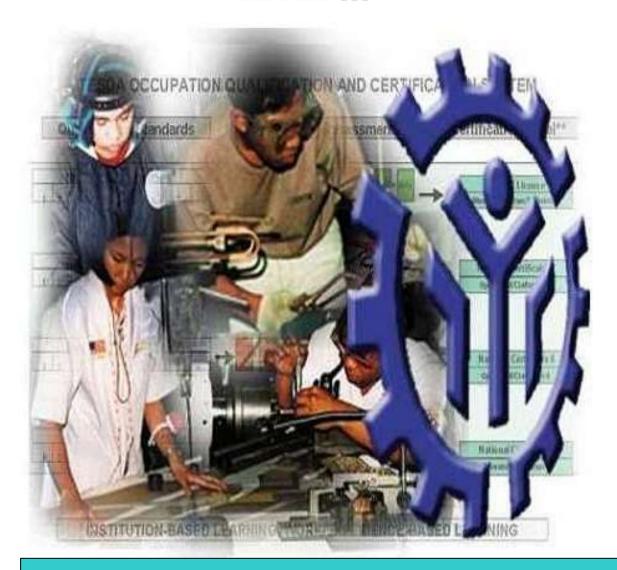# COMPETENCY STANDARDS

VEGETABLE SEED PRODUCTION LEVEL III

AGRICULTURE, FORESTRY AND FISHERY SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY

TESDA Complex East Service Road, South Luzon Expressway (SLEX),

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

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

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AGRICULTURE, FORESTRY AND FISHERY SECTOR

VEGETABLE SEED PRODUCTION LEVEL III

COMPETENCY STANDARDS FOR
VEGETABLE SEED PRODUCTION LEVEL III

Section 1   DESCRIPTION OF QUALIFICATION

The **VEGETABLE SEED PRODUCTION LEVEL III** consists of competencies that a person must achieve in producing high-quality vegetable seeds. Specifically, it involves competencies in preparing vegetable seeds, establishing germplasm, performing plant breeding, and complying vegetable crop variety registration.

The units of competency comprising this qualification include the following:

Code	BASIC COMPETENCIES
400311319	Lead workplace communication
400311320	Lead small teams
400311321	Apply critical thinking and problem-solving techniques in the workplace
400311322	Work in a diverse environment
400311323	Propose methods of applying learning and innovation in the organization
400311324	Use information systematically
400311325	Evaluate occupational safety and health work practices
400311326	Evaluate environmental work practices
400311327	Facilitate entrepreneurial skills for micro-small-medium enterprises (MSMEs)

Code	COMMON COMPETENCIES
AFF321201	Apply safety measures in farm operations
AFF321202	Use farm servicing tools and equipment
AFF321203	Perform estimation and calculations
AFF321205	Process farm wastes
SOC 413206	Maintain service records
AFF 723201	Conduct Diagnosis
AFF 723202	Perform Shop Maintenance

Code	CORE COMPETENCIES
AB-AFF0701242611301	Prepare vegetable seeds
AB-AFF0701242611302	Establish germplasm
AB-AFF0701242611303	Perform plant breeding and post-harvest operations
AB-AFF0701242611304	Comply vegetable crop variety registration

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

- o   Vegetable seed producer

SECTION 2 COMPETENCY STANDARDS

This section provides the Technical Vocational Education and Training (TVET) providers with information and other important requirements to consider when designing training programs for **VEGETABLE SEED PRODUCTION LEVEL III.**

BASIC COMPETENCIES

UNIT OF COMPETENCY	:	LEAD WORKPLACE COMMUNICATION
UNIT CODE	:	400311319
UNIT DESCRIPTOR	:	This unit covers the knowledge, skills, and attitudes required to lead in the effective dissemination and discussion of ideas, information, and issues in the workplace. This includes the preparation of written communication materials.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Communicate information about workplace processes	1.1 Relevant ***communication method*** is selected based on workplace procedures. 1.2 Multiple operations involving several topics/areas are communicated following enterprise requirements. 1.3 Questioning is applied to gain extra information. 1.4 Relevant sources of information are identified in accordance with workplace/ client requirements. 1.5 Information is selected and organized following enterprise procedures. 1.6 Verbal and written reporting is undertaken when required.	1.1 Organization requirements for written and electronic communication methods 1.2 Effective verbal communication methods 1.3 Business writing 1.4 Workplace etiquette	1.1 Organizing information 1.2 Conveying intended meaning 1.3 Participating in a variety of workplace discussions 1.4 Complying with organization requirements for the use of written and electronic communication methods 1.5 Effective business writing 1.6 Effective clarifying and probing skills 1.7 Effective questioning techniques (clarifying and probing)

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	1.7 Communication and negotiation skills are applied and maintained in all relevant situations.		
2. Lead workplace discussions	2.1 Response to workplace issues are sought following enterprise procedures. 2.2 Response to workplace issues are provided immediately. 2.3 Constructive contributions are made to **workplace discussions** on such issues as production, quality and safety. 2.4 Goals/ objectives and action plans undertaken in the workplace are communicated promptly.	2.1 Organization requirements for written and electronic communication methods 2.2 Effective verbal communication methods 2.3 Workplace etiquette	2.1 Organizing information 2.2 Conveying intended meaning 2.3 Participating in variety of workplace discussions 2.4 Complying with organization requirements for the use of written and electronic communication methods 2.5 Effective clarifying and probing skills
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise. 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication. 3.3 Dialogue is initiated with appropriate personnel. 3.4 Communication problems and issues are raised as they arise. 3.5 Identify barriers in communication to be addressed appropriately.	3.1 Organization requirements for written and electronic communication methods 3.2 Effective verbal communication methods 3.3 Workplace etiquette 3.4 Communication problems and issues 3.5 Barriers in communication	3.1 Organizing information 3.2 Conveying intended meaning 3.3 Participating in a variety of workplace discussions 3.4 Complying with organization requirements for the use of written and electronic communication methods 3.5 Effective clarifying and probing skills 3.6 Identifying issues 3.7 Negotiation and communication skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work requirements	May include: 1.1 Client Profile 1.2 Assignment instructions
2. Team member's concerns	May include: 2.1 Roster/shift details
3. Monitor performance	May include: 3.1 Formal process 3.2 Informal process
4. Feedback	May include: 4.1 Formal process 4.2 Informal process
5. Performance issues	May include: 5.1 Work output 5.2 Work quality 5.3 Team participation 5.4 Compliance with workplace protocols 5.5 Safety 5.6 Customer service

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:**
	1.1 Maintained or improved individuals and/or team performance given a variety of possible scenario
	1.2 Assessed and monitored team and individual performance against set criteria
	1.3 Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf
	1.4 Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed
	1.5 Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members
2. Resource	**The following resources should be provided:**
	2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place
	2.2 Materials relevant to the proposed activity or task
3. Methods of Assessment	**Competency in this unit may be assessed through:**
	3.1 Written Examination
	3.2 Oral Questioning
	3.3 Portfolio
4. Context for Assessment	4.1 Competency may be assessed in actual workplace or at the designated TESDA Accredited Assessment Center.

UNIT OF COMPETENCY :   LEAD SMALL TEAMS

UNIT CODE   :   400311320

UNIT DESCRIPTOR   :   This unit covers the knowledge, skills and attitudes to lead small teams including setting, maintaining and monitoring team and individual performance standards.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Provide team leadership	1.1 **Work requirements** are identified and presented to team members based on company policies and procedures 1.2 Reasons for instructions and requirements are communicated to team members based on company policies and procedures 1.3 **Team members' and leaders' concerns** are recognized, discussed and dealt with based on company practices	1.1 Facilitation of Team work 1.2 Company policies and procedures relating to work performance 1.3 Performance standards and expectations 1.4 Monitoring individual's and team's performance vis a vis client's and group's expectations	1.1 Communication skills required for leading teams 1.2 Group facilitation skills 1.3 Negotiating skills 1.4 Setting performance expectation
2. Assign responsibilities	2.1. Responsibilities are allocated having regard to the skills, knowledge and aptitude required to undertake the assigned task based on company policies. 2.2 Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible.	2.1 Work plan and procedures 2.2 Work requirements and targets 2.3 Individual and group expectations and assignments Ways to improve group leadership and membership	2.1 Communication skills 2.2 Management skills 2.3 Negotiating skills 2.4 Evaluation skills 2.5 Identifying team member's strengths and rooms for improvement

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Set performance expectations for team members	3.1 Performance expectations are established based on client needs 3.2 Performance expectations are based on individual team members knowledge, skills and aptitude 3.3 Performance expectations are discussed and disseminated to individual team members	3.1 One's roles and responsibilities in the team 3.2 Feedback giving and receiving 3.3 Performance expectation	3.1 Communication skills 3.2 Accurate empathy 3.3 Congruence 3.4 Unconditional positive regard 3.5 Handling of Feedback
4. Supervise team performance	4.1 Performance is monitored based on defined performance criteria and/or assignment instruction 4.2 Team members are provided with feedback, positive support and advice on strategies to overcome any deficiencies based on company practices 4.3 Performance issues which cannot be rectified or addressed within the team are referred to appropriate personnel according to employer policy 4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on client/customer needs 4.5 Client/customer satisfaction are provided with feedback, positive support and advice on strategies to overcome any deficiencies based on company practices	4.1 Performance Coaching 4.2 Performance management 4.3 Performance Issues	4.1 Communication skills required for leading teams 4.2 Coaching skill

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	4.6 Performance issues which cannot be rectified or addressed within the team are referred to appropriate personnel according to employer policy 4.7 Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on client/customer needs and satisfaction 4.8 Team operations are monitored to ensure that employer/client needs and requirements are met 4.9 Follow-up communication is provided on all issues affecting the team 4.10 All relevant documentation is completed in accordance with company procedures		

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work requirements	May include: 1.1. Client Profile 1.2. Assignment instructions
2. Team member's concerns	May include: 2.1 Roster/shift details
3. Monitor performance	May include: 3.1 Formal process 3.2 Informal process
4. Feedback	May include: 4.1 Formal process 4.2 Informal process
5. Performance issues	May include: 5.1 Work output 5.2 Work quality 5.3 Team participation 5.4 Compliance with workplace protocols 5.5 Safety 5.6 Customer service

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Maintained or improved individuals and/or team performance given a variety of possible scenario 1.2 Assessed and monitored team and individual performance against set criteria 1.3 Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf 1.4 Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed 1.5 Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members
2. Resource	The following resources should be provided: 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Materials relevant to the proposed activity or task
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Written Examination 3.2 Oral Questioning 3.3 Portfolio
4. Context for Assessment	4.1 Competency may be assessed in actual workplace or at the designated TESDA Accredited Assessment Center.

