (length, diameter, thickness)</li> <li>9.2 Color</li> <li>9.3 Odor</li> <li>9.4 Shape</li> <li>9.5 Age</li> <li>9.6 Appearance</li> <li>9.7 Taste</li> </ul>

## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Established nursery               <ul style="list-style-type: none"> <li>1.1.1 Selected propagating materials in accordance with industry standards.</li> <li>1.1.2 Prepared potting media in accordance with enterprise procedure.</li> <li>1.1.3 Performed care and maintenance of plant nursery in accordance with enterprise practice.</li> </ul> </li> <li>1.2 Watered plants based on plant water requirements               <ul style="list-style-type: none"> <li>1.2.1 Determined effective control measures on specific pest and diseases as described under the “pest, disease management” of the DENR AO 2002-19</li> <li>1.2.2 Performed plant rejuvenation/rationing based on industry practice</li> <li>1.2.3 Applied fertilizers in accordance with plant requirements</li> </ul> </li> <li>1.3 Set-Up host plants for direct feeding               <ul style="list-style-type: none"> <li>1.3.1 Enclosed the host plants with net according to industry Practice</li> <li>1.3.2 Secured host plants according to industry practice</li> <li>1.3.3 Maintained host plants according to industry practice</li> </ul> </li> <li>1.4 Harvested host plants for feeding               <ul style="list-style-type: none"> <li>1.4.1 Determined harvesting of host plants using maturity indices according to requirements of butterfly and moth larvae</li> <li>1.4.2 Used appropriate harvesting tools and materials are according to industry practice.</li> <li>1.4.3 Accomplished records according to enterprise procedures.</li> </ul> </li> </ul>
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>2.1 DENR AO 2002-19</li> <li>2.2 Hand trowel</li> <li>2.3 Shovel</li> <li>2.4 Digging bar</li> <li>2.5 Mattock</li> <li>2.6 Rake</li> <li>2.7 Spading fork</li> <li>2.8 Dull bolo</li> <li>2.9 Cutting tools</li> <li>2.10 Poly bag</li> <li>2.11 Seedling tray</li> <li>2.12 Planting materials (cuttings, seedling, seeds)</li> <li>2.13 PPE</li> <li>2.14 Planting media</li> <li>2.15 Organic fertilizers and concoctions</li> <li>2.16 Watering tools</li> <li>2.17 Pruning shears</li> </ul>

	2.18 Branch cutter
3. Methods of Assessment	Competency in this unit may be assessed through 3.1 Observation 3.2 Demonstration with oral questioning 3.3 Written examination
5. Context for Assessment	Competency may be assessed in the actual workplace or simulation environment.

**UNIT OF COMPETENCY** : **RAISE BUTTERFLY AND MOTH SPECIES**

**UNIT CODE** : **AB-AFF1704001633303**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills and attitudes required to prepare breeding stock, apply feeds and feeding techniques, and raise larvae.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Prepare breeding stock	1.1 <b>Breeding stock</b> is selected according to market demand 1.2 Breeding stock is determined to attain the desired number based on market demand 1.3 <b>Quality</b> of the breeding stock is checked based on industry requirement 1.4 Care and management of breeding stock	1.1 Breeding stock 1.2 Life cycle of butterfly and moth 1.3 Quality of breeding stock 1.4 Characteristics of breeding stock 1.5 Feeding of breeding stock with nectar plants and alternative sugar solutions 1.6 Preparing inventory report 1.6 Estimation 1.7 Fundamental Operation 1.8 Report Preparation Related Laws and Ordinances 1.9 DENR-AO-2002-19	1.1 Writing Communication 1.2 Selecting quality and healthy breeding stock 1.3 Conducting inventory
2. Provide food plants and apply feeding techniques	2.1 <b>Feeding materials</b> are prepared according to larval requirement 2.2 Larvae are provided with food using <b>feeding techniques</b> based on industry practice 2.3 <b>Sufficiency</b> of feeding materials is monitored based on larval requirement	2.1 Larval feeding habits 2.2 Feeding materials 2.3 Feeding techniques 2.4 Use of PPE 2.5 Feeding requirements and schedule 2.6 Volume and Capacity 2.7 Following Instructions 2.8 6's of Good Housekeeping	2.1 Preparing monitoring chart for feeding materials 2.2 Feeding larvae 2.3 Handling of larvae

