

COMPETENCY STANDARDS



URBAN MICROGREENS PRODUCTION LEVEL II

**AGRICULTURE, FORESTRY AND FISHERY
SECTOR**

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
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TABLE OF CONTENTS

AGRICULTURE, FORESTRY AND FISHERY SECTOR

URBAN MICROGREENS PRODUCTION LEVEL II

		Page/s	
Section 1	Urban Microgreens Production Level II		2
Section 2	COMPETENCY STANDARDS		3 - 67
	• Basic Competencies	3-36	
	• Common Competencies	37-53	
	• Core Competencies	54-67	
	GLOSSARY OF TERMS		68 - 71
	ACKNOWLEDGEMENTS		72

COMPETENCY STANDARDS FOR URBAN MICROGREENS PRODUCTION LEVEL II

Section 1 DEFINITION

The **URBAN MICROGREENS PRODUCTION LEVEL II** qualification consists of competencies that a person must achieve to prepare growing area for Microgreens, plant Microgreens, and harvest Microgreens.

The units of competency comprising this qualification include the following:

Code	BASIC COMPETENCIES
400311210	Participate in workplace communication
400311211	Work in team environment
400311212	Solve/address general workplace problems
400311213	Develop career and life decisions
400311214	Contribute to workplace innovation
400311215	Present relevant information
400311216	Practice occupational safety and health policies and procedures
400311217	Exercise efficient and effective sustainable practices in the workplace
400311218	Practice entrepreneurial skills in the workplace
Code	COMMON COMPETENCIES
AFF321201	Apply safety measures in microgreens production
AFF321202	Use Farm Tools and Equipment
AFF321203	Perform Estimation and Calculations
AFF321205	Process Farm wastes
SOC413206	Perform Record Keeping
Code	CORE COMPETENCIES
AB-AFF1380600611301	Prepare Growing Area for Microgreens
AB-AFF1380600611302	Plant Microgreens
AB-AFF1380600611303	Harvest Microgreens

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

- Microgreens Grower

SECTION 2 COMPETENCY STANDARDS

This section gives the details of the contents of the units of competency required in **URBAN MICROGREENS PRODUCTION LEVEL II**.

BASIC COMPETENCIES

UNIT OF COMPETENCY : PARTICIPATE IN WORKPLACE COMMUNICATION

UNIT CODE : 400311210

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

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

	<p>and colleagues are identified and followed</p> <p>1.6 Defined workplace procedures for the location and storage of information are used</p> <p>1.7 Personal interaction is carried out clearly and concisely</p>		<p>1.8 Basic business writing skills</p> <p>1.9 Interpersonal skills in the workplace</p> <p>1.10 Active-listening skills</p>
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ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
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<p>2. Perform duties following workplace instructions</p>	<p>2.1 Written notices and instructions are read and interpreted in accordance with organizational guidelines 2.2 Routine written instruction are followed based on established procedures 2.3 Feedback is given to workplace supervisor based instructions/ information received 2.4 Workplace interactions are conducted in a courteous manner 2.5 Where necessary, clarifications about routine workplace procedures and matters concerning conditions of employment are sought and asked from appropriate sources 2.6 Meetings outcomes are interpreted and implemented</p>	<p>2.1 Effective verbal and non-verbal communication 2.2 Different modes of communication 2.3 Medium of communication in the workplace 2.4 Organizational/ Workplace policies 2.5 Communication procedures and systems 2.6 Lines of communication 2.7 Technology relevant to the enterprise and the individual's work responsibilities 2.8 Effective questioning techniques (clarifying and probing) 2.9 Workplace etiquette</p>	<p>2.1 Following simple spoken instructions 2.2 Performing routine workplace duties following simple written notices 2.3 Participating in workplace meetings and discussions 2.4 Completing work related documents 2.5 Estimating, calculating and recording routine workplace measures 2.6 Relating/ Responding to people of various levels in the workplace 2.7 Gathering and providing information in response to workplace requirements 2.8 Basic questioning/querying 2.9 Skills in reading for information 2.10 Skills in locating</p>
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<p>3. Complete relevant work related documents</p>	<p>3.1 Range of forms relating to conditions of employment are completed accurately and legibly 3.2 Workplace data is recorded on standard workplace forms and document 3.3 Errors in recording information on forms/ documents are identified and acted upon 3.4 Reporting requirements to supervisor are completed according to organizational guidelines</p>	<p>3.1 Effective verbal and non-verbal communication 3.2 Different modes of communication 3.3 Workplace forms and documents 3.4 Organizational/ Workplace policies 3.5 Communication procedures and systems 3.6 Technology relevant to the enterprise and the individual's work responsibilities</p>	<p>3.1 Completing work related documents 3.2 Applying operations of addition, subtraction, division and multiplication 3.3 Gathering and providing information in response to workplace requirements 3.4 Effective record keeping skills</p>
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RANGE OF VARIABLES

VARIABLES	RANGE
<p>1. Appropriate sources</p>	<p>May include: 1.1. Team members 1.2. Supervisor/Department Head 1.3. Suppliers 1.4. Trade personnel 1.5. Local government 1.6. Industry bodies</p>
<p>2. Medium</p>	<p>May include: 2.1. Memorandum 2.2. Circular 2.3. Notice 2.4. Information dissemination 2.5. Follow-up or verbal instructions 2.6. Face-to-face communication 2.7. Electronic media (disk files, cyberspace)</p>
<p>3. Storage</p>	<p>May include: 3.1. Manual filing system 3.2. Computer-based filing system</p>

4. Workplace interactions	May include: 4.1. Face-to-face 4.2. Telephone 4.3. Electronic and two-way radio 4.4. Written including electronic means, memos, instruction and forms 4.5. Non-verbal including gestures, signals, signs and diagrams
5. Forms	May include: 5.1. HR/Personnel forms, telephone message forms, safety reports

EVIDENCE GUIDE

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

UNIT OF COMPETENCY : WORK IN A TEAM ENVIRONMENT

UNIT CODE : 400311211

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

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

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

VARIABLES	RANGE
1. Roe and objective of team	<p>May include:</p> <p>1.1. Work activities in a team environment with enterprise or specific sector</p> <p>1.2. Limited discretion, initiative and judgement maybe demonstrated on the job, either individually or in a team environment</p>
2. Sources of information	<p>May include:</p> <p>2.1. Standard operating and/or other workplace procedures</p> <p>2.2. Job procedures</p> <p>2.3. Machine/equipment manufacturer's specifications and instructions</p> <p>2.4. Organizational or external personnel</p> <p>2.5. Client/supplier instructions</p> <p>2.6. Quality standards</p> <p>2.7. OHS and environmental standards</p>

3. Workplace context	May include: 3.1. Work procedures and practices 3.2. Conditions of work environments 3.3. Legislation and industrial agreements 3.4. Standard work practice including the storage, safe handling and disposal of chemicals 3.5. Safety, environmental, housekeeping and quality guidelines
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EVIDENCE GUIDE

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

UNIT OF COMPETENCY : SOLVE/ADDRESS GENERAL WORKPLACE PROBLEMS

UNIT CODE : 400311212

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

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

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

RANGE OF VARIABLES

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

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Determined the root cause of a routine problem 1.2 Identified solutions to procedural problems. 1.3 Produced documentation that recommends solutions to problems. 1.4 Followed established procedures. 1.5 Referred unresolved problems to support persons.
2. Resource Implications	2.1 Assessment will require access to a workplace over an extended period, or a suitable method of gathering evidence of operating ability over a range of situations.
3. Methods for Assessment	Competency in this unit may be assessed through: 3.1 Case Formulation 3.2 Life Narrative Inquiry 3.3 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.