UNIT OF COMPETENCY **:** **APPLY CRITICAL THINKING AND PROBLEM-SOLVING TECHNIQUES IN THE WORKPLACE**

UNIT CODE **:** **400311321**

UNIT DESCRIPTOR **:** This unit covers the knowledge, skills, and attitudes required to solve problems in the workplace including the application of problem-solving techniques and to determine and resolve the root cause/s of specific problems in the workplace.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Examine specific workplace challenges	1.1 Variances are examined from normal operating *parameters*, and product quality. 1.2 Extent, cause and nature of the specific problem are defined through observation, investigation and *analytical techniques*. 1.3 *Problems* are clearly stated and specified.	1.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations. 1.2 Competence to include the ability to apply and explain, enough for the identification of fundamental causes of specific workplace challenges. 1.3 Relevant equipment and operational processes. 1.4 Enterprise goals, targets and measures. 1.5 Enterprise quality OHS and environmental requirement. 1.6 Enterprise information systems and data collation	1.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 1.2 Identifying extent and causes of specific challenges in the workplace

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
		1.7 Industry codes and standards.	
2. Analyze the causes of specific workplace challenges	2.1 Possible causes of specific problems are identified based on experience and the use of problem solving tools/ analytical techniques. 2.2 Possible cause statements are developed based on findings. 2.3 Fundamental causes are identified per results of investigation conducted.	2.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations. 2.2 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 2.3 Relevant equipment and operational processes. 2.4 Enterprise goals, targets and measures. 2.5 Enterprise quality OSH and environmental requirement. 2.6 Enterprise information systems and data collation. 2.7 Industry codes and standards.	2.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 2.2 Identifying extent and causes of specific challenges in the workplace. 2.3 Providing clear-cut findings on the nature of each identified workplace challenges.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Formulate resolutions to specific workplace challenges	3.1 All possible options are considered for resolution of the problem. 3.2 Strengths and weaknesses of possible options are considered. 3.3 Corrective actions are determined to resolve the problem and possible future causes. 3.4 ***Action plans*** are developed identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures.	3.1 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 3.2 Relevant equipment and operational processes 3.3 Enterprise goals, targets and measures 3.4 Enterprise quality OSH and environmental requirement 3.5 Principles of decision making strategies and techniques 3.6 Enterprise information systems and data collation 3.7 Industry codes and standards	3.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 3.2 Identifying extent and causes of specific challenges in the workplace. 3.3 Providing clear-cut findings on the nature of each identified workplace challenges. 3.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.
4. Implement action plans and communicate results	4.1 Action plans are implemented and evaluated. 4.2 Results of plan implementation and recommendations are prepared.	4.1 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations	4.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	4.3 Recommendations are presented to appropriate personnel. 4.4 Recommendations are followed-up, if required.	4.2 Relevant equipment and operational processes 4.3 Enterprise goals, targets and measures 4.4 Enterprise quality, OSH and environmental requirement 4.5 Principles of decision making strategies and techniques 4.6 Enterprise information systems and data collation 4.7 Industry codes and standards	4.2 Identifying extent and causes of specific challenges in the workplace. 4.3 Providing clear-cut findings on the nature of each identified workplace challenges. 4.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Parameters	May include: 1.1 Processes 1.2 Procedures 1.3 Systems
2. Analytical techniques	May include: 2.1 Brainstorming 2.2 Intuitions/Logic 2.3 Cause and effect diagrams 2.4 Pareto analysis 2.5 SWOT analysis 2.6 Gant chart, Pert CPM and graphs 2.7 Scattergrams
3. Problem	May include: 3.1 Routine, non – routine and complex workplace and quality problems 3.2 Equipment selection, availability and failure 3.3 Teamwork and work allocation problem 3.4 Safety and emergency situations and incidents 3.5 Risk assessment and management
4. Action plans	May include: 4.1 Priority requirements 4.2 Measurable objectives 4.3 Resource requirements 4.4 Timelines 4.5 Co-ordination and feedback requirements 4.6 Safety requirements 4.7 Risk assessment 4.8 Environmental requirements

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:**
	1.1 Examined specific workplace challenges.
	1.2 Analyzed the causes of specific workplace challenges.
	1.3 Formulated resolutions to specific workplace challenges.
	1.4 Implemented action plans and communicated results on specific workplace challenges.
2. Resource Implications	2.1 Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios / case studies / what ifs will be required as well as bank of questions which will be used to probe the reason behind the observable action.
3. Methods of Assessment	**Competency in this unit may be assessed through:**
	3.1 Observation
	3.2 Case Formulation
	3.3 Life Narrative Inquiry
	3.4 Standardized test
	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.
	These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened.
4. Context for Assessment	In all workplace, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units.

UNIT OF COMPETENCY **:** **WORK IN A DIVERSE ENVIRONMENT**

UNIT CODE **:** **400311322**

UNIT DESCRIPTOR **:** This unit covers the outcomes required to work effectively in a workplace characterized by diversity in terms of religions, beliefs, races, ethnicities and other differences.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop an individual's cultural awareness and sensitivity	1.1 Individual differences with clients, customers and fellow workers are recognized and respected in accordance with enterprise policies and core values. 1.2 Differences are responded to in a sensitive and considerate manner. 1.3 *Diversity* is accommodated using appropriate verbal and non-verbal communication.	1.1 Understanding cultural diversity in the workplace 1.2 Norms of behavior for interacting and dialogue with specific groups (e. g., Muslims and other non-Christians, non-Catholics, tribes/ethnic groups, foreigners) 1.3 Different methods of verbal and non-verbal communication in a multicultural setting	1.1 Applying cross-cultural communication skills (i.e. different business customs, beliefs, communication strategies) 1.2 Showing affective skills – establishing rapport and empathy, understanding, etc. 1.3 Demonstrating openness and flexibility in communication 1.4 Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices
2. Work effectively in an environment that acknowledges and values cultural diversity	2.1 Knowledge, skills and experiences of others are recognized and documented in relation to team objectives. 2.2 Fellow workers are encouraged to utilize and share their specific qualities, skills	2.1 Value of diversity in the economy and society in terms of Workforce development 2.2 Importance of inclusiveness in	2.1 Demonstrating cross-cultural communication skills and active listening 2.2 Recognizing diverse groups in the workplace and community as defined by divergent culture,

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	or backgrounds with other team members and clients to enhance work outcomes. 2.3 Relations with customers and clients are maintained to show that diversity is valued by the business.	a diverse environment 2.3 Shared vision and understanding of and commitment to team, departmental, and organizational goals and objectives 2.4 Strategies for customer service excellence	religion, traditions and practices 2.3 Demonstrating collaboration skills 2.4 Exhibiting customer service excellence
3. Identify common issues in a multicultural and diverse environment	3.1 ***Diversity-related conflicts*** within the workplace are effectively addressed and resolved. 3.2 Discriminatory behaviors towards customers/stakeholders are minimized and addressed accordingly. 3.3 Change management policies are in place within the organization.	3.1 Value, and leverage of cultural diversity 3.2 Inclusivity and conflict resolution 3.3 Workplace harassment 3.4 Change management and ways to overcome resistance to change 3.5 Advanced strategies for customer service excellence	3.1 Addressing diversity-related conflicts in the workplace 3.2 Eliminating discriminatory behavior towards customers and co-workers 3.3 Utilizing change management policies in the workplace

RANGE OF VARIABLES

VARIABLE	RANGE
1. Diversity	This refers to diversity in both the workplace and the community and may include divergence in: 1.1 Religion 1.2 Ethnicity, race or nationality 1.3 Culture 1.4 Gender, age or personality 1.5 Educational background
2. Diversity-related conflicts	May include conflicts that result from: 2.1 Discriminatory behaviors 2.2 Differences of cultural practices 2.3 Differences of belief and value systems 2.4 Gender-based violence 2.5 Workplace bullying 2.6 Corporate jealousy 2.7 Language barriers 2.8 Individuals being differently-abled persons 2.9 Ageism (negative attitude and behavior towards old people)

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1 Adjusted language and behavior as required by interactions with diversity 1.2 Identified and respected individual differences in colleagues, clients and customers 1.3 Applied relevant regulations, standards and codes of practice
2. Resource Implications	**The following resources should be provided:** 2.1 Access to workplace and resources 2.2 Manuals and policies on Workplace Diversity
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1 Demonstration or simulation with oral questioning 3.2 Group discussions and interactive activities 3.3 Case studies/problems involving workplace diversity issues 3.4 Third-party report 3.5 Written examination 3.6 Role Plays
4. Context for Assessment	Competency assessment may occur in workplace or any appropriately simulated environment

UNIT OF COMPETENCY **:** **PROPOSE METHODS OF APPLYING LEARNING AND INNOVATION IN THE ORGANIZATION**

UNIT CODE **:** **400311323**

UNIT DESCRIPTOR **:** This unit covers the knowledge, skills and attitudes required to assess general obstacles in the application of learning and innovation in the organization and to propose practical methods of such in addressing organizational challenges.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Assess work procedures, processes and systems in terms of innovative practices	1.1 *Reasons* for innovation are incorporated to work procedures. 1.2 *Models of innovation* are researched. 1.3 *Gaps or barriers* to innovation in one's work area are analyzed. 1.4 Staff who can support and foster innovation in the work procedure are identified.	1.1 Seven habits of highly effective people 1.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 1.3 Five minds of the future concepts (Gardner, 2007) 1.4 Adaptation concepts in neuroscience (Merzenich, 2013) 1.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992)	1.1 Demonstrating collaboration and networking skills 1.2 Applying basic research and evaluation skills 1.3 Generating insights on how to improve organizational procedures, processes and systems through innovation
2. Generate practical action plans for improving work procedures, processes	2.1 Ideas for innovative work procedure to foster innovation using individual and	2.1 Seven habits of highly effective people 2.2 Character strengths that foster	2.1 Assessing readiness for change on simple work procedures, processes and systems

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	group techniques are conceptualized. 2.2 Range of ideas with other team members and colleagues are evaluated and discussed. 2.3 Work procedures and processes subject to change are selected based on *workplace requirements* (feasible and innovative). 2.4 Practical action plans are proposed to facilitate simple changes in the work procedures, processes and systems. 2.5 *Critical inquiry* is applied and used to facilitate discourse on adjustments in the simple work procedures, processes and systems.	innovation and learning (Christopher Peterson and Martin Seligman, 2004) 2.3 Five minds of the future concepts (Gardner, 2007) 2.4 Adaptation concepts in neuroscience (Merzenich, 2013) 2.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992)	2.2 Generating insights on how to improve organizational procedures, processes and systems through innovation 2.3 Facilitating action plans on how to apply innovative procedures in the organization
3. Evaluate the effectiveness of the proposed action plans	3.1 Work structure is analyzed to identify the impact of the new work procedures. 3.2 Co-workers/key personnel are consulted to know who will be involved	3.1 Five minds of the future concepts (Gardner, 2007) 3.2 Adaptation concepts in neuroscience (Merzenich, 2013)	3.1 Generating insights on how to improve organizational procedures, processes and systems through innovation 3.2 Facilitating action plans on

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	with or affected by the work procedure.	3.3 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992)	how to apply innovative procedures in the organization
	3.3 Work instruction operational plan of the new work procedure is developed and evaluated.		3.3 Communicating results of the evaluation of the proposed and implemented changes in the workplace procedures and systems
	3.4 Feedback and suggestion are recorded.		
	3.5 Operational plan is updated.		3.4 Developing action plans for continuous improvement on the basic systems, processes and procedures in the organization
	3.6 Results and impact on the developed work instructions are reviewed.		
	3.7 Results of the new work procedure are evaluated.		
	3.8 Adjustments are recommended based on results gathered.		