<p>3. Raise larvae</p>	<p>3.1 Eggs still attached to the leaves are carefully collected on a daily basis based on standard procedures</p> <p>3.2 Eggs are allowed to mature, hatch, and are kept safe from insects and other environmental factors following the industry practice</p> <p>3.3 Newly cut branches/vines, or potted host plants with larvae, are carefully transferred to a cabinet or cage to further develop in accordance with industry practice</p> <p>3.4 Larvae are continuously supplied with food until they reach <b>pupation stage</b> in accordance with the larval feeding requirements</p> <p>3.5 Cages are maintained regularly and are freed from frass and dried food materials based on safety and sanitation standards</p>	<p>3.1 Rearing condition</p> <p>3.2 Correct temperature</p> <p>3.3 Correct humidity</p> <p>3.4 Life cycle of butterfly and moth</p> <p>3.5 Procedures of collecting eggs</p> <p>3.6 Monitor date of laying eggs</p> <p>3.7 Egg incubation</p> <p>3.8 Maintain cage</p> <p>3.9 Data encoding</p> <p>3.10 Data collection and management</p> <p>3.11 Recordkeeping</p> <p>3.12 6's of good housekeeping</p>	<p>1.1 Monitoring of date of laying eggs</p> <p>1.2 Handling of newly cut branch/vine</p> <p>1.3. Recordkeeping</p> <p>1.4. Collecting eggs/larvae</p> <p>1.5 Feeding of larvae</p> <p>1.6 Maintaining cages</p>
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## RANGE OF VARIABLES

VARIABLE	RANGE
1. Breeding stock	May include: <ul style="list-style-type: none"> <li>1.1 Mature male and female butterfly and moth</li> <li>1.2 Identification of male and female stock</li> <li>1.3 Ratio of male and female stock (1:3)</li> </ul>
2. Quality	May include: <ul style="list-style-type: none"> <li>2.1 Healthy stock</li> <li>2.2 Unhealthy stock</li> </ul>
3. Feeding materials	May include: <ul style="list-style-type: none"> <li>3.1 Host plants</li> <li>3.2 Water-honey solution</li> <li>3.3 Water-sugar solution</li> <li>3.4 Puddling feeding</li> <li>3.5 Fruit feeding</li> </ul>
4. Feeding techniques	May include: <ul style="list-style-type: none"> <li>4.1 Larvae are transferred to habitat</li> <li>4.2 Potted host plants are provided to larvae</li> <li>4.3 Good quality host plants are picked and transferred to cages</li> <li>4.4 Host plant trees with breeding stock are covered using outdoor-netted breeding technique</li> </ul>
5. Pupation Stage	May include: <ul style="list-style-type: none"> <li>5.1 Pre-pupa stage</li> <li>5.2 Matured pupa stage</li> </ul>



## EVIDENCE GUIDE

<p>1. Critical aspect of competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Selected breeding stock according to market demand</li> <li>1.2 Checked quality of the breeding stock based on industry requirement</li> <li>1.3 Provided larvae with food using feeding techniques based on industry practice</li> <li>1.4 Collected carefully the eggs that are still attached on the leaves on a daily basis based on the standard procedure</li> <li>1.5 Supplied larvae with food continuously until they reach pupation stage in accordance with the larval feeding requirements</li> <li>1.6 Maintained cages regularly and must be free of frass and dried food materials based on safety and sanitation standards</li> </ul>
<p>2. Resource Implication</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>2.1 Host plants</li> <li>2.2 Feeding materials</li> <li>2.3 Net cage/cabinet</li> <li>2.4 Rearing cage</li> <li>2.5 Breeding stock</li> <li>2.6 Honey</li> <li>2.7 Sugar</li> <li>2.8 Fruits</li> <li>2.9 Mud and other nutrient sources</li> <li>2.10 Water</li> <li>2.11 Pen and paper</li> <li>2.12 Board</li> </ul>
<p>3 Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>3.1 Direct observation</li> <li>3.2 Demonstration with oral questioning</li> <li>3.3 Written examination</li> </ul>
<p>4 Context for Assessment</p>	<p>Competency may be assessed in the actual workplace or simulation environment.</p>