4. Context for Assessment

4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY : DEVELOP CAREER AND LIFE DECISIONS

UNIT CODE : 400311213

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

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Manage one’s emotion	1.1 Self-management strategies are identified 1.2 Skills to work independently and to show initiative, to be conscientious, and persevering in the face of setbacks and frustrations are developed 1.3 Techniques for effectively handling negative emotions and unpleasant situation in the workplace are examined	1.1 Self-management strategies that assist in regulating behavior and achieving personal and learning goals (e.g. Nine self-management strategies according to Robert Kelley) 1.2 Enablers and barriers in achieving personal and career goals 1.3 Techniques in handling negative emotions and unpleasant situations in the workplace such as frustration, anger, worry, anxiety, etc.	1.1 Managing properly one’s emotions and recognizing situations that cannot be changed and accept them and remain professional 1.2 Developing self-discipline, working independently and showing initiative to achieve personal and career goals 1.3 Showing confidence, and resilience in the face of setbacks and frustrations and other negative emotions and unpleasant situations in the workplace

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

VARIABLES	RANGE
<p>1. Self-management strategies</p>	<p>May include: 1.1 Seeking assistance in the form of job coaching or mentoring 1.2 Continuing dialogue to tackle workplace grievances 1.3 Collective negotiation/bargaining for better working conditions 1.4 Share your goals to improve with a trusted co-worker or supervisor 1.5 Make a negativity log of every instance when you catch yourself complaining to others 1.6 Make lists and schedules for necessary activities</p>
<p>2. Unpleasant situation</p>	<p>May include but not limited to: 2.1 Job burn-out 2.2 Drug dependence 2.3 Sulking</p>

EVIDENCE GUIDE

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

UNIT OF COMPETENCY : CONTRIBUTE TO WORKPLACE INNOVATION

UNIT CODE : 400311214

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

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

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

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

	<p>3.9 People outside the organization in the same field or similar expertise/industry.</p> <p>3.10 Clients</p>
4. Critical inquiry method	<p>May include:</p> <p>4.1 Preparation.</p> <p>4.2 Discussion.</p> <p>4.3 Clarification of goals.</p> <p>4.4 Negotiate towards a Win-Win outcome.</p> <p>4.5 Agreement.</p> <p>4.6 Implementation of a course of action.</p> <p>4.7 Effective verbal communication. See our pages: Verbal Communication and Effective Speaking.</p> <p>4.8 Listening.</p> <p>4.9 Reducing misunderstandings is a key part of effective negotiation.</p> <p>4.10 Rapport Building.</p> <p>4.11 Problem Solving.</p> <p>4.12 Decision Making.</p> <p>4.13 Assertiveness.</p> <p>4.14 Dealing with Difficult Situations</p>
5. Reporting skills	<p>May include:</p> <p>5.1 Data management.</p> <p>5.2 Coding.</p> <p>5.3 Data analysis and interpretation.</p> <p>5.4 Coherent writing.</p> <p>5.5 Speaking.</p>

EVIDENCE GUIDE

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Identified opportunities to do things better.</p> <p>1.2 Discussed and developed ideas with others on how to contribute to workplace innovation.</p> <p>1.3 Integrated ideas for change in the workplace.</p> <p>1.4 Analyzed and reported rooms for innovation and learning in the workplace.</p>
2. Resource Implications	<p>Specific resources for assessment:</p> <p>2.1 Pens, papers and writing implements.</p> <p>2.2 Cartolina.</p> <p>2.3 Manila papers.</p>

3. Methods for Assessment	<p>Competency in this unit may be assessed through:</p> <p>3.1 Psychological and behavioral Interviews.</p> <p>3.2 Performance Evaluation.</p> <p>3.3 Life Narrative Inquiry.</p> <p>3.4 Review of portfolios of evidence and third-party workplace reports of on-the-job performance.</p> <p>3.5 Sensitivity analysis.</p> <p>3.6 Organizational analysis.</p> <p>3.7 Standardized assessment of character strengths and virtues applied.</p>
4. Context for Assessment	4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.

UNIT OF COMPETENCY : PRESENT RELEVANT INFORMATION

UNIT CODE : 400311215

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

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Gather data/information	1.1 Evidence, facts and information are collected 1.2 Evaluation, terms of reference and conditions are reviewed to determine whether data/information falls within project scope	1.1 Organisational protocols 1.2 Confidentiality 1.3 Accuracy 1.4 Business mathematics and statistics 1.5 Data analysis techniques/procedures 1.6 Reporting requirements to a range of audiences 1.7 Legislation, policy and procedures relating to the conduct of evaluations 1.8 Organisational values, ethics and codes of conduct	1.1 Describing organisational protocols relating to client liaison 1.2 Protecting confidentiality 1.3 Describing accuracy 1.4 Computing business mathematics and statistics 1.5 Describing data analysis techniques/procedures 1.6 Reporting requirements to a range of audiences 1.7 Stating legislation, policy and procedures relating to the conduct of evaluations 1.8 Stating organisational values, ethics and codes of conduct

<p>2. Assess gathered data/ information</p>	<p>2.1 Validity of data/ information is assessed 2.2 Analysis techniques are applied to assess data/ information. 2.3 Trends and anomalies are identified 2.4 Data analysis techniques and procedures are documented 2.5 Recommendations are made on areas of possible improvement.</p>	<p>2.1 Business mathematics and statistics 2.2 Data analysis techniques/ procedures 2.3 Reporting requirements to a range of audiences 2.4 Legislation, policy and procedures relating to the conduct of evaluations 2.5 Organisational values, ethics and codes of conduct</p>	<p>2.1 Computing business mathematics and statistics 2.2 Describing data analysis techniques/ procedures 2.3 Reporting requirements to a range of audiences 2.4 Stating legislation, policy and procedures relating to the conduct of evaluations 2.5 Stating organisational values, ethics and codes of conduct</p>
<p>3. Record and present information</p>	<p>3.1 Studied data/information are recorded. 3.2 Recommendations are analysed for action to ensure they are compatible with the project's scope and terms of reference. 3.3 Interim and final reports are analysed and outcomes are compared to the criteria established at the outset. 3.4 Findings are presented to stakeholders.</p>	<p>3.1 Data analysis techniques/ procedures 3.2 Reporting requirements to a range of audiences 3.3 Legislation, policy and procedures relating to the conduct of evaluations 3.4 Organisational values, ethics and codes of conduct</p>	<p>3.1 Describing data analysis techniques/ procedures 3.2 Reporting requirements to a range of audiences 3.3 Stating legislation, policy and procedures relating to the conduct of evaluations 3.4 Stating organisational values, ethics and codes of conduct practices</p>

RANGE OF VARIABLES

VARIABLES	RANGE
1. Data analysis techniques	May include: 1.1. Domain analysis 1.2. Content analysis 1.3. Comparison technique

EVIDENCE GUIDE

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

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

UNIT CODE : 400311216

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

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Identify OSH compliance requirements	1.1 Relevant OSH requirements, regulations, policies and procedures are identified in accordance with workplace policies and procedures 1.2 OSH activity nonconformities are conveyed to appropriate personnel 1.3 OSH preventive and control requirements are identified in accordance with OSH work policies and procedures	1.1. OSH preventive and control requirements 1.2. Hierarchy of Controls 1.3. Hazard Prevention and Control 1.4. General OSH principles 1.5. Work standards and procedures 1.6. Safe handling procedures of tools, equipment and materials 1.7. Standard emergency plan and procedures in the workplace	1.1. Communication skills 1.2. Interpersonal skills 1.3. Critical thinking skills 1.4. Observation skills

<p>2. Prepare OSH requirements for compliance</p>	<p>2.1 OSH work activity material, tools and equipment requirements are identified in accordance with workplace policies and procedures 2.2. Required OSH materials, tools and equipment are acquired in accordance with workplace policies and procedures 2.3. Required OSH materials, tools and equipment are arranged/ placed in accordance with OSH work standards</p>	<p>2.1. Resources necessary to execute hierarchy of controls 2.2. General OSH principles 2.3. Work standards and procedures 2.4. Safe handling procedures of tools, equipment and materials 2.5. Different OSH control measures</p>	<p>2.1. Communication skills 2.2. Estimation skills 2.3. Interpersonal skills 2.4. Critical thinking skills 2.5. Observation skills 2.6. Material, tool and equipment identification skills</p>
<p>3. Perform tasks in accordance with relevant OSH policies and procedures</p>	<p>3.1 Relevant OSH work procedures are identified in accordance with workplace policies and procedures 3.2 Work Activities are executed in accordance with OSH work standards 3.3 Non-compliance work activities are reported to appropriate personnel</p>	<p>3.1. OSH work standards 3.2. Industry related work activities 3.3. General OSH principles 3.4. OSH Violations Non-compliance work activities</p>	<p>3.1 Communication skills 3.2 Interpersonal skills 3.3 Troubleshooting skills 3.4 Critical thinking skills 3.5 Observation skills</p>