RANGE OF VARIABLES

VARIABLE	RANGE
1. Reasons	May include: 1.1 Strengths and weaknesses of the current systems, processes and procedures 1.2 Opportunities and threats of the current systems, processes and procedures
2. Models of innovation	May include: 2.1 Seven habits of highly effective people 2.2 Five minds of the future concepts (Gardner, 2007) 2.3 Neuroplasticity and adaptation strategies
3. Gaps or barriers	May include: 3.1 Machine 3.2 Manpower 3.3 Methods 3.4 Money
4. Critical Inquiry	May include: 4.1 Preparation 4.2 Discussion 4.3 Clarification of goals 4.4 Negotiate towards a Win-Win outcome 4.5 Agreement 4.6 Implementation of a course of action 4.7 Effective verbal communication. See our pages: Verbal Communication and Effective Speaking 4.8 Listening 4.9 Reducing misunderstandings is a key part of effective negotiation 4.10 Rapport Building 4.11 Problem Solving 4.12 Decision Making 4.13 Assertiveness 4.14 Dealing with Difficult Situations

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:**
	1.1 Established the reasons why innovative systems are required
	1.2 Established the goals of a new innovative system
	1.3 Analyzed current organizational systems to identify gaps and barriers to innovation.
	1.4 Assessed work procedures, processes and systems in terms of innovative practices.
	1.5 Generate practical action plans for improving work procedures, and processes.
	1.6 Reviewed the trial innovative work system and adjusted reflect evaluation feedback, knowledge management systems and future planning.
	1.7 Evaluated the effectiveness of the proposed action plans.
2. Resource Implications	**The following resources should be provided:**
	2.1 Pens, papers and writing implements
	2.2 Cartolina
	2.3 Manila papers
3. Methods of Assessment	**Competency in this unit may be assessed through:**
	3.1 Psychological and behavioral Interviews
	3.2 Performance Evaluation
	3.3 Life Narrative Inquiry
	3.4 Review of portfolios of evidence and third-party workplace reports of on-the-job performance
	3.5 Sensitivity analysis
	3.6 Organizational analysis
	3.7 Standardized assessment of character strengths and virtues applied
4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY **:** **USE INFORMATION SYSTEMATICALLY**

UNIT CODE **:** **400311324**

UNIT DESCRIPTOR **:** This unit covers the knowledge, skills and attitudes required to use technical information systems, apply information technology (IT) systems and edit, format & check information.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Use technical information	1.1 ***Information*** are collated and organized into a suitable form for reference and use. 1.2 Stored information are classified so that it can be quickly identified and retrieved when needed. 1.3 Guidance are advised and offered to people who need to find and use information.	1.1 Application in collating information 1.2 Procedures for inputting, maintaining and archiving information 1.3 Guidance to people who need to find and use information 1.4 Organize information 1.5 classify stored information for identification and retrieval 1.6 Operate the technical information system by using agreed procedures	1.1 Collating information 1.2 Operating appropriate and valid procedures for inputting, maintaining and archiving information 1.3 Advising and offering guidance to people who need to find and use information 1.4 Organizing information into a suitable form for reference and use 1.5 Classifying stored information for identification and retrieval 1.6 Operating the technical information system by using agreed procedures
2. Apply information technology (IT)	2.1 ***Technical information*** system is operated using agreed procedures. 2.2 Appropriate and valid procedures are operated for inputting, maintaining and archiving information.	2.1 Attributes and limitations of available software tools 2.2 Procedures and work instructions for the use of IT 2.3 Operational requirements for IT systems	2.1 Identifying attributes and limitations of available software tools 2.2 Using procedures and work instructions for the use of IT 2.3 Describing operational

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.3 *Software* required are utilized to execute the project activities 2.4 Information and data obtained are handled, edited, formatted and checked from a range of internal and external *sources*. 2.5 Information are extracted, entered, and processed to produce the outputs required by *customers*. 2.6 Own skills and understanding are shared to help others. 2.7 Specified *security measures* are implemented to protect the confidentiality and integrity of project data held in IT systems.	2.4 Sources and flow paths of data 2.5 Security systems and measures that can be used 2.6 Extract data and format reports 2.7 Methods of entering and processing information 2.8 WWW enabled applications	requirements for IT systems 2.4 Identifying sources and flow paths of data 2.5 Determining security systems and measures that can be used 2.6 Extracting data and format reports 2.7 Describing methods of entering and processing information 2.8 Using WWW applications
3. Edit, format and check information	3.1 Basic editing techniques are used. 3.2 Accuracy of documents are checked. 3.3 Editing and formatting tools and techniques are used for more complex documents. 3.4 Proof reading techniques is used to check that documents look professional.	3.1 Basic file-handling techniques 3.2 Techniques in checking documents 3.3 Techniques in editing and formatting 3.4 Proof reading techniques	3.1 Using basic file-handling techniques is used for the software 3.2 Using different techniques in checking documents 3.3 Applying editing and formatting techniques 3.4 Applying proof reading techniques

RANGE OF VARIABLES

VARIABLE	RANGE
1. Information	May include: 1.1 Property 1.2 Organizational 1.3 Technical reference
2. Technical information	May include: 2.1 paper based 2.2 electronic
3. Software	May include: 3.1 spreadsheets 3.2 databases 3.3 word processing 3.4 presentation
4. Sources	May include: 4.1 other IT systems 4.2 manually created 4.3 within own organization 4.4 outside own organization 4.5 geographically remote
5. Customers	May include: 5.1 colleagues 5.2 company and project management 5.3 clients
6. Security measures	May include: 6.1 access rights to input; 6.2 passwords; 6.3 access rights to outputs; 6.4 data consistency and back-up; 6.5 recovery plans

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:** 1.1 Used technical information systems and information technology 1.2 Applied information technology (IT) systems 1.3 Edited, formatted and checked information
2. Resource Implications	**The following resources should be provided:** 2.1 Computers 2.2 Software and IT system
3. Methods of Assessment	**Competency in this unit should be assessed through:** 3.1 Direct Observation 3.2 Oral interview and written test
4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY   :   EVALUATE OCCUPATIONAL SAFETY AND HEALTH WORK PRACTICES

UNIT CODE   :   400311325

UNIT DESCRIPTOR   :   This unit covers the knowledge, skills and attitudes required to interpret Occupational Safety and Health practices, set OSH work targets, and evaluate effectiveness of Occupational Safety and Health work instructions.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret Occupational Safety and Health practices	1.1 ***OSH work practices*** issues are identified relevant to work requirements. 1.2 OSH work standards and procedures are determined based on applicability to nature of work. 1.3 Gaps in work practices are identified related to relevant OSH work standards.	1.1 OSH work practices issues 1.2 OSH work standards 1.3 General OSH principles and legislations 1.4 Company/ workplace policies/ guidelines 1.5 Standards and safety requirements of work process and procedures	1.1 Communication skills 1.2 Interpersonal skills 1.3 Critical thinking skills 1.4 Observation skills
2. Set OSH work targets	2.1 Relevant work information are gathered necessary to determine OSH work targets. 2.2 ***OSH Indicators*** based on gathered information are agreed upon to measure effectiveness of workplace OSH	2.1 OSH work targets 2.2 OSH Indicators 2.3 OSH work instructions 2.4 Safety and health requirements of tasks 2.5 Workplace guidelines on providing feedback on OSH	2.1 Communication skills 2.2 Collaborating skills 2.3 Critical thinking skills 2.4 Observation skills

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	policies and procedures. 2.3 Agreed OSH indicators are endorsed for approval from appropriate personnel. 2.4 **OSH work instructions** are received in accordance with workplace policies and procedures.	and security concerns 2.6 OSH regulations Hazard control procedures 2.7 OSH trainings relevant to work	
3. Evaluate effectiveness of Occupational Safety and Health work instructions	3.1 OSH Practices are observed based on workplace standards. 3.2 Observed OSH practices are measured against approved **OSH metrics**. 3.3 Findings regarding effectiveness are assessed and gaps identified are implemented based on OSH work standards.	3.1 OSH Practices 3.2 OSH metrics 3.3 OSH Evaluation Techniques 3.4 OSH work standards	3.1 Critical thinking skills 3.2 Evaluating skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. OSH Work Practices Issues	May include: 1.1 Workers' experience/observance on presence of work hazards 1.2 Unsafe/unhealthy administrative arrangements (prolonged work hours, no break-time, constant overtime, scheduling of tasks) 1.3 Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/ guidelines
2. OSH Indicators	May include: 2.1 Increased of incidents of accidents, injuries 2.2 Increased occurrence of sickness or health complaints/symptoms 2.3 Common complaints of workers' related to OSH 2.4 High absenteeism for work-related reasons
3. OSH Work Instructions	May include: 3.1 Preventive and control measures, and targets 3.2 Eliminate the hazard (i.e., get rid of the dangerous machine 3.3 Isolate the hazard (i.e. keep the machine in a closed room and operate it remotely; barricade an unsafe area off) 3.4 Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one) 3.5 Use administrative controls to reduce the risk (i.e. give trainings on how to use equipment safely; OSH-related topics, issue warning signages, rotation/shifting work schedule) 3.6 Use engineering controls to reduce the risk (i.e. use safety guards to machine) 3.7 Use personal protective equipment 3.8 Safety, Health and Work Environment Evaluation 3.9 Periodic and/or special medical examinations of workers
4. OSH metrics	May include: 4.1 Statistics on incidence of accidence and injuries 4.2 Morbidity (Type and Number of Sickness) 4.3 Mortality (Cause and Number of Deaths) 4.4 Accident Rate

EVIDENCE GUIDE

1. Critical aspects of Competence	**Assessment requires evidence that the candidate:** 1.1 Identify OSH work practices issues relevant to work requirements 1.2 Identify gaps in work practices related to relevant OSH work standards 1.3 Agree upon OSH Indicators based on gathered information to measure effectiveness of workplace OSH policies and procedures 1.4 Receive OSH work instructions in accordance with workplace policies and procedures 1.5 Compare Observed OSH practices with against approved OSH work instructions 1.6 Assess findings regarding effectiveness based on OSH work standards
2. Resource Implications	**The following resources should be provided:** 2.1 Facilities, materials, tools and equipment necessary for the activity
3. Methods of Assessment	**Competency in this unit may be assessed through:** 3.1 Observation/Demonstration with oral questioning 3.2 Third party report 3.3 Written exam
4. Context for Assessment	4.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY **:** **EVALUATE ENVIRONMENTAL WORK PRACTICES**

UNIT CODE **:** **400311326**

UNIT DESCRIPTOR **:** This unit covers the knowledge, skills and attitude to interpret environmental Issues, establish targets to evaluate environmental practices and evaluate effectiveness of environmental practices.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret environmental practices, policies and procedures	1.1 ***Environmental work*** practices issues are identified relevant to work requirements. 1.2 Environmental Standards and Procedures nature of work are determined based on Applicability to nature of work. 1.3 Gaps in work practices related to Environmental Standards and Procedures are identified.	1.1 Environmental Issues 1.2 Environmental Work Procedures 1.3 Environmental Laws 1.4 Environmental Hazardous and Non-Hazardous Materials 1.5 Environmental required license, registration or certification	1.1 Analyzing Environmental Issues and Concerns 1.2 Critical thinking 1.3 Problem Solving 1.4 Observation Skills
2. Establish targets to evaluate environmental practices	2.1 Relevant information are gathered necessary to determine environmental work targets. 2.2 ***Environmental Indicators*** based on gathered information are set to measure environmental work targets.	2.1 Environmental indicators 2.2 Relevant Environment Personnel or expert 2.3 Relevant Environmental Trainings and Seminars	2.1 Investigative Skills 2.2 Critical thinking 2.3 Problem Solving 2.4 Observation Skills

