# PROGRAM AND BOOK OF ABSTRACTS

1st International Transborder
Conference of the Timor Island:

## TIMOR, SCIENCE WITHOUT BORDERS

**Jointly organized by**
Universitas Nusa Cendana,
Indonesia

Universidade Nacional Timor
Lorosa'e, Timor-Leste

DILI, 07-08 MAY 2025

# PROGRAMS
# AND
# ABSTRACTS

**The 1st International Transborder Conference of the Timor Island**:
# Timor  –*Science Without Borders*

Dili, 7-8 May 2025

**Jointly organized by**

**Universitas Nusa Cendana, Indonesia**

**Universidade Nacional Timor Lorosa'e**

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# Programs

## Day 1: 7 May 2025

| Time | Agenda |
|---|---|
| **08.00 – 09.00** | **Registration / Poster fitting** |
| **Opening Ceremony: Auditorium** | |
| 09.00 – 09.10 | Conference Chairman Report. *Afonso de Almeida.* |
| 09:10 – 09.25 | Welcome speech. *Prof. Dr. João Martins.* Rector of UNTL |
| 09.25 – 09.30 | Official opening |
| 09.30 – 09.40 | Cultural moment/welcome dance |
| **09.40 – 10.30** | **Plenary Session 1. Auditorium. Moderator: Dr Edmundo Viegas** |
| | Science and international cooperation for peace. *Dr. José Ramos Horta* President of the RDTL. |
| **10.30 – 11.00** | **Coffee Break and Poster View** |
| 11.00 – 13.00 | **Plenary Session 2. Auditorium** Moderator: *Prof. Dr. Tans Felix* |
| | Timor-Leste's trajectory, moving from Fragility to Resilience. *Dr. Helder Costa.* Secretary Gen. G7+ |
| | Indonesia – Timor-Leste Cross Border Education Cooperation. *Prof. Dr. drh. Maxs U. E. Sanam, M.Sc.* Rector of Undana. |
| | Timor and Science without Borders: Building Knowledge for a Shared Future. *Dr. José Honório da Costa Jerónimo.* Ministry of High Education, Science and Culture, RDTL. |
| **13.00 – 14.00** | **Lunch and poster's view** |
| 14:00 – 16.00 | **Plenary Session 3: Moderator: *Prof. Dr. Apolinário Magno*** |
| | Border governance based on local context. *Mr. Melkiades Laka Lena.* NTT Governor. |
| | Education and Capacity Building Across Borders – Strengthening education and professional capacity through international partnerships. *Prof. Wily Toisuta, PhD.* Satya Wacana University, Indonesia. |
| | Carbon Value and Economic Added Value of Biomass as a Source of Renewable Energy for the Power Plant in Timor Island. *Prof. Ir. Frederik L. Benu, M.Si., Ph.D. Undana* |
| **15.30 – 16.00** | **Coffee Break and Posters view** |
| 16.00 – 17.45 | **Oral presentations I: Moderators** |

| | Auditorium | Room 1 | Room 2 | Room 3 | Room 4 | Room 5 | Room 6 |
|---|---|---|---|---|---|---|---|
| | Vicente Corrieia | Matias Tavares | Eduardo A. Serrao | Javiano da Costa | Domingos Welem Turupadang | Alfonso de Almeida | Marito Maia |
| | Marthen L. Mullik | Harry Z. Kotta | Maria Lobo | | | Imanuel Benu | Catharina Behar |

