TRAINING REGULATIONS

RUBBER PRODUCTION NC II

AGRICULTURE AND FISHERY SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
East Service Road, South Superhighway, Taguig City, Metro Manila

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AGRI-FISHERY SECTOR

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TRAINING REGULATIONS FOR
RUBBER PRODUCTION NC II

Section 1 RUBBER PRODUCTION QUALIFICATIONS

The **RUBBER PRODUCTION NC II** Qualification consists of competencies that a person must achieve to establish rubber budwood and seedlings nursery, plant rubber trees/rubber seedlings, perform budding operation and harvest latex.

This Qualification is packaged from the competency map of the Agri-Fishery Sector as shown in Annex A.

The units of competency comprising this qualification include the following:

Code	BASIC COMPETENCIES
500311105	Participate in workplace communication
500311104	Work in a team environment
500311107	Practice career professionalism
500311108	Practice occupational health and safety procedures

Code	COMMON COMPETENCIES
AGR321201	Apply safety measures in farm operations
AGR321202	Use farm tools and equipment
AGR321203	Perform estimation and calculations

Code	CORE COMPETENCIES
AGR612201	Establish rubber budwood and seedlings nursery
AGR612202	Plant rubber trees/rubber seedlings
AGR612203	Perform budding operation
AGR612204	Harvest latex

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

- **Budder**
- **Tapper**
- **Nursery caretaker**
- **Rubber plantation worker**
- **Rubber Farmer**

SECTION 2 COMPETENCY STANDARDS

BASIC COMPETENCIES

UNIT OF COMPETENCY : PARTICIPATE IN WORKPLACE COMMUNICATION

UNIT CODE : 500311105

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
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 non- verbal communication is used
	1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed
	1.6 Defined workplace procedures for the location and ***storage*** of information are used
	1.7 Personal interaction is carried out clearly and concisely
2. Participate in workplace meetings and discussions	2.1 Team meetings are attended on time
	2.2 Own opinions are clearly expressed and those of others are listened to without interruption
	2.3 Meeting inputs are consistent with the meeting purpose and established ***protocols***
	2.4 ***Workplace interactions*** are conducted in a courteous manner
	2.5 Questions about simple routine workplace procedures and maters concerning working conditions of employment are asked and responded to
	2.6 Meetings outcomes are interpreted and implemented
3. Complete relevant work related documents	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 documents
	3.3 Basic mathematical processes are used for routine calculations
	3.4 Errors in recording information on forms/ documents are identified and properly acted upon
	3.5 Reporting requirements to supervisor are completed according to organizational guidelines

RANGE OF VARIABLES

VARIABLE	RANGE
1. Appropriate sources	1.1. Team members 1.2. Suppliers 1.3. Trade personnel 1.4. Local government 1.5. Industry bodies
2. Medium	2.1. Memorandum 2.2. Circular 2.3. Notice 2.4. Information discussion 2.5. Follow-up or verbal instructions 2.6. Face to face communication
3. Storage	3.1. Manual filing system 3.2. Computer-based filing system
4. Forms	4.1. Personnel forms, telephone message forms, safety reports
5. Workplace interactions	5.1. Face to face 5.2. Telephone 5.3. Electronic and two way radio 5.4. Written including electronic, memos, instruction and forms, non-verbal including gestures, signals, signs and diagrams
6. Protocols	6.1. Observing meeting 6.2. Compliance with meeting decisions 6.3. Obeying meeting instructions

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 communication equipment 1.3. Made use of relevant terms as an aid to transfer information effectively 1.4. Conveyed information effectively adopting the formal or informal communication
2. Required Knowledge and Attitudes	2.1. Effective communication 2.2. Different modes of communication 2.3. Written communication 2.4. Organizational policies 2.5. Communication procedures and systems 2.6. Technology relevant to the enterprise and the individual's work responsibilities
3. Required Skills	3.1. Follow simple spoken language 3.2. Perform routine workplace duties following simple written notices 3.3. Participate in workplace meetings and discussions 3.4. Complete work related documents 3.5. Estimate, calculate and record routine workplace measures 3.6. Basic mathematical processes of addition, subtraction, division and multiplication 3.7. Ability to relate to people of social range in the workplace 3.8. Gather and provide information in response to workplace Requirements
4. Resource Implications	4.1. Fax machine 4.2. Telephone 4.3. Writing materials 4.4. Internet
5. Methods of Assessment	5.1. Direct Observation 5.2. Oral interview and written test
6. Context of Assessment	6.1. Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY: WORK IN TEAM ENVIRONMENT

UNIT CODE : 500311106

UNIT DESCRIPTOR : This unit covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
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
2. Identify own role and responsibility within team	2.1. Individual role and responsibilities within the team environment are identified 2.2. Roles and responsibility of other team members are identified and recognized 2.3. Reporting relationships within team and external to team are identified
3. Work as a team member	3.1. Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives 3.2. Effective and appropriate contributions made to complement team activities and objectives, based on individual skills and competencies and ***workplace context*** 3.3. Observed protocols in reporting using standard operating procedures 3.4. Contribute to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members.

RANGE OF VARIABLES

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

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Operated 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 1.6. Reported outcomes
2. Required Knowledge and Attitude	2.1. Communication process 2.2. Team structure 2.3. Team roles 2.4. Group planning and decision making
3. Required Skills	3.1. Communicate appropriately, consistent with the culture of the workplace
4. Resource Implications	The following resources **MUST** be provided: 4.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 4.2. Materials relevant to the proposed activity or tasks
5. Methods of Assessment	Competency may be assessed through: 5.1. Observation of the individual member in relation to the work activities of the group 5.2. Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal 5.3. Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
6. Context for Assessment	6.1. Competency may be assessed in workplace or in a simulated workplace setting 6.2. Assessment shall be observed while task are being undertaken whether individually or in group

UNIT OF COMPETENCY: PRACTICE CAREER PROFESSIONALISM

UNIT CODE : 500311107

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes in promoting career growth and advancement.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Integrate personal objectives with organizational goals	1.1 Personal growth and work plans are pursued towards improving the qualifications set for the profession 1.2 Intra- and interpersonal relationships ~~is~~ are maintained in the course of managing oneself based on performance ***evaluation*** 1.3 Commitment to the organization and its goal is demonstrated in the performance of duties
2. Set and meet work priorities	2.1 Competing demands are prioritized to achieve personal, team and organizational goals and objectives. 2.2 ***Resources*** are utilized efficiently and effectively to manage work priorities and commitments 2.3 Practices along economic use and maintenance of equipment and facilities are followed as per established procedures
3. Maintain professional growth and development	3.1 ***Trainings and career opportunities*** are identified and availed of based on job requirements 3.2 ***Recognitions*** are -sought/received and demonstrated as proof of career advancement 3.3 ***Licenses and/or certifications*** relevant to job and career are obtained and renewed

RANGE OF VARIABLES

VARIABLE	RANGE
1. Evaluation	1.1 Performance Appraisal 1.2 Psychological Profile 1.3 Aptitude Tests
2. Resources	2.1 Human 2.2 Financial 2.3 Technology 2.3.1 Hardware 2.3.2 Software
3. Trainings and career opportunities	3.1 Participation in training programs 3.1.1 Technical 3.1.2 Supervisory 3.1.3 Managerial 3.1.4 Continuing Education 3.2 Serving as Resource Persons in conferences and workshops
4. Recognitions	4.1 Recommendations 4.2 Citations 4.3 Certificate of Appreciations 4.4 Commendations 4.5 Awards 4.6 Tangible and Intangible Rewards
5. Licenses and/or certifications	5.1 National Certificates 5.2 Certificate of Competency 5.3 Support Level Licenses 5.4 Professional Licenses

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Attained job targets within key result areas (KRAs) 1.2 Maintained intra - and interpersonal relationship in the course of managing oneself based on performance evaluation 1.3 Completed trainings and career opportunities which are based on the requirements of the industries 1.4 Acquired and maintained licenses and/or certifications according to the requirement of the qualification
2. Required Knowledge and Attitude	2.1 Work values and ethics (Code of Conduct, Code of Ethics, etc.) 2.2 Company policies 2.3 Company-operations, procedures and standards 2.4 Fundamental rights at work including gender sensitivity 2.5 Personal hygiene practices
3. Required Skills	3.1 Appropriate practice of personal hygiene 3.2 Intra and Interpersonal skills 3.3 Communication skills
4. Resource Implications	The following resources **MUST** be provided: 4.1 Workplace or assessment location 4.2 Case studies/scenarios
5. Methods of Assessment	Competency may be assessed through: 5.1 Portfolio Assessment 5.2 Interview 5.3 Simulation/Role-plays 5.4 Observation 5.5 Third Party Reports 5.6 Exams and Tests
6. Context of Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