RANGE OF VARIABLES

VARIABLES	RANGE
1. OSH Requirements, Regulations, Policies and Procedures	May include: 1.1 Clean Air Act 1.2 Building code 1.3 National Electrical and Fire Safety Codes 1.4 Waste management statutes and rules 1.5 Permit to Operate 1.6 Philippine Occupational Safety and Health Standards 1.7 Department Order No. 13 (Construction Safety and Health) 1.8 ECC regulations
2. Appropriate Personnel	May include: 2.1 Manager 2.2 Safety Officer 2.3 EHS Offices 2.4 Supervisors 2.5 Team Leaders 2.6 Administrators 2.7 Stakeholders 2.8 Government Official 2.9 Key Personnel 2.10 Specialists 2.11 Himself
3. OSH Preventive and Control Requirements	May include: 3.1 Resources needed for removing hazard effectively 3.2 Resources needed for substitution or replacement 3.3 Resources needed to establishing engineering controls 3.4 Resources needed for enforcing administrative controls 3.5 Personal Protective equipment
4. Non OSH-Compliance Work Activities	May include non-compliance or observance of the following safety measures: 4.1 Violations that may lead to serious physical harm or death 4.2 Fall Protection 4.3 Hazard Communication 4.4 Respiratory Protection 4.5 Power Industrial Trucks 4.6 Lockout/Tag-out 4.7 Working at heights (use of ladder, scaffolding) 4.8 Electrical Wiring Methods 4.9 Machine Guarding Amended CS for Basic Competencies Integrating 21st Century Skills Promulgated July 9, 2019 Page 75 4.10 Electrical General Requirements 4.11 Asbestos work requirements 4.12 Excavations work requirements

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1. Convey OSH work non-conformities to appropriate personnel 1.2. Identify OSH preventive and control requirements in accordance with OSH work policies and procedures 1.3. Identify OSH work activity material, tools and equipment requirements in accordance with workplace policies and procedures 1.4. Arrange/Place required OSH materials, tools and equipment in accordance with OSH work standards 1.5. Execute work activities in accordance with OSH work standards 1.6. Report OSH activity non-compliance work activities to appropriate personnel
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1. Facilities, materials, tools and equipment necessary for the activity
<p>3. Methods for Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1. Observation/Demonstration with oral questioning 3.2. Third party report
<p>4. Context for Assessment</p>	<ul style="list-style-type: none"> 4.1. Competency may be assessed in the workplace or in a simulated workplace setting

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

UNIT CODE : 400311217

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

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

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

RANGE OF VARIABLES

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

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Measured required resource utilization in the workplace using appropriate techniques 1.2. Recorded data in accordance with workplace protocol 1.3. Identified causes of inefficiency and/or ineffectiveness through deductive reasoning 1.4. Validate the identified causes of inefficiency and/or ineffectiveness thru established environmental procedures 1.5. Report efficiency and effectiveness of resource utilization to appropriate personnel 1.6. Clarify feedback on information/concerns raised with appropriate personnel
2. Resource Implications	The following resources should be provided: 2.1 Workplace 2.2 Tools, materials and equipment relevant to the tasks 2.3 PPE 2.4 Manuals and references
3. Methods for Assessment	Competency in this unit may be assessed through: 3.1. Demonstration 3.2 Oral questioning 3.3 Written examination

4. Context for Assessment	4.1. Competency may be assessed in the workplace or in a simulated environment 4.2. Assessment shall be observed while task are being undertaken whether individually or in-group
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UNIT OF COMPETENCY : PRACTICE ENTREPRENEURIAL SKILLS IN THE WORKPLACE

UNIT CODE : 400311218

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

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Apply entrepreneurial workplace best practices	1.1 Good practices relating to workplace operations are observed and selected following workplace policy. 1.2 Quality procedures and practices are complied with according to workplace requirements. 1.3 Cost-conscious habits in resource utilization are applied based on industry standards.	1.1 Workplace best practices, policies and criteria 1.2 Resource utilization 1.3 Ways in fostering entrepreneurial attitudes: <ul style="list-style-type: none"> ● Patience ● Honesty ● Quality-consciousness ● Safety-consciousness ● Resourcefulness 	1.1 Communication skills 1.2 Complying with quality procedures

<p>2. Communicate entrepreneurial workplace best practices</p>	<p>2.1 Observed good practices relating to workplace operations are communicated to appropriate person. 2.2 Observed quality procedures and practices are communicated to appropriate person 2.3 Cost-conscious habits in resource utilization are communicated based on industry standards.</p>	<p>2.1 Workplace best practices, policies and criteria 2.2 Resource utilization 2.3 Ways in fostering entrepreneurial attitudes: <ul style="list-style-type: none"> ● Patience ● Honesty ● Quality-consciousness ● Safety-consciousness ● Resourcefulness </p>	<p>2.1 Communication skills 2.2 Complying with quality procedures 2.3 Following workplace communication protocol</p>
<p>3. Implement cost-effective operations</p>	<p>3.1 Preservation and optimization of workplace resources is implemented in accordance with enterprise policy 3.2 Judicious use of workplace tools, equipment and materials are observed according to manual and work requirements. 3.3 Constructive contributions to office operations are made according to enterprise requirements. 3.4 Ability to work within one's allotted time and finances is sustained.</p>	<p>3.1 Optimization of workplace resources 3.2 5S procedures and concepts 3.3 Criteria for cost effectiveness 3.4 Workplace productivity 3.5 Impact of entrepreneurial mindset to workplace productivity 3.6 Ways in fostering entrepreneurial attitudes: <ul style="list-style-type: none"> ● Quality-consciousness ● Safety-consciousness </p>	<p>3.1 Implementing preservation and optimizing workplace resources 3.2 Observing judicious use of workplace tools, equipment and materials 3.3 Making constructive contributions to office operations 3.4 Sustaining ability to work within allotted time and finances</p>

RANGE OF VARIABLES

VARIABLES	RANGE
1. Good Practices	May include workplace thinking related to: 1.1 Economy in use of resources 1.2 Documentation of quality practices
2. Resource utilization	May include: 2.1 Consumption/ use of consumables 2.2 Use/Maintenance of assigned equipment and furniture 2.3 Optimum use of allotted /available time

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Demonstrated ability to identify and sustain cost-effective activities in the workplace 1.2 Demonstrated ability to practice entrepreneurial knowledge, skills and attitudes in the workplace.
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 2.3.1 Enterprise procedures manuals 2.3.2 Company quality policy
3. Methods for Assessment	Competency in this unit may be assessed through: 3.1 Interview 3.2 Third-party report
4. Context for Assessment	4.1. Competency may be assessed in the workplace or in a simulated workplace environment 4.2 Assessment shall be observed while task 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 <i>Italicized terms</i> are elaborated in the Range of Variable	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/functional tools, materials and outfit 1.5 Preparing tools, materials and outfits 1.6 Discarding defective tools, and materials

<p>2. Apply appropriate safety measures</p>	<p>2.1 Tools and materials are used according to specifications and procedures 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</p>	<p>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 2.8 Communication skills 2.9 OSHS</p>	<p>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 hazards in the workplace area.</p>
<p>3. Safe keep /dispose tools, materials and outfit</p>	<p>3.1 Used tools and outfit are cleaned after use and stored in designated areas 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</p>	<p>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</p>	<p>3.1 Cleaning used tools and outfit 3.2 Labeling and storing unused materials 3.3 Disposing waste materials</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work tasks	Work task may be selected from any of the subsectors: 1.1 Crop Production 1.2 Post-harvest 1.3 Agri-marketing 1.4 Farm Equipment
2. Place	Place may include: 2.1 Stock room/storage areas/warehouse 2.2 Field/farm/orchard
3. Time	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	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	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	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. Methods 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 may be assessed in actual workplace or at the designated TESDA Accredited Assessment Center

UNIT OF COMPETENCY : USE FARM TOOLS AND EQUIPMENT

UNIT CODE : AFF321202

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

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variable	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Select and use farm tools	1.1 Appropriate farm tools are identified according to requirement/use 1.2 Farm tools are checked for faults and defective tools reported in accordance with farm procedures 1.3 Appropriate tools are safely used according to job requirements and manufacturers conditions	1.1 Types and uses of farm tools 1.2 Characteristics of functional tools 1.3 Checking tools for defects/faults 1.4 Segregation and reporting defective tools 1.5 Uses of tools and equipment	1.1 Identifying farm tools for the work 1.2 Checking the conditions of tools 1.3 Reporting defective tools 1.4 Using tools