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.3 Indicators are verified with appropriate personnel.		
3. Evaluate effectiveness of environmental practices	3.1 Work environmental practices are recorded based on workplace standards. 3.2 Recorded work environmental practices are compared against planned indicators. 3.3 Findings regarding effectiveness are assessed and gaps identified are implemented based on environment work standards and procedures. 3.4 Results of environmental assessment are conveyed to appropriate personnel.	3.1 Environmental Practices 3.2 Environmental Standards and Procedures	3.1 Documentation and Record Keeping Skills 3.2 Critical thinking 3.3 Problem Solving 3.4 Observation Skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Environmental Practices Issues	May include: 1.1 Water Quality 1.2 National and Local Government Issues 1.3 Safety 1.4 Endangered Species 1.5 Noise 1.6 Air Quality 1.7 Historic 1.8 Waste 1.9 Cultural
2. Environmental Indicators	May include: 2.1 Noise level 2.2 Lighting (Lumens) 2.3 Air Quality - Toxicity 2.4 Thermal Comfort 2.5 Vibration 2.6 Radiation 2.7 Quantity of the Resources 2.8 Volume

EVIDENCE GUIDE

1. Critical aspects of Competency	**Assessment requires evidence that the candidate:**
	1.1 Identified environmental issues relevant to work requirements
	1.2 Identified gaps in work practices related to Environmental Standards and Procedures
	1.3 Gathered relevant information necessary to determine environmental work targets
	1.4 Set environmental indicators based on gathered information to measure environmental work targets
	1.5 Recorded work environmental practices are recorded based on workplace standards
	1.6 Conveyed results of environmental assessment to appropriate personnel
2. Resource Implications	**The following resources should be provided:**
	2.1 Workplace/Assessment location
	2.2 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection
	2.3 Case studies/scenarios relating to environmental protection
3. Methods of Assessment	**Competency in this unit may be assessed through:**
	3.1 Written/ Oral Examination
	3.2 Interview/Third Party Reports
	3.3 Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad)
	3.4 Simulations and role-plays
4. Context for Assessment	4.1 Competency may be assessed in actual workplace or at the designated TESDA center.

UNIT OF COMPETENCY **:** **FACILITATE ENTREPRENEURIAL SKILLS FOR MICRO-SMALL-MEDIUM ENTERPRISES (MSMEs)**

UNIT CODE **:** **400311327**

UNIT DESCRIPTOR **:** This unit covers the outcomes required to build, operate and grow a micro/small-scale enterprise.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop and maintain micro-small-medium enterprise (MSMEs) skills in the organization	1.1 Appropriate **business strategies** are determined and set for the enterprise based on current and emerging business environment. 1.2 **Business operations** are monitored and controlled following established procedures. 1.3 Quality assurance measures are implemented consistently. 1.4 Good relations are maintained with staff/workers. 1.5 Policies and procedures on occupational safety and health and environmental concerns are constantly observed.	1.1 Business models and strategies 1.2 Types and categories of businesses 1.3 Business operation 1.4 Basic Bookkeeping 1.5 Business internal controls 1.6 Basic quality control and assurance concepts 1.7 Government and regulatory processes	1.1 Basic bookkeeping/ accounting skills 1.2 Communication skills 1.3 Building relations with customer and employees 1.4 Building competitive advantage of the enterprise
2. Establish and maintain client-base/ market	2.1 Good customer relations are maintained.	2.1 Public relations concepts	2.1 Building customer relations 2.2 Individual marketing skills

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	2.2 New customers and markets are identified, explored and reached out to. 2.3 Promotions/ Incentives are offered to loyal customers. 2.4 Additional products and services are evaluated and tried where feasible. 2.5 ***Promotional/ advertising initiatives*** are carried out where necessary and feasible.	2.2 Basic product promotion strategies 2.3 Basic market and feasibility studies 2.4 Basic business ethics	2.3 Using basic advertising (posters/ tarpaulins, flyers, social media, etc.)
3. Apply budgeting and financial management skills	3.1 Enterprise is built up and sustained through judicious control of cash flows. 3.2 Profitability of enterprise is ensured though appropriate ***internal controls***. 3.3 Unnecessary or lower-priority expenses and purchases are avoided.	3.1 Cash flow management 3.2 Basic financial management 3.3 Basic financial accounting 3.4 Business internal controls	3.1 Setting business priorities and strategies 3.2 Interpreting basic financial statements 3.3 Preparing business plans

RANGE OF VARIABLES

VARIABLE	RANGE
1. Business strategies	May include: 1.1 Developing/Maintaining niche market 1.2 Use of organic/healthy ingredients 1.3 Environment-friendly and sustainable practices 1.4 Offering both affordable and high-quality products and services 1.5 Promotion and marketing strategies (e. g., on-line marketing)
2. Business operations	May include: 2.1 Purchasing 2.2 Accounting/Administrative work 2.3 Production/Operations/Sales
3. Internal controls	May include: 3.1 Accounting systems 3.2 Financial statements/reports 3.3 Cash management
4. Promotional/ Advertising initiatives	May include: 4.1 Use of tarpaulins, brochures, and/or flyers 4.2 Sales, discounts and easy payment terms 4.3 Use of social media/Internet 4.4 "Service with a smile" 4.5 Extra attention to regular customers

EVIDENCE GUIDE

1. Critical aspects of competency	**Assessment requires evidence that the candidate:**
	1.1 Demonstrated basic entrepreneurial skills
	1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise
	1.3 Demonstrated ability to manage/operate a micro/small-scale business
2. Resource Implications	**The following resources should be provided:**
	2.1 Simulated or actual workplace
	2.2 Tools, materials and supplies needed to demonstrate the required tasks
	2.3 References and manuals
3. Methods of Assessment	**Competency in this unit may be assessed through:**
	3.1 Written examination
	3.2 Demonstration/observation with oral questioning
	3.3 Portfolio assessment with interview
	3.4 Case problems
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting
	4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group

COMMON COMPETENCIES

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

OPERATIONS UNIT CODE : **AFF321201**

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

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Determine areas of concern for safety measures	1.1 **Work tasks** are identified in line with farm operations 1.2 **Place** for safety measures are determined in line with farm operations 1.3 **Time** for safety measures are determined in line with farm operations 1.4 Appropriate **tools, materials and outfits** 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/functiona l l tools, materials and outfit 1.5 Preparing tools, materials and outfits 1.6 Discarding defective tools, and materials

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

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work tasks	**Work task may be selected from any of the subsectors:** 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 Wrenches
	    4.1.2 Screw driver
	    4.1.3 Pliers
	4.2 Outfit
	    4.2.1 Masks
	    4.2.2 Gloves
	    4.2.3 Boots
	    4.2.4 Overall coats
	    4.2.5 Hat
	    4.2.6 Eye goggles

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 must be assessed through:** 3.1 Practical demonstration 3.2 Third Party Report
4.	Context of Assessment	4.1. Competency maybe assessed in actual workplace or at the designated TESDA Accredited Assessment Center.

UNIT OF COMPETENCY : USE AND MAINTAIN FARM SERVICING TOOLS AND EQUIPMENT

UNIT CODE   **: AFF321202**

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

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Select and use servicing tools	1.1 Identified appropriate servicing tools according to requirement/use 1.2 Servicing tools are checked for faults and defective tools reported in accordance with farm procedures 1.3 Appropriate servicing tools are safely used according to job requirements and manufacturers conditions	1.1 Servicing tools and their uses 1.2 Defects of servicing tools 1.3 Reporting procedures 1.4 Appropriate usage of servicing tools 1.5 Handling of servicing tools 1.6 OSHS	1.1 Identifying appropriate servicing tools 1.2 Checking servicing tools 1.3 Using appropriately servicing tools 1.4 Apply safety practices
2. Select and operate testing equipment and accessories	2.1 Identify appropriate *testing equipment and accessories* 2.2 Instructional manual of the servicing tools and equipment are carefully read prior to operation 2.3 *Pre-operation check-up* is conducted in line with manufacturers manual 2.4 Faults in *testing equipment and accessories* are identified and reported in line with farm procedures 2.5 *Testing equipment and accessories* used according to its function	2.1 Testing equipment and accessories 2.2 Instructional Manual 2.3 Pre-operation check-up procedures 2.4 Different faults of testing equipment and accessories 2.5 Reporting procedures 2.6 Appropriate usage of test equipment and accessories 2.7 Handling of test equipment and accessories 2.8 OSHS	2.1 Identifying appropriate testing equipment 2.2 Reading instructional manual 2.3 Conducting pre-operation check-up 2.4 Identifying faults in testing equipment and accessories 2.5 Using testing equipment and accessories 2.6 Applying safety practices

	2.6 Followed safety procedures		
3. Perform preventive maintenance	3.1 Servicing tools are cleaned immediately after use in line with farm procedures 3.2 Routine check-up and maintenance of *testing equipment and accessories* are performed according to manufacturer's specification. 3.3 Servicing tools, *testing equipment and accessories* are inventoried based on work requirements 3.4 Servicing tools are stored in designated areas in line with manufacturer's specifications.	3.1 Cleaning procedures 3.2 Farm procedures 3.3 Check -up and maintenance procedures 3.4 Inventory procedures 3.5 Storage procedures 3.6 Waste Management 3.7 5S of Good Housekeeping 3.8 OSHS	3.1 Cleaning servicing tools 3.2 Performing routine check - up and maintenance 3.3 Conducting inventory of servicing tools, testing equipment and accessories 3.4 Storing servicing tools 3.5 Applying safety practices

RANGE OF VARIABLES

VARIABLE	RANGE
1. Testing equipment and accessories	Testing equipment and accessories includes: 1.1 Load tester 1.2 Engine analyzer 1.3 Stability analyzer 1.4 Wheel balancer 1.5 Hydraulic lift 1.6 Compressors 1.7 Power sprayer 1.8 Frame engine hoist
2. Servicing tools	Servicing tools includes: 2.1 Wrenches set 2.2 Screw drivers set 2.3 Hammers 2.4 Pliers 2.5 Testers 2.6 Special tools 2.7 Chisels 2.8 Gauges 2.9 Hydraulic jack 2.10 Sockets and drivers 2.11 Pullers
3. Pre-operation check-up	Pre-operation check-up may include: 3.1 Tires assembly (pressure & bolt tightness) 3.2 Level of brake fluid 3.3 Level of Fuel 3.4 Level of Water 3.5 Level of Lubricants 3.6 Battery

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Selected and used servicing tools 1.2 Selected and operated testing equipment and accessories 1.3 Performed preventive maintenance
2. Resource Implications	The following resources should be provided: 2.1 Actual or simulated workplace 2.2 Tools materials and equipment needed to perform the required tasks 2.3 References and manuals 2.4 PPE 2.5 First Aid Kit PPE
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration/Observation with Oral Questioning 3.2 Portfolio with Interview 3.3 Written Test 3.4 Written Report
4. Context of Assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.

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

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

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

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform estimation	1.1 Job requirements are identified from written or oral communications 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 estimate for work completion are made 1.5 Estimate 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 Compute percentage 1.6 Convert English to Metric systems of measurement 1.7 Preparing estimate report
2. Perform basic workplace calculation	2.1 ***System and units of measurement*** to be followed are ascertained 2.2 Calculation needed to complete work tasks are performed using the ***four basic mathematical operation*** 2.3 Calculate whole fraction, percentage and mixed when are used to complete the instructions 2.4 Number computed is checked following work requirements	2.1 Four basic mathematical operation 2.2 System and units of measurement 2.3 Fraction, percentage and ratio 2.4 Material take-off 2.5 Materials costing	2.1 Compute bill of materials 2.2 Compute project cost

RANGE OF VARIABLES

VARIABLE	RANGE
1. Four basic mathematical operation	**May include:** 1.1 Addition 1.2 Subtraction 1.3 Multiplication 1.4 Division
2. System of measurement	**May include:** 2.1 English 2.2 Metric
3. Units of measurement	**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 Actual or simulated workplace
	2.2 Tools materials and equipment needed to perform the required tasks
	2.3 References and manuals
	2.4 PPE
	2.5 First Aid Kit
3. Method of Assessment	Competency in this unit may be assessed through:
	3.1 Demonstration/Observation with Oral Questioning
	3.2 Portfolio with Interview
	3.3 Written Test
	3.4 Written Report
4. Context of Assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.