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

UNIT CODE : **500311108**

UNIT DESCRIPTOR : This unit covers the outcomes required to comply with regulatory and organizational requirements for occupational health and safety.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Identify hazards and risks	1.1 ***Safety regulations*** and workplace safety and hazard control practices and procedures are clarified and explained based on organization procedures 1.2 ***Hazards/risks*** in the workplace and their corresponding indicators are identified to minimize or eliminate risk to co-workers, workplace and environment in accordance with organization procedures 1.3 ***Contingency measures*** during workplace accidents, fire and other emergencies are recognized and established in accordance with organization procedures
2. Evaluate hazards and risks	2.1 Terms of maximum tolerable limits which when exceeded will result in harm or damage are identified based on threshold limit values (TLV) 2.2 Effects of the hazards are determined 2.3 OHS issues and/or concerns and identified safety hazards are reported to designated personnel in accordance with workplace requirements and relevant workplace OHS legislation
3. Control hazards and risks	3.1 Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace are consistently followed 3.2 Procedures for dealing with workplace accidents, fire and emergencies are followed in accordance with organization OHS policies 3.3 ***Personal protective equipment (PPE)*** is correctly used in accordance with organization OHS procedures and practices 3.4 Appropriate assistance is provided in the event of a workplace emergency in accordance with established organization protocol
4. Maintain OHS awareness	4.1 ***Emergency-related drills and trainings*** are participated in as per established organization guidelines and procedures 4.2 ***OHS personal records*** are completed and updated in accordance with workplace requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Safety regulations	May include but are not limited to: 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 Philippine Occupational Safety and Health Standards 1.6 DOLE regulations on safety legal requirements 1.7 ECC regulations
2. Hazards/Risks	May include but are not limited to: 2.1 Physical hazards – impact, illumination, pressure, noise, vibration, temperature, radiation 2.2 Biological hazards- bacteria, viruses, plants, parasites, mites, molds, fungi, insects 2.3 Chemical hazards – dusts, fibers, mists, fumes, smoke, gasses, vapors 2.4 Ergonomics • Psychological factors – over exertion/ excessive force, awkward/static positions, fatigue, direct pressure, varying metabolic cycles • Physiological factors – monotony, personal relationship, work out cycle
3. Contingency measures	May include but are not limited to: 3.1 Evacuation 3.2 Isolation 3.3 Decontamination 3.4 (Calling designed) emergency personnel
4. PPE	May include but are not limited to: 4.1 Mask 4.2 Gloves 4.3 Goggles 4.4 Hair Net/cap/bonnet 4.5 Face mask/shield 4.6 Ear muffs 4.7 Apron/Gown/coverall/jump suit 4.8 Anti-static suits
5. Emergency-related drills and training	5.1 Fire drill 5.2 Earthquake drill 5.3 Basic life support/CPR 5.4 First aid 5.5 Spillage control 5.6 Decontamination of chemical and toxic 5.7 Disaster preparedness/management
6. OHS personal records	6.1 Medical/Health records 6.2 Incident reports 6.3 Accident reports 6.4 OHS-related training completed

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Explained clearly established workplace safety and hazard control practices and procedures 1.2 Identified hazards/risks in the workplace and its corresponding indicators in accordance with company procedures 1.3 Recognized contingency measures during workplace accidents, fire and other emergencies 1.4 Identified terms of maximum tolerable limits based on threshold limit value- TLV. 1.5 Followed Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace 1.6 Used Personal Protective Equipment (PPE) in accordance with company OHS procedures and practices 1.7 Completed and updated OHS personal records in accordance with workplace requirements
2. Required Knowledge and Attitude	2.1 OHS procedures and practices and regulations 2.2 PPE types and uses 2.3 Personal hygiene practices 2.4 Hazards/risks identification and control 2.5 Threshold Limit Value -TLV 2.6 OHS indicators 2.7 Organization safety and health protocol 2.8 Safety consciousness 2.9 Health consciousness
3. Required Skills	3.1 Practice of personal hygiene 3.2 Hazards/risks identification and control skills 3.3 Interpersonal skills Communication skills
4. Resource Implications	The following resources must be provided: 4.1 Workplace or assessment location 4.2 OHS personal records 4.3 PPE 4.4 Health records
5. Methods of Assessment	Competency may be assessed through: 5.1 Portfolio Assessment 5.2 Interview 5.3 Case Study/Situation
6. Context for Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

COMMON COMPETENCIES

UNIT TITLE : APPLY SAFETY MEASURES IN FARM OPERATIONS

UNIT CODE : AGR321201

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
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
2. Apply appropriate safety measures	2.1. Tools and materials are used according to specifications and procedures 2.2. Outfits are worn according to farm requirements 2.3. Effectivity/shelf life/expiration of materials are strictly observed 2.4. ***Emergency procedures*** are known and followed to ensure a safework requirement 2.5. Hazards in the workplace are identified and reported in line with farm guidelines
3. Safekeep/dispose tools, materials and outfit	3.1. Used tools and outfit are cleaned after use and stored in designated areas 3.2. Unused materials are properly labeled and stored according to manufacturers recommendation and farm requirements 3.3. ***Waste materials*** are disposed according to manufacturers, government and farm requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work tasks	May be selected from any of the following sectors: 1.1. Aquaculture 1.2. Animal Production 1.3. Crop Production 1.4. Post-harvest 1.5. Agri-marketing 1.6. Farm Equipment
2. Place	2.1. Animal pens, cages, barns 2.2. Fish ponds, cages 2.3. Stock room/storage areas/warehouse 2.4. Field/farm/orchard
3. Time	3.1. Vaccination and medication period 3.2. Fertilizer and pesticides application 3.3. Feed mixing and feeding 3.4. Harvesting and hauling 3.5. Cleaning, sanitizing and disinfecting 3.6. Dressing, butchering and castration
4. Tools, materials and outfits	4.1. Tools Wrenches Screw driver Pliers 4.2. Materials Bottles Plastic Bags Syringe 4.3. Outfit Masks Gloves Boots Overall coats Hat Eye goggles
5. Emergency procedures	5.1. Location of first aid kit 5.2. Evacuation 5.3. Agencies contract 5.4. Farm emergency procedures
6. Waste materials	6.1. Animal manure 6.2. Waste water 6.3. Syringes 6.4. Unused farm chemicals e.g. pesticides, chemicals, fertilizers 6.5. Expired reagents 6.6. Dead animals
7. Hazards	7.1. Chemical 7.2. Electrical 7.3. 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 Safekeep/cleaned tools, materials and outfit in designated facilities
2. Required Knowledge and Attitudes	2.1 Safety Practices 2.1.1 Implementation of regulatory controls and policies relative to treatment of area and application of chemicals 2.1.2 Proper disposal of waste materials 2.2 Codes and Regulations 2.2.1 Compliance to health program of DOH and DENR 2.2.2 Hazard identification 2.2.3 Emergency procedures 2.3 Tools & Equipment: Uses and Specification 2.3.1 Masks, gloves, boots, overall coats for health protection 2.4 Maintenance 2.4.1 Regular check-up and repair of tools, materials and outfit before and after use
3. Required Skills	3.1 Ability to recognize effective tools, materials and outfit 3.2 Ready skills required to read labels, manuals and other basic safety information
4. Method of Assessment	Competency in this unit must be assessed through: 4.1 Practical demonstration 4.2 Third Party Report
5. Resource Implications	5.1 Farm location 5.2 Tools, equipment and outfits appropriate in applying safety measures
6. Context of Assessment	6.1. Assessment may occur in the workplace or in a simulated workplace or as part of a team under limited supervision.