<p>2. Select and operate farm equipment</p>	<p>2.1 Identify appropriate farm equipment</p> <p>2.2 Instructional manual of the farm tools and equipment are carefully read prior to operation</p> <p>2.3 Pre-operation check-up is conducted in line with manufacturers manual</p> <p>2.4 Faults in farm equipment are identified and reported in line with farm procedures</p> <p>2.5 Farm equipment used according to its function</p> <p>2.6 Safety procedures are followed.</p>	<p>2.1 Types and operations of farm equipment</p> <p>2.2 Standards operating procedures of farm equipment</p> <p>2.3 Instructional manual of equipment</p> <p>2.4 Pre-operation check-up</p> <p>2.5 Equipment Specification</p> <p>2.6 Procedures in calibrating and use of equipment</p> <p>2.7 Equipment faults identification and reporting</p> <p>2.8 Operation of equipment</p> <p>2.9 Codes and Regulations on environmental protection</p> <p>2.10 Safety and keeping of equipment every after use</p> <p>2.11 Safety measures</p>	<p>2.1 Identifying appropriate farm equipment for the work</p> <p>2.2 Reading instructional manual.</p> <p>2.3 Conducting pre-operation check-up</p> <p>2.4 Identifying faults/defects of farm equipment</p> <p>2.5 Reporting on defective farm equipment</p> <p>2.6 Operating farm equipment</p> <p>2.7 Following safety procedures.</p>
<p>3. Perform preventive maintenance</p>	<p>3.1 Tools and equipment are cleaned immediately after use in line with farm procedures</p> <p>3.2 Routine check-up and maintenance are performed</p> <p>3.3 Tools and equipment are stored in designated areas in line with farm procedures</p>	<p>3.1 Cleaning procedures of tools and equipment</p> <p>3.2 Maintenance procedures of farm equipment</p> <p>3.3 Storage of tools and equipment</p> <p>3.4 Designated storage areas</p>	<p>3.1 Cleaning tools and equipment</p> <p>3.2 Performing routinary check-up of tools and equipment</p> <p>3.3 Maintaining farm equipment</p> <p>3.4 Storing tools and equipment</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Farm equipment	Farm equipment may include: 1.1 Engine 1.2 Pumps 1.3 Generators 1.4 Sprayers
2. Farm tools	Farm tools may include: 2.1 Sickle 2.2 Cutters 2.3 Weighing scales 2.4 Hand tools 2.5 Measuring tools 2.5.1 Garden tools
3. Pre-operation check-up	Pre-operation check-up may include: 3.1 Tires 3.2 Brake fluid 3.3 Fuel 3.4 Water 3.5 Oil 3.6 Lubricants 3.7 Battery

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Correctly identified appropriate farm tools and equipment 1.2 Operated farm equipment according to manual specification 1.3 Performed preventive maintenance
2. Resource Implications	The following resources should be provided: 2.1 Service/operational manual of farm tools and equipment 2.2 Tools and equipment 2.3 Farm implements
3. Methods of Assessment	Competency in this unit must be assessed through: 3.1 Direct observation 3.2 Practical demonstration 3.3 Third Party Report
4. Context of Assessment	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 <i>Italicized terms</i> are elaborated in the Range of Variable	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 <i>System and units of measurement</i> to be followed are ascertained. 2.2 Calculation needed to complete work tasks are performed using the <i>four basic mathematical operation</i> . 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	Four basic mathematical operation may include: 1.1 Addition 1.2 Subtraction 1.3 Multiplication 1.4 Division
2. System of measurement	System of measurement may include: 2.1 English 2.2 Metric
3. Units of measurement	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 Relevant tools and equipment for basic calculation 2.2 Recommended data
3. Methods of Assessment	Competency in this unit must be assessed through: 3.1 Practical demonstration 3.2 Written examination
4. Context of Assessment	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 <i>Italicized terms</i> are elaborated in the Range of Variable	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Collect farm wastes	1.1 <i>Tools and materials</i> are prepared for collection of farm wastes. 1.2.Wastes are collected following OSHS and waste collection requirements and plan. 1.3.Dangerous and hazardous wastes are collected following the HAZMAT(hazardous material) protocol. 1.4.Appropriate personal protective equipment (PPE) are worn as prescribed by Occupational Safety and Health Standards (OSHS).	1.1 Tools and materials used in wastes management 1.2 Categories of farm wastes 1.3 Waste collection and segregation procedures 1.4 Farm-waste handling, storage and disposal procedures 1.5 Dangerous and hazardous wastes, hazardous materials (hazmat) protocols 1.6 Personal Protective Equipment (PPE)	1.1 Occupational health and safety 1.2 Skills is using tools and equipment 1.3 Calculations 1.4 Communicate effectively

<p>2. Identify and segregate wastes</p>	<p>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</p>	<p>2.1 Tools and materials used in wastes management 2.2 Categories of farm wastes 2.3 Waste collection and segregation procedures 2.4 Farm-waste handling, storage and disposal procedures 2.5 Dangerous and hazardous wastes, hazardous materials (hazmat) protocols 2.6 Personal Protective Equipment (PPE)</p>	<p>2.1 Occupational health and safety 2.2 Skills is using tools and equipment 2.3 Calculations Communicate effectively</p>
<p>3. Treat and process farm wastes</p>	<p>3.1 Dangerous and hazardous wastes are handled according to organizational requirements and relevant legislation following OSHS procedures. 3.2 Processing of farm wastes is done following environmental legislation and codes. 3.3. Principles of 3Rs (reduce, reuse and recycle) are applied accordingly. 3.4. Farm wastes are disposed of according to environmental legislation and codes.</p>	<p>3.1 Tools and materials used in wastes management 3.2 Categories of farm wastes 3.3 Waste collection and segregation procedures 3.4 Farm-waste handling, storage and disposal procedures 3.5 Dangerous and hazardous wastes, hazardous materials (hazmat) protocols 3.6 Personal Protective Equipment (PPE)</p>	<p>3.1 Occupational health and safety 3.2 Skills is using tools and equipment 3.3 Calculations Communicate effectively</p>

<p>4. Perform housekeeping</p>	<p>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.</p>	<p>4.1 Tools and materials used in wastes management 4.2 Categories of farm wastes 4.3 Waste collection and segregation procedures 4.4 Farm-waste handling, storage and disposal procedures 4.5 Dangerous and hazardous wastes, hazardous materials (hazmat) protocols 4.6 Personal Protective Equipment (PPE)</p>	<p>4.1 Occupational health and safety 4.2 Skills is using tools and equipment 4.3 Calculations Communicate effectively</p>
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RANGE OF VARIABLES

VARIABLE	RANGE
1. Tools and materials	<p>Tools and materials may include:</p> <p>1.1. Tools</p> <p>1.1.1 Spade</p> <p>1.1.2 Wheelbarrow</p> <p>1.1.3 Broomstick</p> <p>1.1.4 Sprayer or pressurized pump</p> <p>1.2. Materials</p> <p>1.2.1 Sacks</p> <p>1.2.2 Containers</p> <p>1.2.3 Disinfectants</p> <p>1.2.4 Detergents</p> <p>1.2.5 First-aid kit</p> <p>1.2.6 Chemical spill kit</p> <p>1.2.7 Personal Protective Equipment</p> <p>1.2.7.1 Goggles</p> <p>1.2.7.2 Disposal gloves</p> <p>1.2.7.3 Face mask</p> <p>1.2.7.4 Rubber boots</p> <p>1.2.7.5 Overall</p>
2. Agricultural wastes	<p>Agricultural wastes may include:</p> <p>2.1. Plant materials</p> <p>2.2. Hay</p> <p>2.3. Weeds</p> <p>2.4. Twigs</p> <p>2.5. Twines</p> <p>2.6. Empty wooden crates</p> <p>2.7. Animal manure</p> <p>2.8. Feed refuse</p> <p>2.9. Spoiled feeds (Forage and feed supplements)</p> <p>2.10. Spent bedding materials</p> <p>2.11. Empty sacks</p> <p>2.12. Trash fish</p> <p>2.13. Fish meal</p> <p>2.14. Effluent</p>
3. Dangerous and hazardous wastes	<p>Dangerous and hazardous wastes may include:</p> <p>3.1 Pesticides</p> <p>3.2 Syringes</p> <p>3.3 Expired biologics</p> <p>3.4 Expired veterinary drugs</p> <p>3.5 Spoiled milk</p> <p>3.6 Diseased plant and plant parts</p> <p>3.7 Empty veterinary bottles/syringes</p>
4. Categories	<p>Categories may include:</p> <p>4.1 Re-usable</p> <p>4.2 Recyclable</p> <p>4.3 Solid</p> <p>4.4 Liquid</p>

5. Processing of wastes	<p>Processing of wastes may include:</p> <ul style="list-style-type: none"> 5.1 Composting 5.2 Compacting 5.3 Liquefying 5.4 Shredding 5.5 Carbonizing 5.6 Charcoaling
6. Record	<p>Record may include:</p> <ul style="list-style-type: none"> 6.1 Record of farm wastes generated and disposed 6.2 Record of incidence of infection and accidents 6.3 Record of chemical spillage 6.4 Record of destroyed carcasses 6.5 Inventory of tools, materials and equipment