**UNIT OF COMPETENCY** : **PERFORM PEST AND DISEASES CONTROL ACTIVITIES**

**UNIT CODE** : **AB-AFF1704001633304**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills and attitudes required to assess the general appearance of larvae, segregate healthy larvae from infected population and disinfect cages and dispose of infected larval population.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Assess the general appearance of larvae	1.1 Reared larvae are assessed according to farm work activities 1.2 Larval appearance and growth are observed for possible presence of <b>pests</b> and <b>diseases</b> according to farm work activities 1.3 Presence of larval pests and diseases are recorded following standard procedures	1.1 Pests and diseases in larvae 1.2 Health indicators 1.3 Determine the level of pest and disease infestation in reared population 1.4 Estimation 1.5 Recordkeeping 1.6 Safety and health measures 1.7 OSH 1.8 PNS for Code of Good Butterfly Rearing Practices	1.1 Identifying pests and diseases in larvae 1.2 Observing grass quality 1.3 Observing and monitoring of the general appearance of larvae for possible presence of pests and diseases
2. Segregate healthy larvae from infected population	2.1 Separate the infected population from healthy ones based on assessment results 2.2 Transfer healthy population to another cage according to industry practice 2.3 Prepare infected population for disposal according to industry practices	2.1 Viral or bacterial infestation 2.2 Parasitism 2.3 Personal Protective Equipment 2.4 Tools and equipment 2.5 Regular disinfection of cages 2.6 Level of infestation 2.7 Degree of parasitism 2.9 Documentation process 2.10 Recordkeeping and management 2.11 Proper disposal practices	2.1 Sorting healthy from infected larval population 2.2 Transferring of healthy population to another cage 2.3 Preparing infected population prior to disposal

<p>3. Disinfect cages and dispose of infected larval population</p>	<p>3.1 <b>Tools and materials</b> are prepared following industry practice</p> <p>3.2 Rearing cages are <b>sanitized</b> following the Occupational Health and Safety standards (OHS)</p> <p>3.3 Safety and health measures are applied following OSH and Code of Good Butterfly Rearing Practices</p> <p>3.4 Infected population is <b>disposed of</b> following Occupational Health and Safety standards (OHS)</p> <p>3.5 Disinfecting solution is properly stored according to OHS.</p>	<p>3.1 Kinds of disinfecting solution</p> <p>3.2 Preparation of disinfecting solution</p> <p>3.3 Proper storage of disinfecting solution</p> <p>3.4 Regular cleaning of rearing cage</p> <p>3.3 Treatment and corrective measures</p> <p>3.4 Proper disposal of infected population</p> <p>3.5 Ratio and proportion of disinfecting solution</p> <p>3.6 Recordkeeping</p> <p>3.7 Safety and health measures</p> <p>3.7 OHS</p> <p>3.8 PNS for Code of Good Butterfly Rearing Practices</p>	<p>3.1 Disinfecting cages</p> <p>3.2 Identifying treatment and corrective measures</p> <p>3.3 Applying safety and health measures</p> <p>3.4 Preparing of disinfecting solution</p> <p>3.5 Storing of disinfecting solution</p> <p>3.6 Disposing of infected population</p>
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## RANGE OF VARIABLES