UNIT TITLE : **USE FARM TOOLS AND EQUIPMENT**

UNIT CODE : **AGR321202**

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Select and use farm tools	1.1. Identified appropriate farm tools 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 and equipment are safely used according to job requirements and manufacturers conditions
2. Select and operate farm equipment	2.1. Identify appropriate ***farm equipment*** 2.2. Instructional manual of the farm tools and equipment are carefully read prior to operation 2.3. ***Pre-operation check-up*** is conducted in line with manufacturers manual 2.4. Faults in farm equipment are identified and reported in line with farm procedures 2.5. Farm equipment used according to its function 2.6. Followed safety procedures
3. Perform preventive maintenance	3.1. Tools and equipment are cleaned immediately after use in line with farm procedures 3.2. Routine check-up and maintenance are performed 3.3. Tools and equipment are stored in designated areas in line with farm procedures

RANGE OF VARIABLES

VARIABLE	RANGE
1. Farm equipment	1.1. Engine 1.2. Pumps 1.3. Generators 1.4. Sprayers
2. Farm tools	2.1. Sickle 2.2. Cutters 2.3. Weighing scales 2.4. Hand tools 2.5. Measuring tools 2.6. Garden tools
3. Pre-operation check-up	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 equipments according to manual specification 1.3. Performed preventive maintenance
2. Required Knowledge and Attitudes	2.1. Safety Practices 2.1.1. Ideal good work habits to demonstrate to workers easy and safety standards during operation of farm equipment 2.2. Codes and Regulations 2.2.1. Environmental Compliance Certificate (ECG) 2.2.2. Effective work supervision in the operations of farm equipment 2.3. Tools & Equipment: Uses and Specification 2.3.1. Knowledge in calibrating and use of equipment 2.3.2. Safety keeping of equipments every after use 2.4. Maintenance 2.4.1. Regular upkeep of equipments 2.4.2. Preventive maintenance skills 2.5. Values 2.5.1. Positive outlook towards work 2.5.2. Possesses pre-emptive/anticipatory skills
3. Required Skills	3.1. Ability to recognized defective farm equipment 3.2. Perform proper management practices of safety measures
4. Method of Assessment	Competency in this unit must be assessed through: 4.1. Direct observation 4.2. Practical demonstration 4.3. Third Party Report
5. Resource Implications	Service/operational manual of farm tools and equipment 5.1. Tools and equipment 5.2. Farm implements
6. Context of Assessment	6.1. Assessment may occur in the workplace or in a simulated workplace or as part of a team under limited supervision

UNIT TITLE : PERFORM ESTIMATION AND BASIC CALCULATION

UNIT CODE : AGR321203

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

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
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
2. Perform basic workplace calculation	2.1. ***Calculations*** to be made are identified according to job requirements 2.2. Correct ***method of calculation*** identified 2.3. ***System and units of measurement*** to be followed are ascertained 2.4. Calculation needed to complete work tasks are performed using the four basic process of addition, division, multiplication and subtraction 2.5. Calculate whole fraction, percentage and mixed when are used to complete the instructions 2.6. Number computed in self checked and completed for alignment

RANGE OF VARIABLES

VARIABLE	RANGE
1. Calculations	1.1. Quantity of feeds 1.2. Amount of fertilizer 1.3. Amount of medicines
2. Method of calculation	2.1. Addition 2.2. Subtraction 2.3. Multiplication 2.4. Division 2.5. Ratio and proportion
3. System of measurement	3.1. English 3.2. Metric
4. Units of measurement	4.1. Area 4.2. Volume 4.3. Weight

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. Required Knowledge and Attitudes	2.1. Mathematics 2.1.1. Basic mathematical operations 2.1.2. Percentage and ratios 2.1.3. Unit Conversion 2.1.4. Basic accounting principles and procedures 2.1.4.1. Production cost 2.1.4.2. Sales 2.1.4.3. Accounts receivables/payables 2.2. Systems, Processes and Operations 2.2.1. Knowledge in different management practices and operational procedures Values 2.3.1. Safety consciousness 2.3.2. Time consciousness and management 2.3.3. Cost consciousness 2.3.4. Precision
3. Required Skills	3.1. Ability to perform basic calculation 3.2. Communicate effectively
4. Method of Assessment	Competency in this unit must be assessed through: 4.1. Practical demonstration 4.2. Written examination
5. Resource Implications	5.1. Relevant tools and equipment for basic calculation 5.2. Recommended data
6. Context of Assessment	6.1. Assessment may occur in the workplace or in a simulated workplace or as part of a team under limited supervision

CORE COMPETENCIES

This section gives the details of the contents of the core units of competency required in Rubber Production NCII

UNIT OF COMPETENCY : ESTABLISH RUBBER BUDWOOD AND SEEDLINGS NURSERY

UNIT CODE : AGR 612201

UNIT DESCRIPTOR : This unit covers the knowledge and skills required to select rubber budwood and nursery site, germinate seeds, plant germinated seeds in polybags, perform maintenance activities and establish budwood nursery

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Select rubber budwood and seedlings nursery sites	1.1 Ocular inspection of the site is conducted. 1.2 Soil samples are gathered for analysis in accordance with standard procedures. 1.3 Site is selected based on results of analysis and ***site evaluation***. 1.4 Site selected is secured from stray animals and unauthorized persons.
2. Germinate seeds	2.1 Selection of seeds for rootstocks is made according to ***seed quality standards***. 2.2 Seedbed is prepared following the ***required standards***. 2.3 Seeds are germinated in seedbed according to established farm procedures.
3. Plant germinated seeds	3.1 Land preparation is performed according to established farm procedures and observance of ***safety precautionary measures*** 3.2 Germinated seeds are planted in polybags or directly on ground. 3.3 ***Unhealthy*** seedlings are culled and replaced in accordance to environmental regulations.
4. Establish budwood nursery	4.1 Land preparation is performed accordance to established farm procedures. 4.2 Budded rubber seedling is planted according to ***prescribed procedures and standards*** 4.3 Budded rubber seedlings are planted according to ***clones***. 4.4 ***Routinary maintenance activities*** for seedlings are carried out according to established farm practices. 4.5 ***Safety precautionary measures*** are practiced according to established procedures.
5. Perform maintenance activities	5.1 ***Weeding*** is performed according to established farm procedures 5.2 Drainage is constructed and maintained according to procedures and plan. 5.3 ***Fertilizer*** is applied based on the results of soil analysis and in accordance with the prescribed procedure 5.4 Pruning is performed in accordance with established standard and safety practices.

RANGE OF VARIABLES

VARIABLE	SCOPE
1. Site evaluation	This may include, but is not limited to: 1.1. Water source 1.2. Accessibility (transport) 1.3. Labor/ propagator 1.4. Topography 1.5. Distance to the proposed plantation site 1.6. Distance to the budwood nursery 1.7. Demand of planting materials 1.8. Peace and order 1.9. Potting medium
2. Seed quality standards	This may include, but is not limited to: 2.1. Fresh 2.2. Shiny 2.3. Heavy
3. Required standards	This includes: 3.1 Seedbed size 3.2 Dimension 3.3 Soil medium
4. Safety precautionary measures	This includes: 4.1. Wearing of appropriate personal protective equipment (PPE) 4.2. Handling of tools 4.3. Following instructions of manual in equipment operation 4.4. Awareness and control of various hazards of the operation
5. Unhealthy seedlings	This may include, but is not limited to: 5.1 Diseased 5.2 Slow growing 5.3 Damaged 5.4 Genetically defective

6. Prescribed procedures and standards	This may include, but is not limited to: 6.1. Distance of planting 6.2. Depth and size of the holes
7. Clones	This may include, but is not limited to: 7.1. RRIM 600 7.2. PB 260 7.3. PB 330 7.4. TJIR 1 7.5. RRIM 712 7.6. PB 235 7.7. PB 350 7.8. PR107 7.9. NSIC (National Seed Industry Council) recommended clones
8. Routinary maintenance activities	These includes the following: 8.1. watering 8.2. weeding 8.3. fertilization 8.4. spraying of insecticide and fungicide 8.5. pruning
9. Weeding	This may include, but is not limited to: 9.1. Tree row/Strip weeding 9.2. Inter-row/General weeding 9.3. Round weeding 9.4. Rolling over tall weeds 9.5. Application of herbicides
10. Fertilizer	This includes: 10.1. Organic/Compost 10.2. Inorganic/chemicals/synthetics