EVIDENCE GUIDE

1. Critical Aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Collected farm waste 1.2 Identified and segregated farm waste 1.3 Processed farm waste 1.4 Performed housekeeping
2. Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Farm area 2.2 Different farm wastes 2.3 Farm-waste processing area 2.4 Tools, supplies and materials use in farm wastes collection, segregation, and processing 2.5 Housekeeping tools and supplies 2.6 Personal Protective Equipment
3. Methods of Assessment	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Observation and questioning 3.2 Third-Party Report 3.3 Demonstration and oral questioning
4. Context of Assessment	<p>Competency maybe assessed in actual workplace or at the designated TESDA Accredited Assessment Center.</p>

UNIT OF COMPETENCY : PERFORM RECORD KEEPING

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 <i>Italicized terms</i> are elaborated in the Range of Variable	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Carry out inventory activities	1.1 <i>Inventory inputs</i> are determined according to enterprise requirements. 1.2 Defective tools and equipment are determined according to operation manuals 1.3 Facilities are inspected according to according to standard codes and laws.	1.1 Kinds of tools and equipment 1.2 Defects of tools and equipment 1.3 Monitoring method 1.4 Farm planning and budgeting 1.5 Methods and process of production 1.6 Quality control 1.7 Basic bookkeeping 1.8 Practice 3Rs and 5S 1.9 Program of work activities are implemented as scheduled	1.1 Work safety 1.2 Skills in determining defective tools and equipment 1.3 Measuring and calculations 1.4 Estimation 1.5 Basic mathematical skills 1.6 Skills in preparation of reports 1.7 Bookkeeping 1.8 Oral and written communication

<p>2. Maintain production record</p>	<p>2.1 Production plan are prepared according to enterprise requirements. 2.2 Schedule for production activities are prepared based from enterprise requirements and plan. 2.3 Production report are prepared in accordance with enterprise reporting procedures 2.4 Input and production are monitored using monitoring chart.</p>	<p>2.1 Kinds of tools and equipment 2.2 Defects of tools and equipment 2.3 Monitoring method 2.4 Farm planning and budgeting 2.5 Methods and process of production 2.6 Quality control 2.7 Basic bookkeeping 2.8 Practice 3Rs and 5S 2.9 Program of work activities are implemented as scheduled</p>	<p>2.1 Work safety 2.2 Skills in determining defective tools and equipment 2.3 Measuring and calculations 2.4 Estimation 2.5 Basic mathematical skills 2.6 Skills in preparation of reports 2.7 Bookkeeping 2.8 Oral and written communication</p>
<p>3. Prepare financial records</p>	<p>3.1. Production cost are computed using established computation procedures. 3.2. Revenue is computed using established computation procedures.</p>	<p>3.1 Kinds of tools and equipment 3.2 Defects of tools and equipment 3.3 Monitoring method 3.4 Farm planning and budgeting 3.5 Methods and process of production 3.6 Quality control 3.7 Basic bookkeeping 3.8 Practice 3Rs and 5S 3.9 Program of work activities are implemented as scheduled</p>	<p>3.1 Work safety 3.2 Skills in determining defective tools and equipment 3.3 Measuring and calculations 3.4 Estimation 3.5 Basic mathematical skills 3.6 Skills in preparation of reports 3.7 Bookkeeping 3.8 Oral and written communication</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Inventory inputs	Inventory inputs may include: 1.1 Plant 1.1.1.Planting materials 1.1.2.Fertilizer 1.1.3.Concoctions (Pesticides and insecticides) 1.1.4.Beneficial microorganisms 1.2 Animals 1.2.1.Stocks 1.2.2.Feeds 1.2.3.Concoctions 1.2.4.Medications 1.2.5.Beneficial microorganisms 1.3 Miscellaneous materials
2. Production activities	Production activities may include: 2.1 Plant 2.1.1 Planting 2.1.2 Fertilizer application 2.1.3 Pesticides application 2.1.4 Implementation of bio-security measures 2.1.5 Irrigation/watering 2.1.6 Weeding 2.1.7 Harvesting 2.1.8 Post-harvesting 2.2 Animal 2.2.1 Feeding 2.2.2 Cleaning and Sanitation 2.2.3 Implementation of bio-security measures 2.2.4 Growth and health condition 2.2.5 Harvesting 2.2.6 Post harvesting 2.3 Miscellaneous activities
3. Production report	Production report may include: 3.1. Categorize and record quality of harvest 3.2. Volume /quantity of products harvested
4. Input	Input may include: 4.1 Input(plant) 4.1.1 Fertilizer 4.1.2 Concoctions (Pesticides and insecticides) 4.1.3 Beneficial microorganisms 4.2 Input(animal) 4.2.1 Feeds 4.2.2 Concoctions 4.2.3 Medication 4.2.4 Beneficial microorganisms 4.3 Miscellaneous inputs
5. Production	Production may include: 5.1 Growth rate 5.2 Survival rate

6. Production cost	Production cost may include: 6.1.Labor 6.2.Inputs 6.3.Tools, equipment and facility depreciation cost 6.4.Administrative cost 6.5.Miscellaneous
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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 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 All supplies, materials and farm implements needed during farm operations should be readily available at the farm site: 2.1.1 Farm site 2.1.2 Office supplies, materials, tools and farm equipment 2.2 Protective clothing equipment and materials. All workers involved in different activities must be fully oriented and cautioned on the different specific work activities of the farm. 2.3 Technical supervisors should have skills and ability in the successful implementation of work program activities.
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration with questioning 3.2 Written examination
4. Context of Assessment	Assessment may occur in an appropriately simulated environment through TESDA accredited assessment centers

CORE COMPETENCIES

UNIT OF COMPETENCY : PREPARE GROWING AREA FOR MICROGREENS

UNIT CODE : AB-AFF1380600611301

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to prepare the growing area for microgreens. This includes determining the appropriate growing area, using available growing medium and materials and setting up microgreens growing area /infrastructure

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Determine appropriate growing site	<p>1.1 <i>Environmental factors</i> of growing <i>microgreens</i> are assessed according to the <i>microgreens requirement</i></p> <p>1.2 <i>Hazards and Risks</i> are identified according to Occupational Safety and Health Standards (OSHS).</p> <p>1.3 <i>Growing area</i> is identified according to the microgreens requirement</p>	<p>Science 1.1 Climatic variables 1.2 Types of Hazards</p> <p>Technology 1.3 Water system 1.4 Lighting system 1.5 Ventilation system</p> <p>Mathematics 1.6 Estimation of the area</p> <p>Communication 1.7 Report on hazard and risk assessment 1.8 Report on Climatic variables</p>	<p>1.1 Identifying climatic factors to consider in growing microgreens</p> <p>1.2 Identifying types of growing medium for microgreens</p> <p>1.3 Determining types of hazards in the workplace</p> <p>1.4 Identifying the water system, ventilation system and lighting system</p> <p>1.5 Preparing report on climatic variables</p>
2. Utilize available growing medium and materials	<p>2.1 <i>Tools, materials and equipment</i> are identified and prepared based on the medium to be used.</p> <p>2.2 <i>Personal Protective Equipment (PPE)</i> is used based on the workplace requirement</p>	<p>Science 2.1 Types of Growing media</p> <p>Technology 2.2 Preparation of</p>	<p>2.1 Identifying tools, equipment, and materials</p> <p>2.2 Identifying types of growing media</p> <p>2.3 Identifying PPEs</p> <p>2.4 Mixing of growing media</p>

	<p>2.3 Growing media is prepared based on the microgreen requirement</p> <p>2.4 Safety procedure in growing media preparation is followed according to OSHS.</p>	<p>tools equipment and materials</p> <p>2.3 Mixture of growing media</p> <p>2.4 Sterilization of growing media</p> <p>2.5 Personal Protective Equipment (PPE)</p> <p>Mathematics</p> <p>2.6 Ratio and proportion</p> <p>2.7 Rate of application</p> <p>2.8 Frequency of application</p> <p>Communication</p> <p>2.9 Follow instruction</p> <p>Environment and other Related Laws</p> <p>2.10 Occupational Safety and Health Standards (OSHS)</p>	<p>2.5 Sterilizing of growing media</p> <p>2.6 Applying safety practices</p>
<p>3. Set up microgreens growing area /infrastructure</p>	<p>3.1 Tools, materials and equipment are identified and prepared for setting up the microgreens growing area based on the nature of the microgreen to be used.</p> <p>3.2 Personal Protective Equipment (PPE) is used based on the workplace requirement</p> <p>3.3 Maintenance and sanitation are performed based on OSHS</p> <p>3.4 Waste are disposed according to the</p>	<p>Science</p> <p>3.1 Sanitation</p> <p>3.2 Waste Management</p> <p>3.3 Nature of Waste</p> <p>Technology</p> <p>3.4 Tools materials and equipment</p> <p>3.5 PPEs</p> <p>3.6 Layout of growing area</p> <p>Mathematics</p> <p>3.7 Computation of area</p>	<p>3.1 Identifying tools, equipment, and materials</p> <p>3.2 Sanitizing the growing area</p> <p>3.3 Identifying PPEs</p> <p>3.4 Identifying waste in the growing area</p> <p>3.5 Setting-up of the growing area</p> <p>3.6 Managing waste accordingly</p>