VARIABLE	RANGE
1. Pests	May include: <ol style="list-style-type: none"> <li>1. Protozoans</li> <li>2. Ants</li> <li>3. Spiders</li> <li>4. Lizards</li> <li>5. Rats</li> <li>6. Flies</li> <li>7. Wasps</li> <li>8. Birds</li> </ol>
2. Diseases	May include: <ol style="list-style-type: none"> <li>1. Bacterial diseases</li> <li>2. Viral diseases</li> <li>3. Other diseases caused by contaminated food plants</li> </ol>
3. Tools and materials	May include: <ol style="list-style-type: none"> <li>1. Gloves</li> <li>2. PPE</li> <li>3. Tweezers</li> <li>4. Tongs</li> <li>5. Containers</li> <li>6. Trash bags</li> <li>7. Pail</li> <li>8. Sprayer</li> <li>9. Brush</li> <li>10. Trowel</li> <li>11. Burning tools and materials</li> </ol>
4. Sanitized	May include: <ol style="list-style-type: none"> <li>1. Chlorine solution</li> <li>2. Water</li> <li>3. 70% Isopropyl Alcohol</li> <li>4. Hydrogen peroxide solution (1:3)</li> </ol>
5. Disposed of	May include: <ol style="list-style-type: none"> <li>1. Burning</li> <li>2. Burying</li> </ol>

## EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Assessed reared larvae according to farm work activities</li> <li>1.2 Separated the infected population from healthy ones based on assessment results</li> <li>1.3 Sanitized rearing cages following the Occupational Health and Safety standards (OHS)</li> <li>1.4 Applied safety and health measures following OSH and Code of Good Butterfly Rearing Practices</li> <li>1.5 Disposal of infected population following Occupational Health and Safety standards (OHS)</li> <li>1.6 Stored disinfecting solution properly according to OHS.</li> </ul>
<p>2. Resource Implications</p>	<p>The following resources <b>should</b> be provided:</p> <ul style="list-style-type: none"> <li>2.1 Manual</li> <li>2.2 Gloves</li> <li>2.3 PPE</li> <li>2.4 Tweezers</li> <li>2.5 Tongs</li> <li>2.6 Containers</li> <li>2.7 Trash bags</li> <li>2.8 Pail</li> <li>2.9 Sprayer</li> <li>2.10 Brush</li> <li>2.11 Trowel</li> <li>2.12 Burning tools and materials</li> <li>2.13 Chlorine solution</li> <li>2.14 Hydrogen peroxide</li> <li>2.15 70% Isopropyl alcohol</li> </ul>
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>3.1 Direct observation</li> <li>3.2 Demonstration with oral questioning</li> <li>3.3 Written examination</li> </ul>
<p>4. Context for Assessment</p>	<p>Competency may be assessed in the actual workplace.</p>

**UNIT OF COMPETENCY** : **PERFORM HARVEST OPERATIONS**

**UNIT CODE** : **AB-AFF1704001633305**

**UNIT DESCRIPTOR** : This unit covers the knowledge, skills and attitudes required to harvest and package pupae, and harvest and package butterfly.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b> <i>Italicized</i> terms are elaborated in the Range of Variables	<b>REQUIRED KNOWLEDGE</b>	<b>REQUIRED SKILLS</b>
1. Harvest and package pupa	1.1 Pupation is accurately monitored based on industry practice 1.2 Pupae are sorted according to industry practice 1.3 Pupae are harvested using different <b>harvesting technique</b> based on industry practice 1.4 <b>Materials</b> for packaging of pupae are prepared based on industry practice 1.5 Pupae are put inside the box following the <b>packaging procedures</b> based on industry practice	1.1 Pupation stage Rearing condition Correct temperature 1.2 Correct humidity 1.3 Hatching period 1.4 Prediction of hatching period using recording chart 1.5 Harvesting techniques 1.6 Materials for packaging of pupa 1.7 Packaging procedures 1.8 Measurement of time 1.9 Recording of data 1.10 Record keeping 1.11 Waste Management	1.1 Harvesting technique 1.2 Packaging procedure 1.3 Labeling
2. Harvest and package adult live butterfly and moth	2.1 Live butterfly is harvested using <b>catching materials</b> 2.2 Butterfly is sorted based on standard procedures 2.3 Harvested butterfly is <b>packed</b> following the standard procedures of the industry 2.4 Packed live butterflies are put inside the perforated box to keep them alive and safe	2.1 Butterfly life span 2.2 Travel time of live butterfly 2.3 Catching materials 2.4 Packaging material 2.5 Packaging procedure for live butterfly 2.6 Proper handling procedure for live butterfly 2.7 Distance, rate, time 2.8 Labeling 2.9 DENR AO 2002-19	2.1 Sorting butterfly 2.2 Packaging live butterfly 2.3 Packaging dried butterfly 2.4 Harvesting live butterfly 2.5 Entrepreneurial skills