EVIDENCE GUIDE

1. Critical Aspects of Competency:	Assessment requires evidence that the candidate: 1.1 Established nursery for rubber plant seedlings and budwoods. 1.2 Germinated rubber plant seeds. 1.3 Planted germinated seeds 1.4 Grew high-yielding budded clones of seedlings. 1.5 Produced quality planting materials 1.6 Performed routinary maintenance activities.
2. Required Knowledge and Skills	2.1. Knowledge, Theory, Practices and Systems Operations 2.1.1. Nursery establishment and operations 2.1.2. Seed selection and clonal identification. 2.1.3. Soil analysis 2.1.4. Germinating rubber seeds 2.1.5. Growing rubber seedlings. 2.1.6. Planting germinated seeds 2.1.7. Signs and symptoms of unhealthy /diseased rubber seedlings, budwoods and plants 2.1.8. Insect pest of rubber plant 2.1.9. Types of weeds 2.1.10. Types of chemicals 2.1.11. Technical specifications of plan 2.1.12. Pruning 2.1.13. Trenching 2.1.14. Types of fertilizer 2.1.15. Different cover crops 2.1.16. Compost 2.1.17. Green and brown budding 2.1.18. Practice of 3Rs and 5S 2.1.19. Program of work activities are implemented as scheduled 2.2. Communication 2.2.1. Prepare and submit required reports 2.3. Mathematics and Mensuration 2.3.1. Basic mathematical operations 2.3.2. Production recording 2.3.3. Percentages and rations 2.4. Safety Practices 2.4.1. Proper application of chemicals such as fertilizer, pesticides and insecticides. 2.4.2. Proper application use of tools, farm implements and equipment. 2.4.3. Wear appropriate PPE 2.4.4. Proper spraying techniques

	2.4.5. Safety procedures in handling and storage of chemicals 2.4.6. Disposal of chemicals and containers 2.5. Codes and Regulations 2.5.1. Comply with DA, DENR, FPA Laws, Rules and Regulations 2.6. Materials, Tools & Equipment: Uses, Specifications and Maintenance 2.6.1. Tools and Equipment 2.6.1.1. Can understand and follow instructional manuals 2.6.1.2. Safe keeping of equipments every after use 2.6.2. Materials 2.6.2.1. Where to source good quality supplies, materials and equipment needed in the operation of the farm 2.6.3. Maintenance 2.6.3.1. Regular upkeep of equipments and facilities 2.6.3.2. Preventive maintenance skills 2.7. Values 2.7.1. Honesty 2.7.2. Patient 2.7.3. Time conscious 2.7.4. Sincerity 2.7.5. Positive attitudes towards tasks assignment' 2.7.6. Safety consciousness 2.7.7. Resourcefulness 2.7.8. Cost consciousness
3. Required Skills	3.1 Using tools and operating simple farm implements/equipment including basic maintenance, simple repair and storage. 3.2 Reading and following lay-out plan 3.3 Lay-outing and staking 3.4 Measuring area and distances 3.5 Selecting seed and identifying clone 3.6 Planting germinated seedlings and budwoods 3.7 Applying appropriate weed control measures 3.8 Handling of fertilizers, herbicides, insecticides and other chemicals. 3.9 Identifying of diseased/unhealthy seedlings 3.10 Pruning and trenching 3.11 Performing other routinary maintenance activities 3.12 Reading technical report and communicating in the workplace. 3.13 Monitoring and data recording

4. Method of Assessment	Competency in this unit must be assessed through: 4.1 Demonstration with questioning 4.2 Interview 4.3 Portfolio 4.4 Third party report
5. Resource Implications	5.1 All supplies, materials and equipment needed during the operations should be readily available at site. These include: 5.1.1 Tools and farm implements use in clearing and land preparation. 5.1.2 PPE (Personal Protective Equipment) 5.1.3 Soil sampler 5.1.4 Seeds 5.1.5 Seedlings 5.1.6 Planting materials (recommended clones) 5.1.7 Polybags 5.1.8 Fertilizers 5.1.9 Insecticides/pesticides/ herbicides/fungicides 5.1.10 Sprayers 5.1.11 Digging tools 5.1.12 Plan 5.1.13 Pruning tools and equipment 5.2 All workers involved in different activities must be fully oriented and cautioned on the different specific work activities of the farm 5.3 Technical supervisors should have skills and ability in the successful implementation of work program activities
6. Context of Assessment	6.1. Assessment may occur in an appropriately simulated environment through TESDA accredited assessment centers

UNIT OF COMPETENCY : PLANT RUBBER TREES/RUBBER SEEDLINGS

UNIT CODE : AGR 612202

UNIT DESCRIPTOR : This unit covers the knowledge and skills required to select planting site, conduct land preparation, perform site laying-out and staking, plant poly-bagged, budded rubber seedling and perform maintenance activities.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Select planting site	1.1. Ocular inspection of the site is conducted . 1.2. Soil samples are gathered for analysis in accordance with standard procedures. 1.3. Site is selected based on results of analysis and ***suitability of area.***
2. Conduct land preparation	2.1. ***Clearing operation*** is carried-out in accordance with enterprise policy 2.2. Drainage and canals are prepared in accordance with the technical plan. 2.3. ***Safety precautions*** are practiced according to enterprise procedures.
3. Perform site lay-outing and staking	3.1 Site is laid out and staked according to the preference of the rubber growers/farmers 3.2 Holes are dug according to plan
4. Plant poly-bagged, budded rubber seedling	4.1. Seedlings are distributed on the holes according to plan. 4.2. Basal ***fertilizer*** is applied according to the result of soil analysis 4.3. Seedlings are planted based on established farm procedures.
5. Perform maintenance activities	5.1 ***Weeding*** is performed according to established farm procedures 5.2 ***Insect/disease control and preventio***n is employed as needed. 5.3 Drainage is maintained according to standards. 5.4 Branch induction is conducted in accordance with established farm practices. 5.5 Pruning is performed in accordance with enterprise standard and safety practices. 5.6 Replanting is carried-out as needed.

RANGE OF VARIABLES

VARIABLE	SCOPE
1. Suitability of area	This pertains to the following: 1.1 Terrain 1.2 Soil suitability 1.3 Availability of labor force 1.4 Accessibility
2. Clearing operation	This may include the following but is not limited to: 2.1 Tree felling 2.2 Heaping and burning 2.3 Slashing 2.4 Plowing 2.5 Harrowing 2.6 Terracing 2.7 Drainage
3. Safety precautions	These refers to the following: 3.1 Wearing of appropriate personal protective equipment (PPE) 3.2 Handling of tools 3.3 Following instructions of manual in equipment operation 3.4 Awareness and control of various hazards of the operation
4. Fertilizer	This includes the following: 4.1 Organic/Compost 4.2 Inorganic/chemicals/synthetics
5. Weeding	This includes the following but is not limited to: 5.1 Tree row/Strip weeding 5.2 Inter-row/General weeding 5.3 Round weeding 5.4 Rolling over tall weeds 5.5 Application of herbicides
6. Insect/disease control and prevention	These refers to the following: 6.1 Cover cropping 6.2 Intercropping 6.3 Fogging/dusting

EVIDENCE GUIDE

1. Critical Aspects of Competency:	Assessment requires evidence that the candidate: 1.1. Prepared site for planting seedlings. 1.2. Transplanted poly-bagged, budded rubber seedlings 1.3. Safety precautions are practiced in the conduct of land preparations
2. Required Knowledge and Skills	2.1. Knowledge, Theory, Practices and Systems Operations 2.1.1. Soil characterizations 2.1.2. Rubber-based farming system 2.1.3. Uses and application of tools and farm implements 2.1.4. Digging canals and drainage 2.1.5. Land preparation 2.1.6. Practice 3Rs and 5S 2.1.7. Program of work activities are implemented as scheduled 2.2. Communication 2.2.1. Prepare and submit required reports 2.3. Mathematics and Mensuration 2.3.1. Basic mathematical operations 2.3.2. Percentages and rations 2.3.3. Measuring distances 2.4. Safety Practices 2.4.1. Proper application of chemicals such as fertilizer, pesticides and insecticides. 2.4.2. Proper application use of tools, farm implements and equipment. 2.4.3. Wear appropriate PPE 2.4.4. Proper spraying techniques 2.4.5. Safety procedures in handling and storage of chemicals 2.4.6. Disposal of chemicals and containers 2.5. Codes and Regulations 2.5.1. Comply with DA, DENR, FPA Laws, Rules and Regulations 2.6. Materials, Tools & Equipment: Uses, Specifications and Maintenance 2.6.1. Tools and Equipment 2.6.1.1. Can understand and follow instructional manuals 2.6.1.2. Safe keeping of equipments every after use 2.6.2. Materials 2.6.2.1. Where to source good quality supplies, materials and equipment needed in the operation of the farm 2.6.3. Maintenance 2.6.3.1. Regular upkeep of equipments and facilities 2.6.3.2. Preventive maintenance skills 2.7. Values