	Standard Operating Procedures (SOP)	Environment and other Related Laws 3.8 RA 9003 - Ecological Solid Waste Management	
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RANGE OF VARIABLES

VARIABLE	RANGE
1. Environmental Factors	May include but not limited to: 1.1 Air 1.2 Temperature 1.3 Light 1.4 Humidity 1.5 Moisture 1.6 Water
2. Microgreen requirement	May include but not limited to: 2.1 Seeds 2.2 Growing trays or containers 2.3 Growing Medium 2.4 Lighting 2.5 Watering Supplies 2.6 Harvest Materials 2.7 Temperature Control Equipment 2.8 Packaging Materials 2.9 Water Source 2.10 Power Source 2.11 Seed Dispenser
3. Hazards and Risks	May include but not limited to: 3.1 Biological Hazards 3.2 Physical Hazards 3.3 Mechanical Hazards 3.4 Ergonomic Hazards
4. Growing area	May include but not limited to: 4.1 Room 4.2 Balcony 4.3 Fence 4.4 Wall 4.5 Backyard 4.6 Nursery 4.7 Greenhouse 4.8 Roof 4.9 Open spaces

<p>5. Microgreens</p>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 5.1 Mustard 5.2 Broccoli 5.3 Arugula 5.4 Beet 5.5 Cilantro 5.6 Radish/Daikon 5.7 Amaranth 5.8 Kale 5.9 Cabbage 5.10 Water cress 5.11 Fennel 5.12 Basil 5.13 Scallion 5.14 Celery 5.15 Parsley 5.16 Bok Choi 5.17 Pechay 5.18 Dill 5.19 Mint 5.20 Carrot 5.21 Lettuce 5.22 Alfalfa 5.23 Sorrel 5.24 Sunflower 5.25 Sweet Corn 5.26 Pea Shoots 5.27 Chinese Kangkong
<p>6. Tools, materials and equipment</p>	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 6.1 Garden Tools <ul style="list-style-type: none"> 6.1.1 Trowel 6.1.2 Hoe 6.1.3 Sprinkler/sprayer 6.1.4 Rake 6.1.5 Bolo 6.1.6 Water Hose 6.2 Carpentry Tools <ul style="list-style-type: none"> 6.2.1 Pliers 6.2.2 Saw 6.2.3 Hammer 6.3 Materials <ul style="list-style-type: none"> 6.3.1 Trays 6.3.2 Seed Box 6.3.3 Black out cover 6.3.4 Other containers 6.4 Equipment <ul style="list-style-type: none"> 6.4.1 Racks and frames 6.4.2 Water pump (if hydroponics or aquaponics)

7. Personal Protective Equipment (PPE)	May include but not limited to: 7.1 Gloves 7.2 Hat 7.3 Boots/safety shoes 7.4 Long sleeve/ trousers 7.5 Eyewear
8. Growing Media	May include but not limited to: 8.1 Coco peat 8.2 Coco coir 8.3 Saw dust 8.4 Rice hull/ carbonized rice hull 8.5 Loam Soil/ garden Soil 8.6 Compost/Vermicompost 8.7 Moss

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: <ul style="list-style-type: none"> 1.1 Determined appropriate growing site <ul style="list-style-type: none"> 1.1.1 Environmental factors of growing microgreens are assessed according to the microgreens requirement 1.1.2 Hazards and Risks are identified according to Occupational Safety and Health Standards (OSHS). 1.1.3 Growing area is identified according to the microgreens requirement 1.2 Used available growing medium and materials <ul style="list-style-type: none"> 1.2.1 Tools, materials and equipment are identified and prepared based on the medium to be used. 1.2.2 Personal Protective Equipment (PPE) is used based on the workplace requirement 1.2.3 Growing media is prepared based on the microgreen requirement 1.2.4 Safety procedure in growing media preparation is followed according to OSHS. 1.3 Set up microgreens growing area/ infrastructure <ul style="list-style-type: none"> 1.3.1 Tools, materials and equipment are identified and prepared for setting up the microgreens growing area based on the nature of the microgreen to be used. 1.3.2 Personal Protective Equipment (PPE) is used based on the workplace requirement 1.3.3 Maintenance and sanitation are performed based on OSHS 1.3.4 Waste are disposed according to the Standard Operating Procedures (SOP)
2. Resource Implications	<i>The following resources MUST be provided:</i> <ul style="list-style-type: none"> 2.1 Tools, materials and equipment 2.2 Personal Protective Equipment (PPE)

	2.3 Actual and simulated workplace
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Written Examination 3.2 Observation 3.3 Demonstration with oral questioning
4. Context for Assessment	<i>4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions</i>

UNIT OF COMPETENCY : PLANT MICROGREENS

UNIT CODE : AB-AFF1380600611302

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to plant microgreens. This includes performing pre-planting activities, performing planting activities and performing post-planting activities

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform Pre-Planting activities	1.1 Tools, materials and equipment are identified and prepared according to the activities to be undertaken 1.2 Different types of microgreens varieties are identified based on the industry standards 1.3 Growing medium and trays are sanitized based on the good agricultural practices for microgreens 1.4 Growing medium is placed in containers based on the good agricultural practices for microgreens 1.5 Good seeds are selected according to the industry practices 1.6 Selected seeds are treated according to the manufacturer's recommendation. 1.7 Personal Protective Equipment (PPE) is used based on the workplace	Science 1.1 Varieties of microgreens 1.2 Seeds 1.3 Germination Test 1.4 Methods of testing seeds 1.5 Growing medium Technology 1.6 Tools, materials and equipment 1.7 Seed Treatment 1.8 PPEs Mathematics 1.9 Ratio and proportion 1.10 Percentage Communication 1.11 Documentation Environment and other Related Laws 1.12 Occupational	1.1 Selecting and treating good seeds 1.2 Testing seeds germination 1.3 Organizing seed storage 1.4 Using PPEs 1.5 Computing seeds germination rate 1.6 Applying safety practices 1.7 Identifying tools, materials and equipment

	<p>requirement</p> <p>1.8 Safety practices are applied following OSHS</p>	<p>Safety and Health Standards (OSHS)</p>	
<p>2. Perform Planting activities</p>	<p>2.1 Tools, materials and equipment are identified for planting activity</p> <p>2.2 Seeds are sown to the growing media based on the good agricultural practices for microgreens</p> <p>2.3 Seeds are gently pressed into the growing media and covered based on the good agricultural practices</p> <p>2.4 Personal Protective Equipment (PPE) is used based on industry standards.</p>	<p>Science</p> <p>2.1 Seeds</p> <p>2.2 Water</p> <p>Technology</p> <p>2.3 Sowing Techniques</p> <p>2.4 Watering techniques</p> <p>2.5 PPE</p> <p>Mathematics</p> <p>2.6 Depth and Rate of Planting</p> <p>2.7 Density of Planting</p> <p>Communication</p> <p>2.8 Record keeping</p>	<p>2.1 Identifying tools, materials and equipment</p> <p>2.2 Sowing of Seeds</p> <p>2.3 Watering sown seeds</p> <p>2.4 Caring and managing of sown seeds</p> <p>2.5 Recording and documenting sowing activities</p> <p>2.6 Using appropriate PPEs</p>
<p>3. Perform Post-Planting activities</p>	<p>3.1 Tools, materials and equipment are identified and prepared based on activities to be undertaken</p> <p>3.2 Watering is performed following prescribed method and schedule</p> <p>3.3 Preventive and corrective measures are applied based on microgreen requirements.</p> <p>3.4 Documentation is performed based on the industry practices.</p> <p>3.5 Safety practices are applied following OSHS.</p>	<p>Science</p> <p>3.1 Plant Nutrients</p> <p>3.2 Water</p> <p>3.3 Light</p> <p>3.4 Pest and Diseases</p> <p>3.5 Weeds</p> <p>3.6 Waste Management</p> <p>Technology</p> <p>3.7 Tools, materials and equipment</p> <p>3.8 Method of Nutrient application</p> <p>3.9 Method of watering</p> <p>3.10 Weeding Techniques</p> <p>3.11 PPEs</p> <p>3.12 Integrated Pest Management</p> <p>Mathematics</p>	<p>3.1 Identifying tools, materials and equipment for the activities</p> <p>3.2 Applying plant nutrients</p> <p>3.3 Watering of plants</p> <p>3.4 Controlling and preventing pest and diseases</p> <p>3.5 Weeding microgreens</p> <p>3.6 Preparing reports and records</p> <p>3.7 Applying safety practices</p>