| | |
|---|---|
| **18.30 -** | **Conference dinner** |

## Day 2: 8 May 2025

| **08.00 – 09.30** | **Registration** |
|---|---|
| **09.00 – 10.30** | **Plenary Session 4: Moderator: *Prof. Dr. Aurelio Guterres*** |
| | Incorporating system thinking on agricultural education – food, water & energy nexus. *Dr. John Mischler.* Visiting lecture at UNDANA |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Cooperation with Australia for Education, Science & Technology. Caitlin Wilson. AUSAID | | | | | | |
| | Cooperation with the European Union for Education, Science & Technology. Dr. Iotam Lerer. EU/EC | | | | | | |
| **10.30 – 11.00** | **Coffee Break and Poster View** | | | | | | |
| **11.00 – 12.30** | **Oral presentations II: Moderators:** | | | | | | |
| | **Auditorium** | **Room 1** | **Room 2** | **Room 3** | **Room 4** | **Room 5** | **Room 6** |
| | Eduardo A. Serrao | Vicente Corrieia | Alexandre Corte-Real | Teodoro Soare | Venancio Lopes | Joao Soares | Marito Maia |
| | Harry Z. Kotta | Marthen L. Mullik | Prof. Agnes Simamora | Maria Lobo | Welem Turupadang | Imanuel Benu | |
| **12.30 – 14.00** | **Lunch and poster's view** | | | | | | |
| **14.30 – 16.15** | **Oral presentations III (Moderators)** | | | | | | |
| | **Auditorium** | **Room 1** | **Room 2** | **Room 3** | **Room 4** | **Room 5** | **Room 6** |
| | Matias Tavares | Eduardo A. Serrao | Ruben J. Freita | Venancio Lopes | Fernando Hajam | Carlos T. Boavida | Marito Maia |
| | Agnes Simamora | Harry Z. Kotta | Maria Lobo | Welem Turupadang | Imanuel Benu | | Catharina Behar |
| **16.15 – 16.45** | **Coffee Break / Posters view** | | | | | | |
| **16.45 – 17.30** | **Closing Ceremony:** | | | | | | |
| | Post-conference report by Conference Co-Chairman. Dr. Marthen L. Mullik UNDANA | | | | | | |
| | Closing Speech by Rector of UNTL. Dr. João Martins. UNTL | | | | | | |
| **18.30 – 18.45** | **Conference dinner** | | | | | | |

# PARALLEL SESSIONS

## Day 1:  Wednesday 7 May 2025

### I. AUDITORIUM

| Time | Title | Presenter |
|---|---|---|
| 16.00 - 16.15 | Assessing the Potential of Droughtmaster Cattle for Livestock Improvement in Timor-Leste: A Comparative Review of Production, Reproductive, and Health Performance in Australia and Indonesia | Alipio de Almeida |
| 16.15 - 16.30 | Opportunities for Shrimp and Milkfish Aquaculture Development Through Market Demand Analysis in Timor Region | Franchy Ch. Liufeto |
| 16.30 - 6.45 | Fusarium Wilt of Shallots in Semau Island, Kupang Regency: Pathogen Identification and Biocontrol Potential of Locally Isolated *Trichoderma asperellum* | Mayavira V. Hahuly |
| 16.45 -17.00 | Climate Change Adaptation Strategies of Smallholder Farmers in Timor-Leste | Marcolino E. F. E Brito |
| 17.00 - 17.15 | Potential of Hydrochar from a Combination of Local Biomass and Non-Productive Marine Biomass as a Candidate Material for Dryland Soil Restoration | Yantus A B Neolaka |
| 17.15 - 17.30 | Analysis of Cattle Production Dynamics and Resource Utilization for Sustainable Beef Cattle Farming in Timor-Leste | Flaviano Soares |
| 17.30 - 17.45 | Characteristics of the Traditional Extensive Management System of Droughtmaster Cattle in Lautem Administrative Post, Timor-Leste | Rogerio D.J. Amaral |

### II. ROOM 1:

| Time | Title | Presenter |
|---|---|---|
| 16.00 -16.15 | Formalin (CH2O) Contamination in Seafood and Frozen Meat Imported into Timor-Leste | Acacio C. Amaral |
| 16.30- 16.45 | Syntesis and Antibacterial Activity of C-Methoxyphenylcalix[4]resorcinaryl octacinnamate Compound Against Bacteria That Cause Banana Diseases | I Gusti M. N. Budiana |
| 16.45-17.00 | The effect of Effective Microorganism 4 (EM-4) levels on the fiber components of fermented coffee husks | S. E. Jediut |
| 17.00 -17.15 | Improvement of Total Nitrogen, Exchangeable Potassium Content of Alfisol and Yield of Tomato (*Solanum lycopersicum* Mill) by Application of a Combined Treatment of Shallot Peel Waste, Rice Washing Water, and Activated Cassava Powder | Noni Ae, |