	2.7.1. Honesty 2.7.2. Patient 2.7.3. Time conscious 2.7.4. Sincerity 2.7.5. Positive attitudes towards tasks assignment' 2.7.6. Diligence and Perseverance
3.Required Skills	3.1. Planting rubber trees 3.2. Using of tools and farm implements including maintenance and simple repair. 3.3. Monitoring and data recording 3.4. Reading and following layout plan 3.5. Skill in measurement of area and distances
4. Method of Assessment	Competency in this unit must be assessed through: 4.1. Demonstration 4.2. Oral questioning 4.3. Third party report
5. Resource Implications	5.1. All supplies, materials and equipment needed during farm operations should be readily available at the farm site • Tools and farm implements use in activities such as clearing and plowing sites, digging, among others. • PPE • Soil sampler • Fertilizers • Insecticides/pesticides • Layout plan • Digging tools • Stakes • Sprayer 5.2. All workers involved in different activities must be fully oriented and cautioned on the different specific work activities of the farm 5.3. Technical supervisors should have skills and ability in the successful implementation of work program activities
6. Context of Assessment	6.1. Assessment may occur in an appropriately simulated environment through TESDA accredited assessment centers

UNIT OF COMPETENCY : PERFORM BUDDING OPERATION

UNIT CODE : AGR612203

UNIT DESCRIPTOR : This unit covers the knowledge and skills required to prepare for budding, harvest, handle and transport budsticks, perform actual budding/rebudding and cutback the seedlings.

ELEMENT	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range of Variables
1. Prepare for budding operation	1.1 Appropriate ***tools and materials*** are identified in accordance with the job requirement. 1.2 Sharpening of budding knife is perform following prescribed procedure. 1.3 Budding tape is prepared in accordance to required size. 1.4 ***Cleanliness*** is implemented during budding operation 1.5 Conditioning of seedling stock and budstick/budwood is done in accordance with the established standards.
2. Harvest, handle and transport budsticks	2.1 Selection of budstick/budwood is conducted in accordance with the established standards. 2.2 Harvesting (cutting)of budsticks/budwoods is conducted in accordance with the established procedures. 2.3 Cut-ends of harvested budsticks/budwoods are treated with melted paraffin wax. 2.4 Treated budsticks/budwoods are packed and transported in accordance with the standard practices.
3. Perform actual budding/rebudding	3.1 Selection of seedling rootstocks is conducted in accordance with the established standards. 3.2 Budding/rebudding operation is performed according to established procedures. 3.3 Budded rootstock is opened 21 days after budding. 3.4 ***Safety precautions*** are practice according to enterprise procedures.
4. Cutback the seedlings	4.1 Successfully budded seedlings is cutback according ***accepted procedures.*** 4.2 Cutback seedlings are segregated 7 days after cutting. 4.3 Cutback budded seedlings are maintained according to ***established farm practices.***

RANGE OF VARIABLES

VARIABLE	SCOPE
1. Tools and materials	Tools and materials include the following but is not limited to: 1.1 Budding knife 1.2 Budding tape 1.3 Clean rag 1.4 Disinfectant
2. Cleanliness	This refers to the following: 2.1 Washing and sanitation of tools to be used 2.2 Cleaning and sanitation of work area 2.3 Practice of cleanliness and personal hygiene of the budder
3. Safety precautions	This may include but not limited: 3.1 Proper handling of budding knife 3.2 Wear protective gloves
4. Accepted procedures	This may include but not limited: 4.1 7-14 days after opening 4.2 Length not less than 100 mm from the budpatch
5. Established farm practices.	This may include but not limited: 5.1 Pruning of sideshoots growing from the rootstocks 5.2 Control of pests and diseases 5.3 Application of fertilizers 5.4 Lifting of the polybags 5.5 Watering 5.6 Weeding

EVIDENCE GUIDE

1. Critical Aspects of Competency:	Assessment requires evidence that the candidate: 1.1 Budded seedlings at the right leaf stages. 1.2 Selected robust/vigorous seedlings 1.3 Selected and harvested healthy budsticks/budwoodsand and at the right leaf stages 1.4 Performed appropriate budding operations (green or brown budding) 1.5 Treated,packed and transported budsticks/budwoods 1.6 Conducted cutback
2. Required Knowledge and Attitude	2.1. Knowledge, Theory, Practices and Systems Operations 2.1.1. Proper use of budding tools and materials 2.1.2. Kind of sharpening tools and sharpening techniques 2.1.3. Techniques in cutting budding tape 2.1.4. Physical appearance of the conditioned seedlings and scion 2.1.5. Appropriate budding operation (brown or green budding 2.1.6. Selecting and harvesting budsticks/budwoods 2.1.7. Proper packaging of budsticks / budwood 2.1.8. Proper handling of budding knife in doing incision 2.1.9. Proper extraction of budpatch, ensuring the presence of budeye 2.1.10. Technique in tying securely not pressing the budeye 2.1.11. Technique in knowing the length (cm) of the remaining stem (stock) 2.1.12. Practice 3Rs and 5S 2.1.13. Program of work activities are implemented as scheduled 2.2. Communication 2.2.1. Prepare and submit required reports 2.3. Mathematics and Mensuration 2.3.1. Basic mathematical operations 2.4. Safety Practices 2.4.1. Proper application use of tools, farm implements and equipment. 2.4.2. Wear appropriate PPE 2.4.3. Proper waste disposal 2.5. Codes and Regulations 2.5.1. Comply with DA, DENR, FPA Laws, Rules and Regulations 2.6. Materials, Tools & Equipment: Uses, Specifications and Maintenance 2.6.1. Tools and Equipment 2.6.1.1. Can understand and follow instructional manuals 2.6.1.2. Safe keeping of equipments every after use 2.6.2. Materials

	2.6.2.1. Where to source good quality supplies, materials and equipment needed in the operation of the farm 2.6.3. Maintenance 2.6.3.1. Regular upkeep of equipments and facilities 2.6.3.2. Preventive maintenance skills 2.7. Values 2.7.1. Patient 2.7.2. Positive attitudes towards tasks assignment 2.7.3. Efficient
3. Required Skills	3.1. Skills in sharpening budding knife and cutting of budding tape 3.2. Able to identify conditioned seedlings and budsticks/budwood for budding 3.3. Able to identify compatibility of stock and scion. 3.4. Able to identify leaf stages of stock and scion due for budding 3.5. Ability to make correct incision of the seedling stock and of the budpatch 3.6. Can demonstrate the right procedures of budding. 3.7. Can demonstrate cutback of seedlings
4. Method of Assessment	Competency in this unit must be assessed through: 4.1. Demonstration with questions 4.2. Oral questioning
5. Resource Implications	5.1. All supplies, materials and farm implements needed during farm operations should be readily available at the farm site 5.1.1 Budding knife 5.1.2 Sharpening tool 5.1.3 Budding tape 5.1.4 Clean rag 5.1.5 Disinfectant 5.1.6 PPE 5.1.7 Budsticks/ budwood 5.1.8 Seedling stock and scion 5.2. All workers involved in different activities must be fully oriented and cautioned on the different specific work activities of the farm 5.3. Technical supervisors should have skills and ability in the successful implementation of work program activities
6. Context of Assessment	6.1. Assessment may occur in an appropriately simulated environment through TESDA accredited assessment centers

UNIT OF COMPETENCY : HARVEST LATEX

UNIT CODE : AGR612204

UNIT DESCRIPTOR : This unit covers the knowledge and skills required to perform tapping and collecting which perform dotting and marking of rubber trees, install tapping materials, prepare tools and materials for tapping, perform tapping and collect latex and cuplumps.