		3.13 Density 3.14 Volume Environment and other Related Laws 3.15 RA 9003 Ecological Solid Waste Management Act	
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RANGE OF VARIABLES

VARIABLE	RANGE
1. Good Agricultural Practices	May include but not limited to: 1.1 Seed selection 1.2 Watering 1.3 Lighting 1.4 Pest and disease management 1.5 Sanitation 1.6 Harvesting 1.7 Storing 1.8 Handling 1.9 Packaging and refrigeration 1.10 Transporting 1.11 Documentation
2. Good Seeds	May include but not limited to: 2.1 Viable 2.2 Damaged-Free 2.3 Matured 2.4 Fresh 2.5 True-to-type 2.6 Free from Seed borne diseases
3. Tools, Materials and Equipment	May include but not limited to: 3.1 Garden Tools 3.1.1 Hand Trowel 3.1.2 Water Hose 3.1.3 Sprinkler/sprayer 3.1.4 Shovel 3.1.5 Mechanical Seed Dispenser 3.2 Materials 3.2.1 Trays 3.2.2 Seed Box 3.2.3 Black out cover 3.2.4 Other containers 3.3 Equipment 3.3.1 Racks and frames 3.3.2 Water pump (if hydroponics or aquaponics) 3.3.3 Grow lights
4. Personal Protective Equipment (PPE)	May include but not limited to: 4.1 Gloves 4.2 Hat 4.3 Boots/safety shoes 4.4 Long sleeve/ trousers 4.5 Eyewear
5. Growing Medium	May include but not limited to: 5.1 Coco peat

	<ul style="list-style-type: none"> 5.2 Coco coir 5.3 Saw dust 5.4 Rice hull/ carbonized rice hull 5.5 Loam Soil/ garden Soil 5.6 Compost/Vermicompost 5.7 Moss
6. Preventive and corrective measures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 6.1 Sanitation 6.2 Cleaning 6.3 Weed and Pest Control 6.4 Nutrients adjustment 6.5 Water adjustment
7. Microgreen requirements	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 7.1 Seeds 7.2 Growing trays or containers 7.3 Growing Medium 7.4 Lighting 7.5 Watering Supplies 7.6 Harvest Materials 7.7 Temperature Control Equipment 7.8 Packaging Materials 7.9 Water Source 7.10 Power Source 7.11 Seed Dispenser
8. Documentation	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 8.1 Production cost 8.2 Inventory 8.3 Usage 8.4 Monitoring <ul style="list-style-type: none"> 8.4.1 Date planted/Projected date of harvest 8.4.2 Variety 8.4.3 Germination rate performance 8.4.4 Plant status 8.5 Recording

EVIDENCE GUIDE

1. Critical aspects of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Performed Pre-Planting activities <ul style="list-style-type: none"> 1.1.1 Tools, materials and equipment are identified and prepared according to the activities to be undertaken 1.1.2 Different types of microgreens varieties are identified based on the industry standards 1.1.3 Growing medium and trays are sanitized based on the good agricultural practices for microgreens 1.1.4 Growing medium is placed in containers based on the good agricultural practices for microgreens
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	<p>1.1.5 Good seeds are selected according to the industry practices</p> <p>1.1.6 Selected seeds are treated according to the manufacturer's recommendation.</p> <p>1.1.7 Personal Protective Equipment (PPE) is used based on the workplace requirement</p> <p>1.1.8 Safety practices are applied following OSHS</p> <p>1.2 Performed Planting Activities</p> <p>1.2.1 Tools, materials and equipment are identified for planting activity</p> <p>1.2.2 Seeds are sown to the growing media based on the good agricultural practices for microgreens</p> <p>1.2.3 Seeds are gently pressed into the growing media and covered based on the good agricultural practices</p> <p>1.2.4 Personal Protective Equipment (PPE) is used based on industry standards.</p> <p>1.3 Performed Post-Planting Activities</p> <p>1.3.1 Tools, materials and equipment are identified and prepared based on activities to be undertaken</p> <p>1.3.2 Watering is performed following prescribed method and schedule</p> <p>1.3.3 Preventive and corrective measures are applied based on microgreen requirements.</p> <p>1.3.4 Documentation is performed based on the industry practices.</p> <p>1.3.5 Safety practices are applied following OSHS.</p>
2. Resource Implications	<p><i>The following resources MUST be provided:</i></p> <p>2.1 Tools, materials and equipment</p> <p>2.2 Personal Protective Equipment (PPE)</p> <p>2.3 Actual and simulated workplace</p>
3. Methods of Assessment	<p>Competency in this unit may be assessed through:</p> <p>3.1 Written Examination</p> <p>3.2 Direct Observation</p> <p>3.3 Demonstration with oral questioning</p>
4. Context for Assessment	<p><i>4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions</i></p>

UNIT OF COMPETENCY : HARVEST MICROGREENS

UNIT CODE : AB-AFF1380600611303

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to harvest microgreens. This includes performing harvesting and performing post-harvesting operations

ELEMENT	PERFORMANCE CRITERIA <i>Italicized</i> terms are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform Harvesting	1.1 Tools, materials and equipment are identified and prepared according to the activities to be undertaken 1.2 Products are checked using quality indicators according to good agricultural practices for microgreens 1.3 Marketable products are harvested according to good agricultural practices for microgreens 1.4 Harvesting techniques are applied based on the good agricultural practices for microgreens 1.5 Personal Protective Equipment (PPE) is used based on the workplace requirement 1.6 Residual materials are disposed based on the industry practices. 1.7 Production record is accomplished according to enterprise procedures. 1.8 Safety practices are applied following OSHS	Science 1.1 Quality indicators of microgreens 1.2 Vegetative stages of microgreens Technology 1.3 Tools, materials and equipment 1.4 Harvesting techniques 1.5 PPEs 1.6 3Rs Mathematics 1.7 Percentage of production yield 1.8 Weight and mass 1.9 Date and Time Communication 1.8 Record keeping Environment and other Related Laws 1.9 Occupational Safety and Health Standards (OSHS)	1.1 Assessing microgreens quality indicators 1.2 Harvesting microgreens 1.3 Segregating defective microgreens 1.4 Disposing of harvesting residuals 1.5 Using PPEs 1.6 Applying safety practices 1.7 Identifying tools, materials and equipment 1.8 Preparing reports and records

		1.10 RA 9003 - Ecological Solid Waste Management	
2. Perform Post-Harvesting Operations	<p>2.1 Tools, materials and equipment are identified for post-harvesting activity</p> <p>2.2 Products are cleaned according to microgreens industry practices</p> <p>2.3 Products are packed, labeled and stored according to microgreens industry practices</p> <p>2.4 Personal Protective Equipment (PPE) is used based on industry standards.</p> <p>2.5 Harvest record is accomplished according to enterprise procedures.</p> <p>2.6 Safety practices are applied following OSHS</p>	<p>Science</p> <p>2.1 Temperature</p> <p>2.2 Mass</p> <p>2.3 Moisture</p> <p>2.4 Humidity</p> <p>2.5 Refrigeration</p> <p>Technology</p> <p>2.6 Cleaning techniques</p> <p>2.7 Packing Techniques</p> <p>2.8 Storing techniques</p> <p>2.9 PPE</p> <p>2.10 Tool, materials and equipment</p> <p>Mathematics</p> <p>2.11 Percentage of yield</p> <p>2.12 Weight and mass</p> <p>2.13 Date and Time</p> <p>2.14 Temperature Computation</p> <p>Communication</p> <p>2.15 Record keeping Inventory</p>	<p>2.1 Identifying tools, materials and equipment</p> <p>2.2 Cleaning of harvested microgreens</p> <p>2.3 Packing of harvested microgreens</p> <p>2.4 Storing of harvested microgreens</p> <p>2.5 Recording and documenting post-harvesting activities</p> <p>2.6 Using appropriate PPEs</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Tools, Materials and Equipment	<p>May include but not limited to:</p> <p>1.1 Harvesting Tools</p> <p> 1.1.1 Shears/Scissor</p> <p> 1.1.2 Pail</p> <p> 1.1.3 Basin</p> <p>1.2 Materials</p>