## II. ROOM 2:

| Time | Title | Presenter |
|------|-------|-----------|
| 16.00 -16.15 | Analysis of the Use of Remittances from Workers Employed Abroad in the Village of Mau-Meta and Metagou, Bazartete, Liquiça (A Case Study of Workers from Mau-Meta and Metagou work in the United Kingdom) | Vicente de Paulo Correia |
| 16.15-16.30 | Agroforestry provides multiple benefits to small-farm-holders in Timor-Leste | Marçal GUSMÃO |
| 16.30 -16.45 | Characteristics of the Traditional Extensive Management System of Droughtmaster Cattle in Lautem Administrative Post, Timor-Leste | Rogerio DJ Amaral |
| 16.45-17.00 | Synthesis of Nanosize MgO from Timor Island Dolomite Limestone | Yusuf Rumbino |
| 17.00 -17.15 | Use of Ordinary Krigging Method in Calculating Nickel Resources of Pit 3 PT X in Morowali | Kandida Y. Bole |
| 17.15 -17.30 | Optimization of Nickel Resources in Pit 2 of PT. Z Morowali Using the 3-D Lerchs-Grossman Algorithm in GEOVIA Whittle | Valeria T. Am'isa |

## III. ROOM 3:

| Time | Title | Presenter |
|------|-------|-----------|
| 16.00 - 16.15 | Text Mining and Word Cloud Visualization of Public Sentiment on Timor-Leste's ASEAN Membership Using Machine Learning | Marcelino C. Noronha |
| 16.15-16.30 | Study the composition of material and productivity of salt production in Kasait-Ulmera, Likisa Municipality | Lelis Gonzaga Fraga |
| 16.30 -16.45 | The impact of water absorption on the joint strength of the adhesive | Joviano Antonio da Costa |
| 16.45-17.00 | Analysis and Evaluation the Quality of Each Type of Code of Reinforcement Carbon Steel Bar Distributed in the Timor Leste Market | Valerio de Sousa Gama |
| 17.00 - 17.15 | Modeling Water Infiltration in Furrow Irrigation Using DRBEM | Maria Lobo |
| 17.15 - 17.30 | Experimental Study on the Pull-out Strength of Tek Screws in Cold-Formed Steel Roof Connections under Wind Load Conditions | Leonel S. G. Madeira |

## IV. ROOM 4:

| Time | Title | Presenter |
|------|-------|-----------|
| 16.00 - 16.15 | ARIMA Modeling of ETCCDI Extreme Climate Indices in Southeast Asia: Insights from CMIP6 Projections | Shannon M. Dias Viegas |
| 16.15-16.30 | Optimization Of Traditional Salt Production To Reduce Downtime and Cost In West Oesapa | Halena M.Asa |

| Time | Title | Presenter |
|------|-------|-----------|
| 16.30 -16.45 | Harnessing Machine Learning to Address Climate Change in Southeast Asia: a PRISMA-guided Systematic Literature Review | Shannon M. Dias Viegas |
| 16.45-17.00 | Ecological and Socioeconomic Perspectives on Sonokeling (Dalbergia latifolia) Management in East Nusa Tenggara | Elisa Iswandono |
| 17.00 - 17.15 | Runoff estimation for the Loes watershed in Timor-Leste using soil conservation service-curve number (SCS-CN) | Delfim da Costa |
| 17.15 - 17.30 | Descriptive Study of Clean and Healthy Living Behavior (PHBS) of Students in Inpres Lasiana Elementary School Kupang City | Eklesia P. Ragowino |