ELEMENTS	PERFORMANCE CRITERIA ***Italicized*** terms are elaborated in the Range Statement
1. Identify tappable trees	1.1 Tappable trees are identified according to ***standard criteria***. 1.2 ***Dot*** on tappable trees are placed in accordance with the standard. 1.3 Trees are marked in accordance with the ***marking standards***.
2. Open the tapping panel	2.1 ***Tools and materials*** for tapping are prepared and inspected. 2.2 Tapping panel is opened based on ***standard procedures.*** 2.3 Tapping materials are installed in accordance with the standards and requirements.
3. Perform tapping and collect ion latex or cuplumps/scrap	3.1 Tapping is performed in accordance with the ***standards.*** 3.2 Materials in collecting latex are prepared 3.3 ***Coagulants/anti-coagulant*** are prepared in accordance with prescribed standards. 3.4 Latex and cuplump/scrap is collected and stored according to established farm standards. 3.5 Coagulants are applied in latex for cuplump or coagulum production.

RANGE OF VARIABLES

VARIABLE	SCOPE
1. Standard criteria	Budded trees have: 1.1 45 cm trunk in circumference 1.2 1.5 m from the ground or stock-scion union Seedling trees have: 1.3 45 cm trunk in circumference 1.4 0.75 m from the ground
2. Dot	This includes: 2.1 1 dot 43 centimeter 2.2 dots 44 centimeter 2.3 dot 45 centimeter 2.4 dot 46 centimeter
3. Marking standards	This includes: Budded trees 3.1 Height 1.50 m from the ground or stock-scion union 3.2 Angle of slope of the tapping cut for downward tapping 30 degree 3.3 Angle of slope of the tapping cut for upward tapping 45 degree 3.4 Front and back canals depend on the length of the tapping cut adopted. Seedling trees 3.5 Height 0.75 m from the ground 3.6 Angle of slope of the tapping cut for downward tapping 25 degree 3.7 Angle of slope of the tapping cut for upward tapping 45 degree 3.8 Front and back canals depend on the length of the tapping cut adopted.
4. Tools and materials	This may include but not limited to: 4.1 Personal Protective Equipment 4.1.1 Rubber boots 4.1.2 Head gear 4.1.3 Googles 4.1.4 Body protector (jacket etc.) 4.1.5 Gloves 4.1.6 Mask 4.2 Brush for upward tapping 4.3 Coagulants/Anti-coagulant 4.4 Tapping knife

	4.5 Spout 4.6 Cup holder 4.7 Wire Spring 4.8 Collecting cup 4.9 Template 4.10 String 4.11 Collecting pail/bucket/container 4.12 Balancer 4.13 Scoop
5. Standard procedures	This may include: 5.1 Height of the tapping cut 5.2 Length of the tapping cut 5.3 Angle of slope of the tapping cut
6. Standards	This may include: 6.1 For tappers: 6.1.1 Proper handling of tapping knife 6.1.2 Proper footwork/stepping For bark consumption: 6.1.3 1.2-1.6 mm per tapping (2.2 - 2.5 cm per month bark consumption)S/2, d/2 downward tapping 6.1.4 mm per tapping (2.5-3cm per month bark consumption) S/2, d/2 upward tapping 6.2 Length of tapping cut 6.2.1 S/2 (1/2 of the tree circumference) 6.3 Angle of the slope of the tapping cut 6.3.1 Budded-30 degree 6.3.2 Seedling -25 degree 6.4 Time of tapping 6.4.1 As early as possible before sunrise and tapping task should be finished within 3 hours 6.4.2 No more tapping task should be done after 9:00 AM 6.5 Depth of tapping cut 6.5.1 1 mm away from the cambium layer 6.6 Tapping speed 6.6.1 20-25 seconds/tree
7. Coagulants /anti-coagulant	This may include: 7.1 Formic acid 7.2 Acetic acid 7.3 Anti-coagulant (liquid ammonia, sodium bisulfite, others)

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1. Dotted and marked tappable rubber trees 2. Installed tapping materials 3. Performed tapping
2. Required Knowledge and Attitudes	2.1. Knowledge, Theory, Practices and Systems Operations 2.1.1. Criteria of tappability 2.1.2. Techniques in opening tappable trees 2.1.3. Installation techniques of tapping materials 2.1.4. Tools for tapping and their functions 2.1.5. Sharpening technique for tapping knife 2.1.6. Importance of sharp tapping knife 2.1.7. Importance and maintenance of bark consumption 2.1.8. Purpose of coagulants 2.1.9. Uses and importance of the latex/cuplump collecting materials. 2.1.10. Standard coagulants solution set by enterprise 2.1.11. Handling of latex and cuplumps 2.1.12. Practice 3Rs and 5S 2.1.13. Parts and functions of specific tools and farm implements use in tapping 2.1.14. Program of work activities are implemented as scheduled 2.2. Communication 2.2.1. Prepare and submit required reports 2.2.2. Documentation of harvesting operations 2.3. Mathematics and Mensuration 2.3.1. Basic mathematical operations 2.3.2. Percentage and parts per ppm 2.3.3. Unit conversion 2.4. Safety Practices 2.4.1. Proper application use of tools, farm implements and equipment. 2.4.2. Proper use of cutting tools 2.4.3. Wear appropriate PPE 2.4.4. Handling of chemicals 2.4.5. Proper waste disposal 2.5. Codes and Regulations 2.5.1. Comply with DA, DENR, FPA Laws, Rules and Regulations 2.5.2. Within the codes and regulations set by Bureau of Plant Industry 2.6. Materials, Tools & Equipment: Uses, Specifications and Maintenance 2.6.1. Tools and Equipment 2.6.1.1. Can understand and follow instructional manuals 2.6.1.2. Safe keeping of equipments every after use 2.6.2. Materials

	2.6.2.1. Where to source good quality supplies, materials and equipment needed in the operation of the farm 2.6.3. Maintenance 2.6.3.1. Regular upkeep of equipments and facilities 2.6.3.2. Preventive maintenance skills 2.7. Values 2.7.1. Safety consciousness 2.7.2. Time consciousness and management 2.7.3. Resourcefulness 2.7.4. Cost consciousness 2.7.5. Diligence 2.7.6. Determined 2.7.7. Observes hygiene
3. Required Skills	3.1. Placing marks 3.2. Sharpening tapping knife 3.3. Collecting tread lace, cleaning of collecting cups and tapping 3.4. Performing tapping procedure such as installation of tapping materials 3.5. Preparing/mixing of coagulants and applying 3.6. Collecting/Harvesting latex/cup lump 3.7. Basic mathematical skills 3.8. Skills in preparation of reports 3.9. Oral and written communication
4. Method of Assessment	Competency in this unit must be assessed through: 4.1. Direct observation and questioning of the trainee 4.2. Demonstration 4.3. Third Party Report,
5. Resource Implications	5.1 All supplies, materials and farm implements needed during farm operations should be readily available at the farm site: • Rubber plantation • Tools and equipment essential to rubber harvesting • Trained/tamed work animals • Supplies and materials in harvesting procedures 5.2 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 5.3 Technical supervisors should have skills and ability in the successful implementation of work program activities
6. Context of Assessment	6.1. Assessment may occur in an appropriately simulated environment through TESDA accredited assessment centers

SECTION 3 TRAINING STANDARDS

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

3.1 CURRICULUM DESIGN

Course Title: **RUBBER PRODUCTION** Level: **NC II**

Nominal Training Duration:

18 hrs -	Basic Competencies
14 hrs -	Common Competencies
290 hrs-	Core Competencies
80 hrs.	SIT/OJT
322 hrs-	Total training duration

Course Description:

This course is designed to enhance the knowledge, desirable skills and attitudes of Rubber Production NCII in accordance with industry standards. It covers core competencies such as: establish rubber budwood and seedlings nursery, plant rubber trees/rubber seedlings, perform budding operation and harvest latex.

BASIC COMPETENCIES
(18 hrs.)