	<p>2.5 Proper handling procedure is applied following industry practice</p> <p>2.6 Dried butterfly and moth specimens are stored according to industry practice</p>		
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## RANGE OF VARIABLES

VARIABLE	RANGE
1. Harvesting techniques	May include: 1.1 Using water sprayer 1.2 Using blade 1.3 Using branch cutter 1.4 Using wet cotton
2. Materials for packaging	May include: 2.1 Carton box 2.2 Tissue 2.3 Cotton 2.4 Plastic twine 2.5 Packaging tape 2.6 Labelling materials
3. Packaging procedures	May include: 3.1 Wax paper 3.2 Perforated carton box 3.3 Cotton layering
4. Catching materials	May include: 4.1 Aerial catching net 4.2 "Sigpaw" or Sweep net
5. Packed	May include: 5.1 Packed live butterfly 5.2 Packed dried butterfly



## EVIDENCE GUIDE

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Harvested pupae</li> <li>1.2 Harvested live butterfly</li> <li>1.3 Packaged pupa, live and dried butterfly</li> </ul>
2. Resource Implications	<p>The following resources <b>should</b> be provided:</p> <p>DENR AO 2002-19</p> <ul style="list-style-type: none"> <li>2.1 Water sprayer</li> <li>2.2 Cutter</li> <li>2.3 Wax paper</li> <li>2.4 Carton box</li> <li>2.5 Cotton</li> <li>2.6 Ballpen</li> <li>2.7 Permanent marker</li> <li>2.8 Packaging tape</li> <li>2.9 Tissue</li> <li>2.10 Plastic twine</li> <li>2.11 Packaging tape</li> <li>2.12 Labelling materials</li> </ul>
3. Methods of Assessment	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> <li>1. Direct observation</li> <li>2. Demonstration with oral questioning</li> <li>3. Written examination</li> </ul>
4. Context for Assessment	<p>Competency may be assessed in the actual workplace or simulated environment</p>

## **SECTION 3      TRAINING ARRANGEMENTS**

### **3.1 TRAINEE ENTRY REQUIREMENTS**

Trainees or students wishing to gain entry into this course should possess the following requirements:

- can communicate either oral and written
- physically and mentally fit
- with good moral character
- can perform basic mathematical computation

### **3.2 TRAINING DELIVERY**

1. The delivery of training shall adhere to the design of the curriculum. Delivery shall be guided by the principles of competency-based TVET.
  - a. Course design is based on competency standards set by the industry or recognized industry sector; (Learning system is driven by competencies written to industry standards);
  - b. Training delivery is learner-centered and should accommodate individualized and self-paced learning strategies;
  - c. Training can be done on actual workplace setting, simulation of a workplace and/or thru adoption of modern technology;
  - d. Assessment is based in the collection of evidence of the performance of work to the industry require standards;
  - e. Assessment of competency takes the trainees' knowledge and attitude into account but requires evidence of actual performance of the competency as the primary source of evidence;
  - f. Training program allows for recognition of prior learning (RPL) or current competencies;
  - g. Training completion is based on satisfactory performance of all specified competencies.
2. The competency-based TVET system recognizes various types of delivery modes, both on and off-the-job as long as the learning is driven by the competency standards specified by the industry. The following training modalities and their variations/components maybe adopted singly or in combination with other modalities when designing and delivering training programs.
  - 2.1 Community-Based
    - Short-term programs conducted by non-government organizations, NGOs, LGUs, training centers and other TVET providers which are intended to address the specific needs of a community.