UNIT OF COMPETENCY : **PROCESS FARM WASTES**

UNIT CODE : **AFF321205**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to process farm wastes. It comprises functions such as collecting farm wastes, conducting waste identification and segregation, treating and processing farm wastes and performing housekeeping duties

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Collect wastes	1.1 *Tools, materials and PPEs* are prepared for collection of farm wastes. 1.2 *Wastes* are collected following OSHS and waste collection requirements and plan. 1.3 Appropriate *personal protective equipment (PPE)* are worn as prescribed by Occupational Safety and Health Standards (OSHS).	1.1 Tool, materials and equipment 1.2 PPEs 1.3 OSHS 1.4 Waste collection requirements and plan	1.1 Preparing tools, materials and PPEs 1.2 Collecting wastes 1.3 Wearing of PPEs 1.4 Applying safety practices
2 Identify and segregate wastes	2.1 Wastes are identified by *categories* according to industry standards and environmental legislation. 2.2 Wastes are segregated according to organizational requirements and relevant legislation. 2.3 Sorted waste is placed into labelled container to avoid littering and prevent cross-contamination. 2.4 Information on waste is obtained by asking authority to ensure correct identification.	2.1 Categories of wastes 2.2 Wastes segregation procedures 2.3 Environmental legislations	2.1 Identifying wastes 2.2 Segregating wastes 2.3 Sorting wastes 2.4 Obtaining information on wastes

| 3 | Handle farm wastes | 3.1 *Dangerous and hazardous wastes* are handled according to organizational requirements and relevant legislation following OSHS procedures.
3.2 *Handling of farm wastes* is done following environmental legislation and codes.
3.3 Principles of 3Rs (reduce, reuse and recycle) are applied accordingly.
3.4 Wastes are disposed of according to environmental legislation and codes. | 3.1 Dangerous and hazardous wastes
3.2 OSHS
3.3 Organizational requirements
3.4 Handling of farm wastes
3.5 Environmental legislations and codes
3.6 Principles of 3Rs
3.7 Procedures of waste disposal | 3.1 Handling dangerous and hazardous wastes
3.2 Applying safety practices
3.3 Handling of farm wastes
3.4 Applying principles of 3Rs
3.5 Disposing of wastes |
| 4. | Perform housekeeping | 4.1 Appropriate warning signs and labels are displayed in conspicuous places around the workplace.
4.2 Work area is cleaned according to 5S principles.
4.3 Tools are checked, cleaned and stowed according to established industry procedures and following user's manual.
4.4 Materials are stored following industry standard procedures and manufacturer's specifications.
4.5 PPE is checked for damage prior to ensuring that clean and undamaged equipment is stored.
4.6 Storage facility is checked to ensure no contamination in the area according to organizational requirements and legislation and codes.
4.7 *Record* keeping is done according to industry requirements*.* | 4.1 Warning signs and labels
4.2 5S of Good Housekeeping
4.3 Procedures of cleaning, checking and storing of materials
4.4 PPEs
4.5 Organizational requirements and legislation and codes.
4.6 Record keeping procedures | 4.1 Displaying warning signs and labels
4.2 Cleaning work area
4.3 Checking, cleaning and stowing tools
4.4 Storing materials
4.5 Checking storage facility
4.6 Conducting record keeping |

RANGE OF VARIABLES

VARIABLE	SCOPE

1. Tools, materials, PPEs	Tools and materials include:
	1.1. Tools
	   • Wheel borrow
	   • Broomstick
	   • Sprayer or pressurized pump
	1.2. Materials
	   • Sacks
	   • Containers
	   • Disinfectants
	   • Detergents
	   • First-aid kit
	   • Chemical spill kit
	1.3. Personal Protective Equipment
	   • Goggles
	   • Disposal gloves
	   • Face mask
	   • Rubber boots
	   • Overall

2. Wastes	May include:
	2.1. Oil
	2.2. Batteries
	2.3. Consumable parts
	   - Filters
	   - Seals
	2.4. Containers
	2.5. Defective parts

3. Dangerous and hazardous wastes	3.1 Used oil 3.2 Battery solution 3.3 Coolants 3.4 Battery 3.5 Pesticides
4. Categories	4.1 Re-usable 4.2 Recyclable 4.3 Solid 4.4 Liquid
5. Handling of wastes	5.1 Reduce 5.2 Re-use 5.3 Recycle
6. Record	6.1. Record of wastes generated and disposed 6.2. Record of incidence of accidents 6.3. Record of chemical spillage 6.4. Inventory of tools and materials

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Collected farm waste 1.2 Identified and segregated farm waste 1.3 Processed farm waste 1.4 Performed housekeeping
2. Resource Implications	The following resources should be provided: 2.1 Actual or simulated workplace 2.2 Tools materials and equipment needed to perform the required tasks 2.3 References and manuals 2.4 PPE 2.5 First Aid Kit PPE
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration/Observation with Oral Questioning 3.2 Portfolio with Interview 3.3 Written Test 3.4 Written Report
4. Context of Assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.

UNIT OF COMPETENCY   **: MAINTAIN SERVICE RECORD**

UNIT CODE   **: SOC 413206**

UNIT DESCRIPTOR   **:** This unit covers the knowledge, skills and attitude required to carry-out inventory activities, maintain production record and prepare financial records.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Carry out inventory activities	1.1 ***Inventory inputs*** are determined according enterprise requirements. 1.2 Defective tools and equipment are determined according to operation manuals 1.3 Facilities are inspected according to according standard codes and laws.	1.1 Inventory inputs 1.2 Inventory procedures 1.3 Defective tools and equipment 1.4 Inspection procedures	1.1 Determining inventory inputs 1.2 Determining defective tools and equipment 1.3 Inspecting facilities
2 Update record	2.1 Servicing plan are prepared according to enterprise requirements. 2.2 Schedule for ***servicing activities*** are prepared based from enterprise requirements and plan. 2.3 ***Service report*** are prepared in accordance with enterprise reporting procedures	2.1 Servicing Plan 2.2 Servicing Plan Procedures 2.3 Reporting procedures	2.1 Preparing servicing plan 2.2 Preparing schedule for servicing activities 2.3 Preparing service report
3 Prepare financial records	3.1 ***Servicing cost*** are computed using established computation procedures. 3.2 Revenue is computed using established computation procedures.	3.1 Computation procedures 3.2 Revenue and servicing cost 3.3 Financial records	3.1 Computing servicing cost 3.2 Computing revenue

RANGE OF VARIABLES

VARIABLE	SCOPE
1. Inventory inputs	Inventory inputs may include: 1.1 Tools 1.2 Machinery 1.3 Equipment
2. Servicing activities	Servicing activities may include: 2.1 Maintenance 2.2 Check-up 2.3 Repair
3. Service report	Service report may include: 3.1 Client information 3.2 Machinery details (e.g. serial number, model) 3.3 Machinery damages 3.4 Causes of damage 3.5 Servicing details
4. Servicing cost	Servicing cost may include: 4.1 Labor 4.2 Input Parts 4.3 Rentals 4.4 Miscellaneous

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1. Determined inventory inputs according enterprise requirements 1.2. Determined defective tools and equipment's according to operation manuals. 1.3. Inspected facilities according to standard codes and laws. 1.4. Prepared production plan and report according to enterprise requirements and reporting procedures.
2. Resource Implications	The following resources should be provided: 2.1 Actual or simulated workplace 2.2 Tools materials and equipment needed to perform the required tasks 2.3 References and manuals 2.4 PPE 2.5 First Aid Kit
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration/Observation with Oral Questioning 3.2 Portfolio with Interview 3.3 Written Test 3.4 Written Report
4. Context of Assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.

Unit of Competency : **CONDUCT DIAGNOSIS**

Unit Code : **AFF723201**

Unit descriptor : This competency unit covers the knowledge, skills and attitude to conduct initial assessment, provide technical report to client and prepare and present job estimate.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS

1. Conduct initial assessment	1.1 Effective communication skills are applied to interview the operator of the unit.
	 1.2 ***The problem and/or complaint of the customer*** is assessed based on workplace procedures
	 1.3 Analytical observation is done to determine the cause of problem and/or complaint of the customer.
	 1.4 Test run of unit is done to gain full extent of damage to the unit.
		1.1 Operation of 4-Wheel Tractor
		 1.2 4-Wheel Tractor Troubleshooting
		 1.3 Analytical skills using senses
		 1.4 Problem or complaint from customers
		 1.5 Communications skills
		   1.5.1 Listening to customer
		   1.5.2 Speaking with suppliers, customer and co-workers
			1.1 Basic troubleshooting principles
			   1.1.1 Common problems
			 1.2 4-wheel tractor systems
			 1.3 Nomenclature on faults and failures
			 1.4 Receiving, Inspection and checklist procedure
			 1.5 Unit conversions
			 1.6 Four fundamental mathematical operations (addition, subtraction, multiplication and division)
			 1.7 Resourcefulness
			 1.8 Diligence
			 1.9 Time consciousness
			 1.10 Cost consciousness
			 1.11 Personal integrity

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS

2 Provide assessment report to client	2.1 Nature / scope of work to be done is identified.
	 2.2 Extent of *service* to be rendered is determined.
	 2.3 Assessment checklist is submitted to customer.
		2.1 Troubleshooting
		 2.2 Basic mathematics operations
		 2.3 Communications skills
		    2.3.1 Giving feedback to clients
		    2.3.2 Accomplishin g g forms
			2.1 Basic troubleshooting principles
			 2.2 Agricultural machinery systems
			 2.3 Nomenclature of agricultural machinery parts
			 2.4 Nomenclature on faults and failures
			 2.6 Procedures in accomplishing job order forms
			 2.7 Receiving, Inspection and checklist procedure
			 2.8 Unit conversions
			 2.9 Four fundamental mathematical operations (addition, subtraction, multiplication and division)
			 2.10 Resourcefulness
			 2.11 Diligence
			 2.12 Time consciousness
			 2.13 Cost Consciousness
			 2.14 Personal integrity

3 Prepare and present job estimate	3.1 **Items** to be used for repairs are listed following job order 3.2 Cost of parts, supplies, materials are obtained from **suppliers** 3.3 **Total cost** of required repair service is calculated in line with SOP 3.4 Estimate is presented to customer in line with SOP 3.5 Approval is requested from customer	3.1 Estimating repair/service work to be done 3.2 Basic mathematics operations 3.3 Communication skills Preparing job estimate Negotiate with clients Practicing customer relations	3.1 Receiving, Inspection and checklist procedure 3.2 Unit conversions 3.3 Cost analysis 3.4 Customer relations 3.5 Four fundamental mathematical operations (addition, subtraction, multiplication and division) 3.6 Resourcefulness 3.7 Diligence 3.8 Time consciousness 3.9 Cost consciousness 3.10 Personal integrity

RANGE OF VARIABLES

1. The problem and /or complaint of the customer	May include: 1.1 Engine failure 1.2 Excessive vibration 1.3 Abnormal noise and smoke 1.4 Difficulty in maneuvering 1.5 Difficulty in gear shifting 1.6 Faulty electrical system 1.7 Hydraulic failure 1.8 Leaks 1.9 Engine overheating
2. Service	May include: 2.1 Labor 2.2 Parts 2.3 Materials 2.4 Consumable items
3. Suppliers	May include: 3.1 Distributors 3.2 Managers 3.3 Purchasing Officers 3.4 Proprietors
4. Total Cost	May include: 4.1 Parts 4.2 Materials 4.3 Supplies 4.4 Labor 4.5 Administrative
5. Items	May include: 5.1 Type and quantity of parts 5.2 Supplies and materials 5.3 labor required to perform work

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Conducted initial assessment, 1.2 Provided technical report to client 1.3 Prepared and presented job estimate
2. Resource Implications	The following resources should be provided: 2.1 Appropriate tools such as calculator, paper, pen, and other measuring instruments relevant to activity. 2.2 Parts Catalogs 2.3 Service Manuals 2.4 Operation Manuals 2.5 Machinery, tools, and accessories
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Written test 3.2 Oral questioning 3.3 Interview 3.4 Demonstration
4. Context of Assessment	4.1 Competency maybe assessed individually in the actual workplace or simulated situation in accredited institution.