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Participate in workplace communication	1.1 Obtain and convey workplace information. 1.2 Complete relevant work related documents. 1.3 Participate in workplace meeting and discussion.	• Group discussion • Interaction	• Demonstration • Observation • Interviews/ questioning
2. Work in a team environment	2.1 Describe and identify team role and responsibility in a team. 2.2 Describe work as a team member.	• Discussion • Interaction	• Demonstration • Observation • Interviews/ questioning
3. Practice career professionalism	3.1 Integrate personal objectives with organizational goals. 3.2 Set and meet work priorities. 3.3 Maintain professional growth and development.	• Discussion • Interaction	• Demonstration • Observation • Interviews/ questioning

4. Practice occupational health and safety	4.1 Evaluate hazard and risks 4.2. Identify hazards and risks 4.3. Control hazards and risks 4.4. Maintain occupational health and safety awareness	• Discussion • Plant tour • Symposium	• Observation • Interview

COMMON COMPETENCIES

(14 hrs.)

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Apply safety measures in farm operations	1.1. Determine areas of concern for safety measures 1.2. Apply appropriate safety measures 1.3. Safekeep/maintain/ dispose tools, materials and outfit.	• Self-paced/modular • Lecture/ Discussion • Interaction • Practical Demonstration • Visit/tour	• Oral/Written Interviews • Direct Observation • Practical Demonstration
2. Use farm tools and equipment	2.1. Prepare and use farm tools 2.2. Prepare and operate farm equipment 2.3. Perform preventive maintenance procedures/practices	• Self-paced/modular • Lecture/ Discussion • Interaction • Practical Demonstration • Visit/tour	• Oral/Written Interviews • Direct Observation • Practical Demonstration
3. Perform estimation and basic calculation	3.1. Perform estimation 3.2. Perform basic workplace calculation	• Self-paced/modular • Lecture/ Discussion • Interaction • Practical Exercise	• Oral/Written examination • Practical exercise

CORE COMPETENCIES
(290 hrs.)

Unit of Competency	Learning Outcomes	Methodology	Assessment Approach
1. Establish rubber budwood and seedlings nursery	1.1. Select rubber budwood and seedlings nursery sites 1.2. Germinate seeds 1.3. Plant germinated seeds 1.4. Establish budwood nursery 1.5. Perform maintenance activities	• Discussion • Lecture • Demonstration • Simulation	• Demonstration and questioning • Direct observation with questioning • Written examination
2. Plant rubber trees/rubber seedlings	2.1 Select planting site 2.2 Conduct land preparation 2.3 Perform lay-outing and staking 2.4 Plant polybagged, budded rubber seedlings 2.5 Perform maintenance activities	• Discussion • Lecture • Demonstration • Simulation • Hands on • SIT/OJT	• Demonstration and questioning of related underpinning knowledge • Written examination • Practical performance
3. Perform budding operation	3.1 Prepare for budding operation 3.2 Harvest, handle and transport budsticks 3.3 Perform actual budding and rebudding 3.4 Cutback the seedlings	• Discussion • Lecture • Demonstration • Simulation • Hands on	• Demonstration and questioning of related underpinning knowledge • Written examination • Practical performance
4. Harvest latex	4.1. Identify tappable trees 4.2. Open tapping panel 4.3. Perform tapping and collecting latex, cuplumps/scrap	• Discussion • Lecture • Demonstration • Simulation • Hands on • SIT/OJT	• Demonstration and questioning of related underpinning knowledge • Written examination • Practical performance

TRAINING DELIVERY

The delivery of training should adhere to the design of the curriculum. Delivery should be guided by the 10 basic principles of competency-based TVET.

- The training is based on curriculum developed from the competency standards;
- Learning is modular in its structure;
- Training delivery is individualized and self-paced;
- Training is based on work that must be performed;
- Training materials are directly related to the competency standards and the curriculum modules;
- Assessment is based in the collection of evidence of the performance of work to the industry required standard;
- Training is based both on and off-the-job components;
- Allows for recognition of prior learning (RPL) or current competencies;
- Training allows for multiple entry and exit; and
- Approved training programs are nationally accredited.

The competency-based TVET system recognizes various types of delivery modes, both on and off-the-job as long as the learning is driven by the competency standards specified by the industry. The following training modalities may be adopted when designing training programs:

- The dualized mode of training delivery is preferred and recommended. Thus programs would contain both in-school and in-industry training or fieldwork components. Details can be referred to the Dual Training System (DTS) Implementing Rules and Regulations.
- Modular/self-paced learning is a competency-based training modality wherein the trainee is allowed to progress at his own pace. The trainer facilitates the training delivery
- Peer teaching/mentoring is a training modality wherein fast learners are given the opportunity to assist the slow learners.
- Supervised industry training or on-the-job training is an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire specific competencies prescribed in the training regulations.
- Distance learning is a formal education process in which majority of the instruction occurs when the students and instructor are not in the same place. Distance learning may employ correspondence study, or audio, video or computer technologies.
- Project-Based Instruction is an authentic instructional model or strategy in which students plan, implement and evaluate projects that have real world applications.

3.3 TRAINEE ENTRY REQUIREMENTS

Trainees or students wishing to enroll in this course should possess the following requirements.

- Able to read and write;
- With good moral character;
- Ability to communicate, both oral and written
- Physically fit and mentally healthy as certified by a Public Health Officer

3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS

RUBBER PRODUCTION– NC II

Recommended list of tools, equipment and materials for the training of 25 trainees for Rubber Production NC II

RESOURCES:

SUPPLIES AND MATERIALS		TOOLS		EQUIPMENT	
Qty	Description	Qty	Description	Qty	Description
4cans 500 seedlings 25 budsticks	• Seeds and clones • Seedling stock and budsticks/budwoods	4pcs 4pcs 4sets 4sets	• Soil sampler • Sprayers • Digging tools • Pruning tools	1	• Training facilities (lecture room, workshop/laboratory area, chairs and tables, computer, etc.)
500pcs 1sack 1qrts each 4pcs 100 500pcs 25pcs 25pcs	• Polybags • Fertilizers • Insecticides/pesticides/ Herbicides • Layout plan • Stakes • Budding tape • Clean rag • Supplies and materials in harvesting	4sets 25pcs 25pcs 25pcs	• Tools and farm implements use in activities such as clearing and plowing sites, digging, among others • Budding knife • Sharpening tool • Tapping knife	1	• Simulated workplace (nursery, greenhouse, rubber plantations, farm/field, among others) with facilities including practice trees
8pcs 1liter 25pcs 25pcs 4sacks 1 1 4 4	• Brush for upward tapping • Coagulants/Anti-coagulant • Wire Spring • String • Propagating media • Growing media • Seed box • Detergent soap • Broom stick	25pcs 25pcs 25pcs 25pcs 25pcs 25pcs 4pcs 4pcs 4pcs 4pcs 4pcs 4pcs	• Spout • Cup holder • Collecting cup • Template • Collecting pail/bucket/ container • Balancer • Scoop • Bolo • Calculator • Sprinklers	4sets	• Pruning equipment

SUPPLIES AND MATERIALS		TOOLS		EQUIPMENT	
Qty	Description	Qty	Description	Qty	Description
4 4sacks 1 set 4pcs 4rms 25pcs 25pcs 25pcs	• Trash can • Compost • First aid supplies/medicines • Sacks • Bond paper • Clips • Marking pens • Paper Pencils	4pcs 8pcs 4pcs 4pcs 4pcs 4pcs 4pcs 4pcs	• Pick mattock • Storage tools/cabinet • Trowel • Scissors • Rake • Broomstick • Seedling tray • Shovel	4sets 4sets 1 1 1 1 1 1	• Equipment essential to rubber harvesting • Protective clothing equipment or PPE which includes: ○ Rubber boots ○ Head gear ○ Googles ○ Body protector (jacket etc.) ○ Gloves ○ Mask • Power sprayer Portable chainsaw • Irrigation system • DVD player • LCD projector • Service vehicle • Storage room
TRAINING MATERIALS:					
5copies 2copies 5copies 5copies	• Brochures • Visual aids • Reference manuals • Procedural manuals	2copies 2copies	• Instructional supplies and materials (DVD, VCD, PPT, Prints, etc.) • Reference materials/books		• Data (result of soil analysis) • Soil samples analysis

3.5 TRAINING FACILITIES

RUBBER PRODUCTION NC II

Based on a class size of 25 students/trainees

SPACE REQUIREMENT	SIZE IN METERS	TOTAL AREA IN SQ. METERS
A. Building (permanent)		**170.30**
• Lecture Room/Workshop		40.00
• Learning Resource Center	3.00 x 5.00	15.00
• Facilities/Equipment/ Circulation Area (30% of teaching accommodation)		99.30
• Store Room	4.00 x 4.00	16.00
B. **Experimental Rubber Farm**		**10,000.00 (1ha)**

3.6 TRAINER'S QUALIFICATIONS FOR AGRI-FISHERY SECTOR

Trainers who will deliver the training on RUBBER PRODUCTION NC II should be holders of National TVET Trainer Certificate Level I (NTTC I). The following are the requirements for NTTC I :

- Must be a holder of Rubber Production NC II or its equivalent
- Must be a holder of Trainers Methodology Certificate Level I (TMC I)
- Must be physically and mentally fit
- *Must have at least 2 years job/industry experience

* Optional. Only when required by the hiring institution.
Reference: TESDA Board Resolution No. 2010-05
TESDA Circular No. 135, 2011

3.7 INSTITUTIONAL ASSESSMENT

Institutional Assessment is undertaken by trainees to determine their achievement of units of competency. A certificate of achievement is issued for each unit of competency.