### 3.3 LIST OF TOOLS, EQUIPMENT AND MATERIALS

TOOLS		EQUIPMENT		MATERIALS	
QTY	DESCRIPTION	QTY	DESCRIPTION	QTY	DESCRIPTION
5 pcs	Water sprayer	1 unit	Fax machine	25 pcs	Carton box
25 pcs	Cutter	1 unit	Telephone	800 gms	Cotton
25 pcs	Hand lens (Magnifying glass)	1 unit	Computer with internet connection	25 pcs	Ballpen
25 pcs	Tweezers/force ps	1 unit	Engine	25 pcs	Permanent marker
5 pcs	Mounted butterflies and moths	1 unit	Pump	25 pcs	Packaging tape
1 pc	White board	1 unit	Generator	25 rolls	Tissue paper
5 pcs	Hand trowel	5 units	Calculator		Plastic twine
5 pcs	Shovel	1 unit	Weighing Scale		Labelling materials
5 pcs	Digging bar	1 unit	Larval Cabinet	5 pcs	Aerial net
5 pcs	Mattock	1 unit	Net cage good for 100 sqm area		Assorted host plants
5 pcs	Rake	25 pcs	Rearing cages	20 types	Female breeding stocks
5 pcs	Spading fork			10 types	Male breeding stocks
5 pcs	Dull bolo			2 bot	Honey
10 pcs	Seedling tray			2 kgs	Sugar
5 pcs	Hammer				Fruits
5 pcs	Push-pull rule				Mud and other nutrient sources
				5 rolls	Wax paper
5 pairs	Boots			50 pcs	Poly bag
5 pcs	Hats				Hand gloves
5 pcs	Sickle				Plant cuttings

TOOLS		EQUIPMENT		MATERIALS	
QTY	DESCRIPTION	QTY	DESCRIPTION	QTY	DESCRIPTION
5 pairs	Scissors				Seeds
5 pairs	Pruning Shears				Root cuttings
	Nylon/tie				Organic Fertilizers and concoctions
	Wood Peg				Writing materials
	Wood/Steel				notebook
5 pcs	Pail				Manila paper
					Sponge
					Paper
					Oil
					Board
					Cartolina
					Manuals and references
					DENR AO 2002-19 Manual
					Chart of plants and flowers
					Trash bags
					Chlorine solution
					70% Isopropyl Alcohol
					Hydrogen peroxide solution (1:3)

### 3.4 TRAINING FACILITIES

Based on a class of 25 learners / trainees

<b>SPACE REQUIREMENT</b>	<b>AREA IN SQUARE METERS</b>
a. Building	66sqm
• Lecture room	(40sqm)
• Learning resource area	(10sqm)
• Wash room	(4sqm)
• Store room	(4sqm)
• Rest room	(8sqm)
b. Workshop (butterfly farm)	100 sqm

### 3.5 TRAINER'S QUALIFICATIONS FOR BUTTERFLY BREEDER

- Must have at least two (2) years industry experience in Butterfly Production within the last five (5) years
- Must have Training of Trainers' certificate OR must be a practicing trainer (including community training) for 2 years within the last 5 years
- FLD requirements – Qualified with competencies in Facilitating e-Learning Sessions (FeLS)

### 3.6 INSTITUTIONAL ASSESSMENT

Institutional Assessment is gathering of evidences to determine the achievements of the requirements of the qualification to enable the trainer to make judgment whether the trainee is competent or not yet competent.

- Interview
- Written Examination / Online Examination
- Demonstration with Oral questioning
- Direct observation and Questioning