UNIT OF COMPETENCY   **: PERFORM SHOP MAINTENANCE**

UNIT CODE   **: AFF723202**

UNIT DESCRIPTOR   **:** This unit covers knowledge, skills and attitude to maintain work area, tools and equipment, store tools and shop equipment, dispose waste and used liquid, and prepare proper inventory.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS

1. Maintain work area, tools and equipment	1.1 Cleanliness and orderliness of work area is maintained in accordance with company/office procedures.
	1.2 Tools and equipment are cleaned in accordance with **manufacturer's instruction manual.**
	1.3 **Work area** is arranged according to job requirements.
	1.4 **Tools, supplies and equipment** are checked.
	1.5 Wet surfaces in work area is wiped and dried
		1.1 Workshop procedures.
		1.2 Proper use and maintenance of tools and equipment
		1.3 Personal Safety procedures
		1.4 Handling of Hazardous materials
		1.5 Different cleaning agents and lubricants.
		1.6 Occupational Health and safety
		1.7 Attitudes:
		  • Perseverance
		  • Honesty
		  • Patience
		    Attention to detail
			1.1 Handling cleaning agent and grease / lubricants
			1.2 Maintaining tools and equipment.
			1.3 Inspecting tools and equipment

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Store tools and shop equipment	2.1 Tools and equipment are stored in their respective shelves/location. 2.2 Tools and equipment are arranged in accordance with company/office procedures. 2.3 Corresponding visible labels are posted in work area. 2.4 Tools and equipment are labeled based on procedure.	2.1 Labeling procedures 2.2 Storing Procedures 2.3 Personal Safety procedures 2.4 Handling of Hazardous materials Occupational Health and safety 2.5 Attitudes Perseverance 2.6 Honesty Patience Attention to detail	2.1 Handling and storage of tools / equipment / supplies and materials. 2.2 Labeling tools, equipment and work area
3. Dispose wastes/used liquids	3.1 Containers for used *liquids* are visibly labeled. 3.2 Wastes/used liquids are disposed as per workshop Standard Operating Procedure (SOP) 3.3 Waste are segregated according to 3R's 3.4 Safety measures are practiced following OSHS	3.1 3R and environmental rules and regulations 3.2 Different types of wastes 3.3 Handling of Hazardous materials 3.4 OSHS 3.5 Attitudes: Perseverant cue Honesty Patience Attention to detail	3.1 Disposing of wastes and fluids 3.2 Practicing OSHS and 3R's

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
4. Prepare inventory reports	4.1 Tools are safely secured and logged in the records 4.2 Complete inventory of tools/equipment is maintained. 4.3 ***Damaged and defective tools, equipment*** and are segregated. 4.4 Repair recommendations are submitted to immediate supervisor. 4.5 Inventory reports are prepared.	4.1 Inventory procedures 4.2 Different damages and defects of tools and equipment 4.3 Report preparation 4.4 Procedures in accomplishing work	4.1 Processing of damage and accident reports 4.2 Monitor inventory of tools and equipment 4.3 Preparing report 4.4 Accomplishing forms 4.5 Communications skills 4.6 Mathematical skills

RANGE OF VARIABLES

1. Manufacturer instruction manual	Manufacturer instruction manual may include: 1.1 Tools/equipment manufacturer specifications 1.2 Company operating procedure. 1.3 Product manufacturer specifications
2. Work Area	Work area includes: 2.1 Area used for servicing or repairing equipment. 2.2 Workshop 2.3 On-site / on-field where service / repair is done.
3. Tools	Tools may include: 3.1 Wrenches 3.2 Hammer 3.3 Pliers 3.4 Pullers
4. Supplies	Supplies may include: 4.1 Fuel/Oil 4.2 Cleaning Fluids 4.3 Adhesive Fluids
5. Equipment	Equipment may include: 5.1 Compressors 5.2 Drills 5.3 Hydraulic Press 5.4 Lifter
6. Liquids	Liquids may include: 6.1 Oil 6.2 Fuel 6.3 Solvents 6.4 Water Solutions
7. Damaged and defective tools and equipment	Damaged and defective tools and equipment may include: 7.1 Worn out 7.2 Bent 7.3 Rusted 7.4 Chipped 7.5 Misaligned 7.6 Broken

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Cleaned the work area 1.2 Maintained tools, equipment and facilities 1.3 Disposed of waste materials as prescribed.
2. Resource Implications	The following resources should be provided: 2.1 Work Area 2.2 Tools and Equipment 2.3 Materials needed for the job
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration of practical skills 3.2 Written examination 3.3 Interview 3.4 Portfolio 3.5 Third-party report
4. Context of Assessment	4.1 Assessment of skills must take place after a period of supervised practice and repetitive experience.

CORE COMPETENCIES

UNIT OF COMPETENCY : **PREPARE VEGETABLE SEEDS**

UNIT CODE : AB-AFF0701242611301

UNIT DESCRIPTOR : This unit covers the knowledge, skills, and attitudes required to comply relevant legal requirements, identify promising vegetable varietal characteristics and collect promising vegetable variety.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Comply relevant legal requirements	1.1. Legal requirements are identified based on *existing laws and regulations*. 1.2. Legal requirements are consistently adhered to in accordance with established seed production standards. 1.3. Instances of legal non-compliance are identified promptly and reported to the appropriate authorities or management. 1.4. Corrective actions are proposed and implemented in response to non-compliance situations. 1.5. All records related to *legal compliance* are accurately kept in accordance with legal requirements.	**Science** 1.1 Basic legal terms 1.2 Basic vegetable Science 1.3 Relevant laws in vegetable seed production 1.4 Deep understanding of the applicability of legal provisions **Technology** 1.5 Basic Plant Breeding Techniques 1.6 Scientific processes in vegetable seed production covered by the legal provisions 1.7 Scope and limitation in breeding techniques prescribed by law **Communication** 1.8 Basic Legal language 1.9 Knowledge of basic legal terminologies used in the regulation of vegetable seed production	1.1 Identifying relevant laws 1.2 Understanding relevant legal terms 1.3 Written Communication skills 1.4 Analytical skills to determine applicable relevant laws 1.5 Skills to communicate compliance to the seed industry regulators 1.6 Documentation skills of legal compliance

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Identify promising vegetable varietal characteristics	2.1. ***Vegetable seed sources*** are identified based on available data. 2.2. Assessment of vegetable varietal characteristics is conducted using industry-standard methods and tools. 2.3. Promising vegetable variety is characterized based on ***phenotypic characteristics.*** 2.4. Promising vegetable variety is selected based on vegetable seed producer's preference.	**Science** 2.1 Vegetable Varietal Characteristics 2.2 Basic Research on vegetable variety **Technology** 2.3 Techniques in assessing genetic diversity 2.4 Vegetable varietal Sources data Base	2.1 Vegetable Varietal Characterization skills 2.2 Communication skills 2.3 Computer literacy 2.4 Negotiation skills 2.5 Basic Statistics 2.6 Research skills
3. Collect promising vegetable variety	3.1. ***Seed owner's*** prior informed consent is obtained in compliance with existing laws and regulations. 3.2. Seeds are acquired based on industry practices. 3.3. ***Vegetable seed processes*** for ***seed banking*** are followed based on industry practices. 3.4. Vegetable seed inventory is maintained based on standard practice.	**Science** 3.1 Preservation of Genetic Diversity **Technology** 3.2 Methods of sampling 3.3 Seed processing 3.4 Maintenance of vegetable seed inventory **Communication** 3.5 Permit acquisition in collecting vegetable variety samples **Environmental Concern** 3.6 National Commission on Indigenous Peoples (NCIP) Seed Owner Prior Informed Consent	3.1 Written Communication skills 3.2 Understanding genetic diversity 3.3 Sampling skills 3.4 Computer Literacy 3.5 Basic Mathematics 3.6 Processing skills 3.7 Problem-solving skills

RANGE OFVARIABLES

VARIABLE	RANGE
1. Existing laws and regulations	Existing laws and regulations may include: 1.1. RA 7308 (Seed Development Act of 1992) 1.2. Bureau of Plant Industry - National Seed Quality Control Services (BPI-NSQCS) 1.3. RA 8293 (Intellectual Property Office(IPO) Code of the Philippines) 1.4. RA 10372 (Amendments of IPO Code) 1.5. EO 247 (Bioprospecting Law) 1.6. NCIP Seed owner prior informed consent
2. Legal compliance	May include: 2.1. Permits 2.2. Audits 2.3. Inspections
3. Vegetable seed sources	Vegetable seed sources may include: 3.1. Seed producers 3.2. Local Government Unit 3.3. Research center 3.4. Registry of varieties 3.5. Seed bank
4. Phenotypic characteristics	Phenotypic characteristics may include: **Physical**: 4.1. Size 4.2. Shape 4.3. Color **Physiological:** 4.4. Maturity index **Biochemical traits**: 4.5. Pest resistant 4.6. Photo sensitivity
5. Seed owner	Seed owner may include: 5.1. Seed producer 5.2. Seed company
6. Vegetable seed processes	Vegetable seed processes may include: 6.1. Seed cleaning 6.2. Seed drying 6.3. Moisture testing 6.4. Packing and labelling 6.5. Storing
7. Seed banking	Seed banking may include: 7.1. Insite Natural in situ 7.2. Offsite ex situ

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate:
	
	1. Complied relevant legal requirements
	    1.1. Identified requirements.
	    1.2. Followed legal requirements.
	2. Identified promising vegetable varietal characteristics
	    2.1. Identified vegetable seed sources.
	    2.2. Characterized promising vegetable variety.
	    2.3. Selected promising vegetable variety.
	3. Collected promising vegetable variety
	    3.1. Secured seed owner prior informed consent.
	    3.2. Acquired seed.
	    3.3. Processed sample vegetable seeds.
	    3.4. Maintained vegetable seed inventory.