SECTION 4 NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1 To attain the National Qualification of Rubber Production NC II, the candidate must demonstrate competence in all units listed in Section 1. Successful candidates shall be awarded a National Certificate signed by the TESDA Director General.

4.2 The qualification of Rubber Production NC II may be attained through:

4.2..1. Accumulation of Certificates of Competency (COCs) in the following areas:

4.2.1.1. Establish rubber budwood and seedlings nursery
4.2.1.2. Perform Budding Operation
4.2.1.3. Plant rubber trees/rubber seedlings
4.2.1.4. Harvest Latex

Successful candidates shall be awarded Certificates of Competency (COCs) bearing the signature of the Regional Director and Chair of the recognized local industry body.

4.2..2. Demonstration of competence through project-type assessment covering all required units of qualification

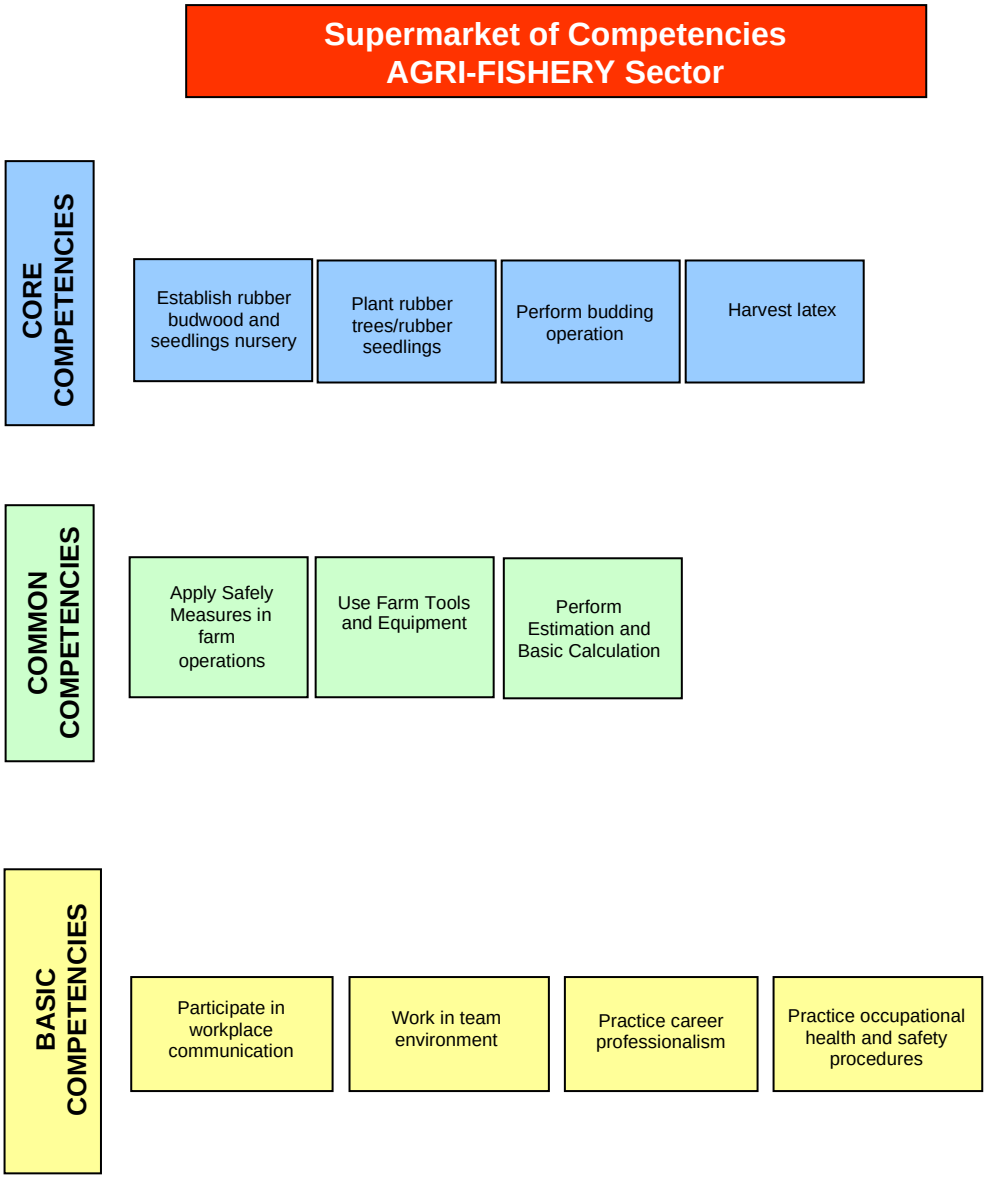
4.2. Assessment shall focus on the core units of competency. The tool and common units shall be integrated or assessed concurrently with the core units.

4.3. Candidates can be assessed on individual units of competency and be issued Certificates of Competency if found competent. Certificates of Competency shall bear the signature of the Regional Director and Chair of the recognized local industry body.

4.4. The following are qualified to apply for assessment and certification:

4.4.1. Graduates of formal, non – formal and informal including enterprise – based training programs
4.4.2. Experienced workers (wage employed or self – employed)

4.9. The guidelines on assessment and certification are discussed in detail in the *Procedures Manual on Assessment and Certification* and *Guidelines on the Implementation of the Philippine TVET Qualification and Certification System* **(PTQCS).**


Supermarket of Competencies
AGRI-FISHERY Sector
CORE COMPETENCIES
Establish rubber budwood and seedlings nursery
Plant rubber trees/rubber seedlings
Perform budding operation
Harvest latex
COMMON COMPETENCIES
Apply Safely Measures in farm operations
Use Farm Tools and Equipment
Perform Estimation and Basic Calculation
BASIC COMPETENCIES
Participate in workplace communication
Work in team environment
Practice career professionalism
Practice occupational health and safety procedures

DEFINITION OF TERMS

- **Budder –**one that performs budding operations

- **Budding -**is a form of asexual reproduction in which a new organism grows on another one. The new organism remains attached as it grows, separating from the parent organism only when it is mature. Since the reproduction is asexual, the newly created organism is a clone and is genetically identical to the parent organism. A new organism grows from an outgrowth or bud on the parent.

- **Fumigant** – a chemical compound which acts in the gaseous state to destroy insects and their larvae.

- **Fumigation** – the process of treating stored products with insecticides/pesticides and the like in fumes or vapor form.

- **Insect pest** – a destructive or harmful insect.

- **Irrigation** - any method of supplying water to sustain plant growth

- **Latex-** as found in nature is a milky fluid found in 10% of all flowering plants (angiosperms). It is a complex emulsion consisting of proteins, alkaloids, starches, sugars, oils, tannins, resins, and gums that coagulates on exposure to air. It is usually exuded after tissue injury. In most plants, latex is white, but some have yellow, orange, or scarlet latex.

- **Standard** – the set of criteria and specifications of quality determining the grades, described as product characteristics such as maturity, color, cleanliness, shape, free from decay and blemishes and uniformity of size.

- **Tappers-** performs tapping job

- **Tapping (Rubber)** is the process by which the sap (latex) is collected from a rubber tree. An incision is made in the tree's bark, which cuts through the planting cycle to optimise the latex yield.

- **Transplants** –seedlings produced for transplanting

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