## GLOSSARY OF TERMS

1. **Aberration** – is a variation in the wing pattern of a butterfly species which is different in some way to the normal pattern. This can occur as a genetic or environmentally produced/induced variation of the usual form of the species.
2. **Butterfly** – a nectar-feeding insect with two pairs of large, typically brightly colored wings that are covered with microscopic scales. For this document's purpose, this may include moths.
3. **Cabinet** – a cupboard with shelves or drawers for storing or displaying
4. **Cage** – a structure use to confine birds or other animals
5. **Cultivation** – the action of cultivating land, or the state of being cultivated
6. **Cuttings** – a piece cut off from something (plants), especially what remains when something is being trimming or prepared
7. **Deweeding** – to remove weeds
8. **Disease** – a disorder of structure or function in a human, animal, or plant, especially one that produces specific signs or symptoms or that affects a specific location and is not simply a direct result of physical injury
9. **Dispersal** – the action or process of distributing things or people over wide area
10. **Disposal** – the action or process of throwing away or getting rid of something
11. **Endemism** – is the state of species being native to a single defined geographic location, such as an island, state, nation, country or other defined zone.
12. **Fertilizer** – a chemical or natural substance added to soil or land to increase its fertility
13. **Frass** – the excrement of insect larvae.
14. **Guesstimation** – a juxtaposition of the words “guess” and “estimation”, a technique used by butterfly breeders estimate the number of butterflies or moths by bulk or a group.
15. **Hardening** – the process of allowing a plant to transition from a protected indoor or greenhouse environment to the harsh outdoor conditions of fluctuating spring temperatures, wind, and full sun exposure
16. **Hatch** – to produce young by incubation; to emerge from an egg, chrysalis, or pupa
17. **Harvest** – the process of gathering something
18. **Humidity** – is the amount of water vapor in the air. If there is a lot of water vapor in the air, the humidity will be high. The higher the humidity, the wetter it feels outside.
19. **Inventory** – a complete list of items such as property, goods in stock, or the contents of a building. In a butterfly farm, items include all the components of the farm.
20. **Kumpay** – is a type of host plant rejuvenation process where only parts of the host plants are collected and fed to butterfly and moth larvae.
21. **Larvae** – the active immature form of an insect, especially one that differs greatly from the adult and forms the stage between egg and pupa, e.g. a caterpillar or grub
22. **Lepidoptera** – an order of insects that comprises butterflies and moths. They have four large scale-covered wings that bear distinctive markings, and larvae that are caterpillars.
23. **Lifecycle** – the series of changes in the life of an organism including reproduction

24. **Maturity** – the quality or state of being mature; full development of crops, animals, human, etc.
25. **Moth** – a chiefly nocturnal insect related to butterflies. It lacks the clubbed antennae of butterflies and typically has a stout body, drab coloration, and wings that fold flat when resting.
26. **Mount** – a backing or setting on which a photograph, gem, or work of art is set for display
27. **Package** – an object or group of objects wrapped in paper or plastic, or packed in a box; present in a particular way, especially to make them more attractive
28. **Parasitism** – relationship between two species of plant and animals in which one benefits at the expense of the other, sometimes without killing the host organism
29. **Pest** – a destructive insect or other animal that attacks crops, food, livestock, etc.
30. **Population** – the whole number of inhabitants in a certain area
31. **Propagation** – the breeding of specimens of a plant or animal by natural processes from the parent stock
32. **Pruning** – the removal of parts of a plant, tree, or vine that are not requisite to growth or production, are no longer visually pleasing, or are injurious to the health or development of the plant
33. **Puddling** – or mud-puddling, is a behavior most conspicuous in butterflies, but occurs in other animals as well, mainly insects; they seek out nutrients in certain moist substances such as rotting plant matter, mud, and carrion, and they suck up the fluid as additional source of nutrition.
34. **Pupation** – the stage when insects undergo transformation between immature and mature stages.
35. **Sanitation** – the act or process of making sanitary; the promotion of hygiene and prevention of disease by maintenance of sanitary conditions
36. **Seedlings** – a young plant growth from seed
37. **Segregation** – the action or state of setting something apart from other things
38. **Sigpaw** – aerial net
39. **Soak** – make or allow something to become thoroughly wet by immersing it in liquid
40. **Sort** – arrange systematically in groups
41. **Species** – a group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding
42. **Specimen** – an individual animal, plant, piece of a mineral, etc. used as an example of its species or type for scientific study or display
43. **Thinning** – make or become less dense, crowded, or numerous
44. **Rejuvenation** – means restoring vitality and freshness of plants. It is another term for renewal.
45. **Vermicast** – organic wastes through earthworms; feces of earthworms

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