2. Resource Implications	The following resources **MUST** be provided:
	    2.1. Land area
	    2.2. Water
	    2.3. Nursery
	    2.4. Farm inputs
	    2.5. Farm machineries
	    2.6. Farm Structures
	    2.7. Record books

3. Methods of Assessment	Competency in this unit must be assessed through
	    3.1. Demonstration with oral questioning
	    3.2. Written test
	    3.3. Portfolio Assessment
	    3.4. Direct Observation

4. Context for Assessment	4.1. Competency may be assessed in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY   :   ESTABLISH GERMPLASM

UNIT CODE   :   AB-AFF0701242611302

UNIT DESCRIPTOR   :   This unit covers the knowledge, skills, and attitudes required to prepare for planting, select site, prepare land, establish nursery, and plant seedlings applicable to conservation practices both *in situ* and *ex situ*.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Prepare for planting	1.1 Planting plan is prepared based on producer's preference. 1.2 Seed is selected based on producer's preference. 1.3 *Tools, materials and equipment* are prepared based on farm requirements. 1.4 *Personal Protective Equipment (PPE)* is selected, used and maintained. 1.5 Occupational Health and Safety procedures are followed.	**Science** 1.1. Occupational Health and Safety Procedures 1.2. Proper planting Techniques **Communication** 1.3. Farm planning 1.4. Seed producers preferences **Environmental Concern** 1.5. Soil/climatic condition requirements	1.1. Planting planning skills 1.2. Seed selection 1.3. Proper use of tools, materials and equipment 1.4. Suitable Personal Protective Equipment selection 1.5. Following Occupational Health and Safety procedures 1.6. Planting techniques
2. Select site	2.1 *Germplasm farm* site is selected based on ideal farm location. 2.2 *Environmental implications* are addressed based on recommended practices.	**Science** 2.1. Topography 2.2. Climate conditions **Communication** 2.3. Criteria for site selection **Environmental Concern** 2.4. Seed material contaminants	2.1. Site selection techniques 2.2. Identification of climate condition 2.3. Identification of seed material contaminants
3. Prepare land	3.1 *Clearing operation* is performed based on farm management practices. 3.2 Soil pH and moisture condition is tested based on plant requirement. 3.3 Land is cultivated based on crop requirement.	**Science & Technology** 3.1. Clearing operation techniques 3.2. Wind directions 3.3. Land cultivator machineries and implements	3.1 Clearing operation 3.2 Land cultivation 3.3 Field laying-out 3.4 Weed and pest control 3.5 Land cultivator machineries and implements operation

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	3.4 Field layout is performed according to planting design. 3.5 *Weed and pest control measures* are applied as required by planting plan.	3.4. Soil pH and moisture condition 3.5. Farm management practices 3.6 Field lay out **Environmental Concern** 3.6. Weed and Pest Control Measures	3.6 Soil pH and moisture condition testing
4. Establish nursery	4.1 *Nursery structure* is constructed based on available resources. 4.2 Seedbeds are prepared in accordance with planting requirements. 4.3 Potting media is prepared in accordance with Vegetable Production Manual (VPM) recommendations. 4.4 Seeds are sown based on Vegetable Production Manual (VPM) recommendations. 4.5 *Care of seedling* are implemented in accordance with Vegetable Production Manual (VPM) recommendations.	**Science** 4.1. Nursery management techniques 4.2. Planting materials and media preparation **Technology** 4.3. Seedling care and maintenance practices 4.4. Nursery structure requirements **Communication** 4.5. Vegetable Production manual	4.1. Nursery establishment 4.2. Seedling care and maintenance 4.3. Nursery structure construction
5. Plant Seedlings	5.1 Seedlings are transplanted based on Vegetable Production Manual (VPM) recommendations. 5.2 *Plant watering* is performed based on the crop requirement. 5.3 Fertilizers are applied based on the crop requirement. 5.4 *Effective control measures* are determined under the pest, disease and weed management of the Philippine National Standard.	**Science** 5.1. Planting/transplanting techniques 5.2. Recommended transplanting age 5.3. Recommended transplanting distance **Technology** 5.4. Appropriate tools and materials in planting and transplanting 5.5. Irrigation **Communication** 5.6. Vegetable Production Manual	5.1. Proper handling of tools and materials in planting and transplanting seeds 5.2. Plant watering 5.3. Application of fertilizer 5.4. Identification of common pests and diseases 5.5. Proper handling of seedlings

RANGE OF VARIABLES

VARIABLE	RANGE

1. Tools, materials and equipment	Tools, materials and equipment may include:
	
	Tools
	   1.1 Bolo
	   1.2 Hand trowel
	   1.3 Shovel
	   1.4 Pick mattock
	   1.5 Crow bar
	   1.6 Sickle
	   1.7 Spades
	   1.8 Spading fork
	   1.9 Rake
	   1.10 Wheel borrow
	   1.11 Sprinklers
	
	Equipment
	   1.1 Hand tractor
	   1.2 Plow
	   1.3 Harrow
	   1.4 Cultivator
	
	Materials
	   1.1 Seed
	   1.2 Soil media
	   1.3 Plastic mulch
	   1.4 Seedling tray
	   1.5 Ropes/straw
	   1.6 Pull push rule
	   1.7 Foliar fertilizer

2. Personal Protective Equipment (PPE)	Personal Protective Equipment (PPE) may include:
	
	   2.1 Gloves
	   2.2 Boots
	   2.3 Jacket
	   2.4 Hat
	   2.5 Face mask
	   2.6 Goggles

3. Germplasm farm	Germplasm farm may include: 3.1. Area or location where different varieties of vegetables planted intended for vegetable seeds production

4. Environmental implications	Environmental implications may include:
	   4.1. Appropriate topography
	   4.2. Availability of water source
	   4.3. Suitable climatic condition
	   4.4. Ideal soil pH

VARIABLE	RANGE
5. Clearing operation	Clearing operation may include: 5.1. Site assessment 5.2. Vegetation removal 5.3. Rock and obstacle removal 5.4. Soil preparation 5.5. Waste disposal 5.6. Drainage improvement
6. Weed and pest control measures	Weed and pest control measures may include: 6.1. Manual control 6.2. Mechanical control 6.3. Biological control 6.4. Integrated pest management control
7. Nursery structure	Nursery structure may include: 7.1. Shade house 7.2. Greenhouse
8. Care of seedling	Care of seedling may include: 8.1. Pricking 8.2. Fertilization 8.3. Irrigation 8.4. Thinning
9. Plant watering	Plant watering may include: 9.1. Manual 9.2. Drip 9.3. Sprinkler
10. Effective control measures	Effective control measures may include: 10.1. Cultural control 10.2. Mechanical and Physical Control 10.3. Biological control 10.4. Chemical control 10.5. Monitoring and record-keeping

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate:
	1. Prepared for planting
	1.1 Prepared planting plan.
	1.2 Selected seed.
	1.3 Prepared necessary tools, materials and equipment.
	1.4 Selected suitable Personal Protective Equipment.
	1.5 Followed Occupational Health and Safety procedures.
	2. Selected site
	2.1 Selected germplasm farm site.
	2.2 Identified environmental implications.
	2.3 Taken weed and pest control measures.
	3. Prepared land
	3.1 Performed clearing operations
	3.2 Cultivated land
	3.3 Performed field lay out
	4. Established nursery
	4.1 Prepared seedbeds
	4.2 Prepared potting media
	4.3 Sown seeds
	4.4 Done care of seedlings
	5. Planted seedlings
	5.1 Transplanted seeds
	5.2 Performed plant watering
	5.3 Applied fertilizers
	5.4 Determined effective control measures
2. Resource Implications	The following resources **MUST** be provided:
	2.1 Plant breeding kit
	2.2 Labelling and tagging materials
	2.3 Harvesting tools
	2.4 Storage room
	2.5 Land area
	2.6 Water
	2.7 Nursery
	2.8 Farm inputs
	2.9 Farm Structures
	2.10 Record books
3. Methods of Assessment	Competency in this unit must be assessed through
	3.1 Demonstration with oral questioning
	3.2 Written test
	3.3 Portfolio Assessment
	3.4 Direct Observation
4. Context for Assessment	4.1 Competency may be assessed in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY **:** **PERFORM PLANT BREEDING AND POST-HARVEST OPERATIONS**

UNIT CODE **:** AB-AFF0701242611303
UNIT DESCRIPTOR **:** This unit covers the knowledge, skills, and attitudes required to perform plant hybridization, harvest matured vegetable fruit and perform post-harvest operations.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform Plant Hybridization	1.1. ***Superior quality parent lines*** are selected based on ***desirable traits*** and breeders' preferences 1.2. Vegetable seed purification is performed based on rouging principles 1.3. Parent lines are utilized for pollination based on preferred characteristics. 1.4. Pollination is performed following the plant breeding techniques. 1.5. Plant hybridization process is monitored regularly to ensure progress as planned. 1.6. Any ***issues*** that arise during the process are addressed in a timely manner. 1.7. Environmental conditions are optimized to support the growth and maturation of hybrid plants. 1.8. Hybridization results and observations are recorded accurately for future reference and breeding purposes.	**Science**: 1.1 Phenotype Characterization **Technology**: 1.2 Proper Selection Technique 1.3 Proper breeding Technique 1.4 Pollination Technique **Communication**: 1.5 Documentation 1.6 Basic Plant Breeding terminologies 1.7 Rouging principles	1.1. Identification skills 1.2. Selection of potential parent plant lines 1.3. Documentation skills 1.4. Breeding skills

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Harvest matured vegetable fruit	2.1. Harvesting tools and Personal Protective Equipment(PPE) are used according to Philippine National Standards. 2.2. Vegetable varietal selection is performed based on breeder's preference. 2.3. Vegetable fruits are collected/harvested based on physiological *maturity indices.* 2.4. Harvested produce are handled properly to minimized bruising, contamination, or spoilage. 2.5. *Harvesting tools* are cleaned and stored immediately after use to maintain their functionality and hygiene 2.6. Safety procedures are followed during harvesting process to prevent accidents and injuries.	**Science** 2.1 Maturity indices **Technology** 2.2 Methods of determining maturity indices 2.3 Classifications of harvesting tools 2.4 Proper use of appropriate PPE's 2.5 Different harvesting techniques 2.6 Safety procedures	2.1 Observing ideal methods in determining matured fruits 2.2 Utilizing harvesting tools and PPE 2.3 Applying proper harvesting techniques 2.4 Following safety procedures
3 Perform post-harvest operations	3.1 Harvested physiologically matured fruits are sorted according to Philippine National Standard and Good Agricultural Practices. 3.2 Seed is extracted according to type of vegetable fruit following the Philippine National Standard and Good Agricultural Practices. 3.3 Vegetable seed cleaning is performed according to industry practices. 3.4 Vegetable seed drying technique is adopted	**Science** 3.1 Sorting criteria 3.2 Steps in seed extraction 3.3 5S in cleaning 3.4 Steps in seed drying 3.5 Criteria in seed sorting **Technology** 3.6 Methods of vegetable seed extraction	3.1 Following proper ways of sorting harvested fruits 3.2 Observing the proper steps in seed extraction 3.3 Performing the 5S in cleaning 3.4 Adopting proper ways in seed drying 3.5 Following the standard requirements in seed sorting

	based on Good Agricultural Practices. 3.5 Vegetable seed is sorted according to its quality based on Good Agricultural Practices. 3.6 High quality vegetable seeds are selected according to Good Agricultural Practices. 3.7 Vegetable seed storing is performed based on Good Agricultural Practices.	3.7 Proper vegetable seed drying technique 3.8 Proper vegetable Seed storage technique 3.9 Criteria in selecting high Quality vegetable seeds **Communication** 3.10 Good Agricultural Practices Manual	3.6 Practicing the proper seed storing