## V. ROOM 5:

| Time | Title | Presenter |
|------|-------|-----------|
| 16.00 - 16.15 | The Relationship Between Dietary Behavior and Emotional Regulation in Psychology Students of Nusa Cendana University | Faizaldy H. Yahya |
| 16.15-16.30 | Association between Maternal Dietary Diversity and Nutritional Status of Children in Timor-Leste | Letícia Jomardo |
| 16.30 - 16.45 | Atauro and its neighboring Indonesian islands: Informal maritime movements and exotic animal disease transmission risks | Abrao J. Pereira |
| 16.45-17.00 | Case Report: A 61-Year-Old Female With Uncontrolled Type 2 Diabetes | I G. A. P. A. Wirawan |
| 17.00 - 17.15 | Case Report: A Family Medicine Approach to the Management of HIV in a Young Adult Patient at Oebobo Primary Health Center | I M. D. H. Suastika |
| 17.15 - 17.30 | Comparison of Serum Vitamin D Levels Between Arthralgia and Non-Arthralgia Groups Among Indoor Workers with Suspected Osteoarthritis Genu in Kupang City Workers | Annisa N. Hasanah |

## VI. ROOM 6:

| Time | Title | Presenter |
|------|-------|-----------|
| 16.00 - 16.15 | Geopolitics of East Timor: Navigating the Challenges of a Small State | Alarico da Costa Ximenes |
| 16.15-16.30 | Good Village Governance in Managing Village Funds and Its Constraints in Sanggoen Village, Lobalain Sub-District, Rote Ndao Regency | Maria M. Lino |
| 16.30 - 16.45 | Post-Independence Challenges: Timor-Leste's Diplomatic Relations and Regional Integration | Alarico da Costa Ximenes |
| 16.45 - 17.00 | Timor-Leste's Foreign Policy: Navigating identity in a Globalized World | Alarico da Costa Ximenes |
| 17.00 - 17.15 | Phenomenon of Partisanship of Governance in Public Administration: A Look at Timor-Leste | Francisco Soares |
| 17.15 - 17.30 | Critical analysis on the impact of child labor on education in Timor-Leste | Ireniu V. P. Martins |

| Time | Title | Presenter |
|---|---|---|
| 17.30 - 17.45 | A Model of Organizational Capacity Development of Daughters to Achieve Sustainable Development Goals (SDGs) On Mother and Baby Deaths | Hendrik Toda |

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# Day 2:  Thursday, 8 May 2025

## I.  ROOM: AUDITORIUM

| Time | Title | Presenter |
|------|-------|-----------|
| **Session 1:** | | |
| 11.00 - 11.15 | Use of Household Waste (Rice Water Washing and Shallot Peel) and Powder Active of Cassava to Improve Physical Characteristic of Alfisol and Fruit Weight of Tomato | Stevania S. Dadi |
| 11.15 - 11.30 | The Impact of Various Biochar Types on Calcareous Soil Physical Properties, and on the Growth and Yield of Mung Bean (Vigna radiata L. | Hilda M. M. G. Muga |
| 11.30 - 11.45 | Shade Trees Typology and Leaf Rust Incidence in Arabica Coffee Plantation | Chatarina G.K.H Behar |
| 11.45 - 12.00 | Mini weather station design based on IoT for dry land agriculture | H. I.A. Berubu |
| 12.00 - 12.15 | Identification of Insect Pests Causing Gall of Eucalyptus urophylla & Eucalyptus alba and Intensity of Their Damage in Fatumnasi, Fatukoko and Noinbila | Shiddiqqie R. F. Al Amin |
| 12.15 - 12.30 | The Effect of Mycorrhiza and Type of Organic Matter on Chemical Properties and Corn Yields on Alfisol | A.S. Muda |
| **Session II** | | |
| 14.30 - 14.45 | Assessment of Body Condition Scoring in Bali Cattle During Drought Periods in Bobonaro Municipality, Timor-Leste | Flafiano Soares |
| 14.45 - 15.00 | Agroforestry provides multiple benefits to small-farm-holders in Timor-Leste | Marçal Gusmãoa |
| 15.00 - 15.15 | Intercropping of Sorghum and Horticultural Crops: Its Potential as Ruminant Feed on Various Types of Soil | Grace Maranatha |
| 15.15 - 15.30 | Preliminary Assessment of Droughtmaster Cattle in Timor-Leste: A New Opportunity for Meat, Milk, and Rural Development | Alipio de Almeida |
| 15.30 - 15.45 | The Effect of Rice Husk Biochar and Tofu Waste Liquid Fertilizer on the Efficiency of Nitrogen Fertilization and the Yield of Mays (*Zea mays ceratina* L.) | T.A.B. Tokan |
| 15.45 - 16.00 | Nutrient status and soil reaction as the basis for horticultural crop development in Ainaro district | António J. da Costa |
| 16.00 - 16.15 | The Effect of Rice Husk Biochar and Tofu Waste Liquid Fertilizer on the Efficiency of Nitrogen Fertilization and the Yield of Mays (Zea mays ceratina L.) | T.A.B. Tokan |