	<ul style="list-style-type: none"> 1.2.1 Trays 1.2.2 Other containers 1.3 Packaging and Labeling materials <ul style="list-style-type: none"> 1.3.1 Clamshell containers 1.3.2 Ziploc bags 1.3.4 Paper bags 1.3.5 Plastic bags 1.3.6 Corrugated box 1.3.7 Stickers 1.3 Equipment <ul style="list-style-type: none"> 1.3.1 Printer 1.3.2 Chiller 1.3.3 Storage facility
2. Quality Indicators	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 2.1 Leaf development <ul style="list-style-type: none"> 2.1.1 Has developed two (2) true leaves 2.1.2 Color 2.2 Disease/infection-free 2.3 Tender, firm stems with the right size 2.4 Plant density
3. Harvesting Techniques	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 3.1 Scissors or Shears Method 3.2 Knife or Harvesting Blade Method 3.3 Pulling Method 3.4 Harvesting with a Rolling Method (for hydroponics)
4. Personal Protective Equipment (PPE)	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 4.1 Gloves 4.2 Hat 4.3 Boots/safety shoes 4.4 Long sleeve/ trousers 4.5 Eyewear
5. Residual Materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 5.1 Roots 5.2 Growing Medium 5.3 Unharvested or Damaged Microgreens 5.4 Packaging Waste 5.5 Water Waste
6. Production Record	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 6.1 Environmental Conditions 6.2 Harvesting Activities 6.3 Harvested Quantity 6.4 Harvest Quality Observations 6.5 Packaging Method 6.6 Storage Conditions Post-Harvest 6.7 Storage or Distribution Details
7. Products	<p>May include but not limited to:</p> <ul style="list-style-type: none"> 7.1 Microgreen Vegetables 7.2 Microgreen Herbs 7.3 Microgreen Grains and Legumes 7.4 Exotic and Specialty Microgreens

EVIDENCE GUIDE

<p>1. Critical aspects of competency</p>	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Performed Harvesting</p> <p>1.1.1 Tools, materials and equipment are identified and prepared according to the activities to be undertaken</p> <p>1.2.1 Products are checked using quality indicators according to good agricultural practices for microgreens</p> <p>1.3.1 Marketable products are harvested according to good agricultural practices for microgreens</p> <p>1.1.4 Harvesting techniques are applied based on the good agricultural practices for microgreens</p> <p>1.1.5 Personal Protective Equipment (PPE) is used based on the workplace requirement</p> <p>1.1.6 Residual materials are disposed based on the industry practices.</p> <p>1.1.7 Production record is accomplished according to enterprise procedures.</p> <p>1.1.8 Safety practices are applied following OSHS</p> <p>2.1 Performed Post-Harvesting Operations</p> <p>2.1.1 Tools, materials and equipment are identified for post-harvesting activity</p> <p>2.1.2 Products are cleaned according to microgreens industry practices</p> <p>2.1.3 Products are packed, labeled and stored according to microgreens industry practices</p> <p>2.1.4 Personal Protective Equipment (PPE) is used based on industry standards.</p> <p>2.1.5 Harvest record is accomplished according to enterprise procedures.</p> <p>2.1.6 Safety practices are applied following OSHS</p>
<p>2. Resource Implications</p>	<p><i>The following resources MUST be provided:</i></p> <p>2.1 Tools, materials and equipment</p> <p>2.2 Personal Protective Equipment (PPE)</p> <p>2.3 Actual and simulated workplace</p>
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <p>3.1 Written Examination</p> <p>3.2 Direct Observation</p> <p>3.3 Demonstration with oral questioning</p>
<p>4. Context for Assessment</p>	<p><i>4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions</i></p>

GLOSSARY OF TERMS

1) Blackout	A phase in microgreen production wherein seeds are typically covered to simulate darkness, which promotes root growth and causes the sprouts to stretch as they seek light. This stretching helps create longer stems and gives the microgreens a stronger foundation for growth
2) Bolting	The premature flowering or seed production in plants is often a stress response. In microgreens, bolting can affect flavor and quality.
3) Carbon-footprint	The total amount of greenhouse gases produced to directly and indirectly support human activities. Microgreens, when grown locally, can have a lower carbon footprint compared to other crops.
4) Chlorosis	The yellowing of leaves due to insufficient chlorophyll. In microgreens, chlorosis can indicate nutrient deficiencies or light issues.
5) Clamshells	Plastic containers that resemble clamshells and have tabs to close them.
6) Climate Control	In microgreens cultivation, this refers to regulating temperature and humidity in the growing environment.
7) Cotyledon	The first set of leaves that appear on a seedling, often not true leaves, but serve to initiate photosynthesis.
8) Cross-contamination	Unintended transfer of bacteria or other microorganisms from one substance or object to another. Microgreen cultivation is a significant concern, especially when growing varieties in proximity
9) Damping-off	A horticultural disease that affects seedlings, causing them to rot at the stem and collapse. It's a common issue in densely planted microgreens.

10) Good Agricultural Practices	voluntary guidelines that help ensure the safe and sustainable production of microgreens.
11) Grow lights	Artificial light sources, often LED, stimulate plant growth by emitting an electromagnetic spectrum suitable for photosynthesis.
12) Growth Cycle	The period from seeding to harvest for microgreens, typically 1 to 3 weeks, depending on the species.
13) Hazards	Refers to any conditions, substances, or practices that could pose risks to the health and safety of workers or the quality of the microgreens themselves
14) LED Grow Lights	An energy-efficient lighting often used in microgreens cultivation. LED lights can be customized to provide specific light spectra for optimal plant growth.
15) Marketable Products	Refer to any goods or items derived from the production of microgreens that can be sold to consumers, businesses, or institutions. These products capitalize on the versatility, nutritional value, and culinary appeal of microgreens.
16) Mechanical Seed Dispenser	Tool or device used to accurately and efficiently distribute seeds onto soil or a growing medium
17) Microgreens	Young seedlings of edible vegetables and herbs.
18) Microgreen Nutrients	Essential elements and minerals that support the microgreens' growth, development, and nutritional value.
19) Mulching	Covering the soil with a material layer to retain moisture, regulate temperature, and suppress weeds. In microgreens, mulch can also prevent soil splash and keep leaves clean.
20) Occupational Safety and Health Standards (OSHS)	Guidelines and regulations designed to keep workers safe and healthy while ensuring the microgreens produced are safe to consume.

21) Personal Protective Equipment (PPE)	Essential elements and minerals that support the microgreens' growth, development, and nutritional value.
22) Pruning	The act of selectively removing parts of a plant. In microgreens, minimal pruning might be done to remove unhealthy parts.
23) Risks	Refer to the likelihood that hazards could cause harm to workers, consumers, or the quality of the microgreens.
24) Sanitation	The practices and procedures used to maintain a clean and hygienic environment to prevent contamination, promote healthy plant growth, and ensure the safety of the final product.
25) Seeds	Small, edible seeds used to grow microgreens, which are young, edible plants harvested at an early stage of growth.
26) Seed density	The amount of seeds sown over a specific area or tray. It is crucial for optimal growth and yield of microgreens.
27) Seed Germination	The process by which seeds begin to sprout and grow into young plants. Germination is a crucial stage in microgreens production because it marks the beginning of plant growth and determines the speed at which the microgreens will be ready for harvest.
28) Seed Priming	The practice of treating seeds before planting to enhance germination. This can be particularly beneficial for microgreens to ensure uniform and rapid germination.
29) Shelf Life	The length of time microgreens remain fresh and edible after harvest
30) Tray System	The use of shallow trays for growing microgreens is essential to most microgreens setups.
31) Urban	This generally relates to characteristics, qualities, or aspects associated with cities or towns, as opposed to rural areas. It often refers to densely populated regions with significant infrastructure, economic activities, and cultural diversity.

32) Yield Efficiency	The ratio of crop yield to the resources used in its production, such as water, nutrients, and space. In microgreens cultivation, optimizing yield efficiency is key for sustainability and profitability.
33) Zero-Waste Farming	A farming approach that aims to reuse all waste products and eliminate waste output. Microgreen cultivation can be adapted to a zero-waste model through composting, recycling water, and minimizing inputs.

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