RANGE OF VARIABLES

VARIABLE	RANGE
1. Superior quality parent plant lines	Superior quality parent plant lines may include: 1.1 High-yielding 1.2 Good eating quality 1.3 Pest and diseases resistance 1.4 Drought tolerant 1.5 Early maturing variety 1.6 High germination percentage 1.7 Higher genetic purity
2. Desirable traits	Desirable traits may include: 2.1 Disease resistance 2.2 High yield 2.3 Quality of fruit/vegetable 2.4 Environmental adaptability
3. Issues	Issues that arise during the process may include: 3.1 Unsuccessful pollination 3.2 Environmental stress

4. Maturity indices	Maturity indices may include:
	
	4.1 Physical appearance
	    4.1.1 Size
	    4.1.2 Color
	    4.1.3 Shape
	    4.1.4 Texture
	4.2 Days to harvest

5. Harvesting tools	Harvesting tools may include: 5.1 Knives 5.2 Scissors 5.3 Harvesters

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate:
	
	1. Performed plant hybridization
	    1.1 Selected superior quality parent lines
	    1.2 Performed vegetable seed purification
	    1.3 Utilized parent lines
	    1.4 Performed pollination
	    1.5 Recorded hybridization results and observations
	2. Harvested matured vegetable fruit
	    2.1 Performed vegetable varietal selection.
	    2.2 Collected/Harvested vegetable fruits
	    2.3 Handle harvested produce properly
	    2.4 Used appropriate harvesting tools and Personal Protective Equipment (PPE)
	    2.5 Followed safety procedures
	3. Performed post-harvest operations
	    3.1 Sorted harvested physiologically matured fruits.
	    3.2 Extracted seed.
	    3.3 Performed vegetable seed cleaning.
	    3.4 Adopted proper vegetable seed drying.
	    3.5 Sorted vegetable seed.
	    3.6 Selected high quality vegetable seeds.
	    3.7 Practiced proper vegetable seed storing.

2. Resource Implications	The following resources **MUST** be provided: 2.1. Plant breeding kit 2.2. Labelling and tagging materials 2.3. Harvesting tools 2.4. Storage room 2.5. Land area 2.6. Water 2.7. Nursery 2.8. Farm inputs 2.9. Farm Structures 2.10. Record books
3. Methods of Assessment	Competency in this unit must be assessed through 3.1. Demonstration with oral questioning 3.2. Written test 3.3. Portfolio Assessment 3.4. Direct Observation
4. Context for Assessment	4.1. Competency may be assessed in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY :   COMPLY VEGETABLE CROP VARIETY REGISTRATION

UNIT CODE   :   AB-AFF0701242611304

UNIT DESCRIPTOR   :   This unit covers the knowledge, skills, and attitudes required to comply with the registration requirements for vegetable crop varieties. It includes to adopt crop variety registration processes and present crop variety registration requirements.

ELEMENT	PERFORMANCE CRITERIA *Italicized terms* are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS

1. Prepare documents and adopt crop variety registration processes	1.1. Guidelines on crop variety registration is identified according to DA Department Circular No. 18 Series of 2020 (Guidelines on Crop Variety Registration)
	1.2. Accurate and complete information and *required documents* about the crop variety is gathered and prepared for submission
	1.3. Crop variety registration processes are followed based on DA Department Circular No. 18 Series of 2020 (Guidelines on Crop Variety Registration).
	1.4. Completeness of all documents are verified before submission for registration
		Communication:
		
		1.1. DA Department Circular No. 18 Series of 2020 (Guidelines on Crop variety Registration)
		1.2. Registration procedures
		    1.2.1. Documentation
		    1.2.2. Timelines
		    1.2.3. Compliance requirements
		1.3. vegetable crop varieties and its characteristics
			1.1. Identify guidelines on crop variety registration
			1.2. Accomplishment of registration forms
			1.3. Clerical skills
			1.4. Communication skills
			1.5. Negotiation skills
			1.6. Basic research skills
			1.7. Documentation skills

2. Submit and follow-up crop variety registration application requirements	2.1. *Established requirements on crop variety registration* are identified and complied for registration application based on DA Department Circular No. 18 Series of 2020 (Guidelines on Crop Variety Registration) 2.2. Registration application requirements are submitted to the appropriate authority within the specified timeline. 2.3. Status of the registration application is followed-up regularly. 2.4. Any inquiries or requests are responded to for additional information from the registration authority. 2.5. *Outcome of the application process* is monitored and	**Communication**: 2.1. DA Department Circular No. 18 Series of 2020 (Guidelines on Crop variety Registration) 2.2. Crop Variety Registration Forms 2.3. Registration application requirements	2.1. Identify requirements on crop variety registration 2.2. Accomplishment of registration forms 2.3. Clerical skills 2.4. Communication skills 2.5. Negotiation skills

	documented and corrective action is taken, if necessary.		
3. Ensure Compliance with Post-Registration Requirements	3.1. Continued compliance is monitored with any post-registration obligations, such as seed distribution or varietal performance reporting. 3.2. Records of registered varieties is maintained, ensuring they are up-to-date and accurate. 3.3. Necessary corrective actions are implemented to address any issues related to varietal performance or legal compliance post-registration. 3.4. Registered variety is ensured that it is marketed and grown according to the guidelines specified in the registration.	**Communication**: 3.1. DA Department Circular No. 18 Series of 2020 (Guidelines on Crop variety Registration) 3.2. Crop Variety Registration Forms 3.3. Post-registration requirements 3.4. Obligations and responsibilities of maintaining a registered vegetable crop variety	3.1. Compliance monitoring skills 3.2. Documentation skills 3.3. Problem solving skills 3.4. Marketing skills 3.5. Communication skills 3.6. Negotiation skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Required documents	Required documents on crop variety registration may include: 1.1. Seed certification 1.2. Variety descriptors 1.3. Performance trials

2. Established requirements on crop variety registration	Established requirements on crop variety registration may include:
	
	2.1. For introduced crop entry
	    2.1.1. Materials Transfer Agreement (MTA) and/or proof of purchase/acquisition/donation issued by the competent authority/owner from the country origin.
	    2.1.2. Sanitary and Phytosanitary Import Clearance (SPSIC) from the Bureau of Plant Industry (BPI).
	    2.1.3. License to commercialize (If applicable)
	2.2. For biotech/GM entries – Biosafety permit for commercial propagation
	2.3. For all conventional crop entries with GM counterpart – Applicant's notarized declaration that the crop entry is non-GM; template is annex 2,
	2.4. For perennial entries – Global Positioning System (GPS) coordinates
	2.5. Morphological data such as distinct characteristics or initial data by the applicant;
	2.6. Special Power of Attorney (SPA) / Memorandum of Understanding (MOU) for authorized representative ; and
	2.7. Photo documentation of the crop entry being applied for registration.

3. Outcome of the application process	Outcome of the application process may include: 3.1. Approval 3.2. Rejection

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate:
	1. Prepared documents and adopted crop variety registration processes
	1.1 Gathered and prepared accurate and complete information and required documents on crop variety registration.
	1.2 Followed crop variety registration processes.
	1.3 Verified completeness of all documents
	2. Submitted and followed-up crop variety registration application requirements
	2.1. Identified and complied established requirements on crop variety registration.
	2.2. Submitted registration application requirements
	2.3. Monitored and documented outcome of the application process
	3. Ensure Compliance with Post-Registration Requirements
	3.1. Monitored continued compliance with any post-registration obligations
	3.2. Maintained records of registered varieties
	3.3. Implemented necessary corrective actions
	3.4. Ensured registered variety that it is marketed and grown
2. Resource Implications	The following resources **MUST** be provided:
	2.1. DA Department Circular No. 18 Series of 2020 (Guidelines on Crop Variety Registration
	2.2. Crop variety registration forms
	2.3. Laptop
	2.4. Logbooks
3. Methods of Assessment	Competency in this unit must be assessed through
	3.1. Demonstration with oral questioning
	3.2. Written test
	3.3. Portfolio Assessment
4. Context for Assessment	4.1. Competency may be assessed in the actual workplace or simulation environment in TESDA accredited institutions.

GLOSSARY OF TERMS

ex situ	Latin phrase which means "outside its original place" or anything that is removed from its natural environment for study.
Germplasm	Genetic resources such as seeds, tissues, and DNA sequences that are maintained for the purpose of animal and plant breeding, conservation efforts, agriculture, and other research uses.
Germplasm farm	A specialized facility dedicated to the collection, preservation, and study of genetic material from plants and animals.
Heirloom	Refers to a seed that has a long history, whose provenance been documented.
Hybrid	An offspring of two plants of different races, varieties, species, or genera.
in situ	Latin phrase which means " in its original place" or "on-site"
Nursery	A nurturing space where young plants begin their growth journey. A place that starts the growing process of plants.
Open Pollinated Variety	Plants that are self-pollinating or cross pollinating with their neighbor.
Parent Lines	A seed parent which is usually male sterile and a pollen parent.
Phenotype	Refers to the observable physical and behavioral characteristics of an organism, which result from the interaction between its genetic makeup (genotype) and the environment.
Philippine National Standard	A document stating the minimum standard for specific commodity established to help industries produce quality products, raise productivity, protect consumers and facilitate trade.
Plant hybridization	A technique of breeding two different individuals of the same or other species in order to achieve the desired changes in the organism.
Pollination	Process by which pollen from the male part of a flower (the anther) is transferred to the female part (the stigma) of a flower, allowing fertilization to occur and seeds to develop
Pricking	The process of separating seedling or young plants growing too close together and transferring them into their own pot.

Promising Vegetable Variety	Refers to a newly developed or identified type of vegetable that shows potential for high yield, disease resistance, better nutritional value, improved taste or adaptability to specific growing conditions.
Rouging	Refers to routine removal of plants that exhibit off-type characteristics or undesirable traits; common practices in seed production that maintain or improve crop genetic integrity.
Seed bank	A place where seeds are stored to preserve genetic diversity for the future.
Seed Breeder	It is the progeny of nucleus seed. Generally breeder seed is produced in one stage.
Seed Certifying Agency	An agency which gives official recognition to seeds to a particular variety; an agency which ensure that the seeds meet specific accepted standards, including genetic purity, identity, and quality.
Seed Producer	A company or individual that produces and sells seeds for flowers, fruits and vegetables.
Seed Treatment	Application of biological, physical, chemical agents and techniques to seeds to provide them protection.
Seeds	A fertilized matured ovule that contains an embryonic plants, stored materials and a protective coat/coats.
Seedbed	A special prepared area of soil where seeds are planted to germinate and grow into seedlings.
Sample vegetable seeds	Seed taken from potential vegetable parent crops from its point of origin transferred, processed and stores in the genebank.
Thinning	Term used in agricultural sciences to mean the removal of some plants, or parts of plants, to make room for the growth of others.
Vegetable Production Manual (VPM)	A manual that contains or provides recommended cultural management practices and techniques in cultivating vegetable vegetables from pre-production, production and postharvest.
Vegetable Seed Purification	Refers to the process of cleaning and sorting seeds to remove any unwanted materials, such as dirt, debris, or damaged seeds, and to ensure that only viable, healthy seeds remain.

ACKNOWLEDGEMENTS

The Technical Education and Skills Development Authority (TESDA) would like to recognize the commitment of industry stakeholders who provided their time and expertise for the development of this Competency Standards.

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