## II. ROOM 1:

| Session I: | | |
|---|---|---|
| 11.00 -11.15 | Study of Carbon Value and Economic added Value of Biomass as a Source of Renewable Energy for the Power Plant | David B.W. Pandie |
| 11.15 -11.30 | The Effect of Fermentation Duration Using Effective Microorganism-4 as Inoculum on the Nutrient Content of Coffee Husks | Kornelia Linda |
| 11.30 -11.45 | The Effect of Harvest Age on Biomass Production of *Mucuna bracteata* in dryland, of West Timor, Indonesia | G. M. Matau |
| 11.45 -12.00 | Development of Smart Inventory & Equipment Renting System for Nusa Cendana University Integrated Lab | Selestino Bernard Kroon |
| 12.00 -12.15 | Fourteen Years Development of a Drought-tolerant and Psyllid-resistant Legume Tree (Leucaena leucochepala Var. Tarramba) in Timor-Leste Since its Introduction. | M. L. Mullik |
| Session II: | | |
| 14.30 -14.45 | Exploring The Complexities of Language Policy In Multilingual Classrooms In Timor-leste | Tans Feliks |
| 14.45 -15.00 | The Effect of Fermentation Duration Using Effective Microorganism-4 as Inoculum on the Nutrient Content of Coffee Husks | Kornelia Linda |
| 15.00 -15.15 | Fungal Endophytes of a Timorese Forest Resource: Morphological Identification from *Santalum album* L | Agnes V. Simamora |
| 15.15-15.30 | Characteristics of the Traditional Extensive Management System of Droughtmaster Cattle in Lautem Administrative Post, Timor-Leste | Rogerio DJ Amaral |

## III. ROOM 2:

| Session I: | | |
|---|---|---|
| 11.00 -11.15 | Social Dynamics and International Legal Problems on the Indonesia-Timor Leste Border | Dhesy Arisandielis Kase |
| 11.15 -11.30 | State Responsibility in Addressing Transnational Crime at the Indonesia–Timor Leste Border: A Juridical Analysis Based on International Criminal Law and National Criminal Law | Alexsander Frengklin Tungga |
| 11.30 -11.45 | The Guidance of Juvenile Residents in the Special Child Development Institution (LPKA) from a Restorative Justice Perspective at the Special Child Development Institution (LPKA) in Kupang | Reny R. Masu |
| 11.45 -12.00 | The role of Teachers in Developing Social Emotional of Children Aged 5-6 years in UPTD TK Negeri Pembina Kalabahi Alor District | Marthina Juli Blegur |

| 12.00 -12.15 | The Application of The Deep Learning Approach to Improve Critical Thinking Skills of Elementary Teacher Education (PGSD) Students of Nusa Cendana University in Elementary Civics Education Courses | Taty Rosiana Koroh |
|---|---|---|
| 12.15 -12.30 | Indonesia–Timor-Leste Cooperation in Strengthening Legal Protection Services for Women and Children Against Violence | Rosalind Angel Fanggi |
| **Session II:** | | |
| 14.30 -14.45 | Analysis of physical-chemical and biological parameters in public water supply and well water in the municipalities of Bobonaro and Liquiçá according to existing legislation | Mariano Amaral |
| 14.45 -15.00 | Temporal and Spatial Analysis of Dengue Cases in the Municipalities of Timor-Leste, 2019 to 2022 | António da Costa Fernandes |
| 15.00 -15.15 | On proportions as the optimum point of the weighted Simpson index | José P. Casquilho |
| 15.15 -15.30 | Integrated Assessment of the Mota-Masin Transboundary Watershed Between Indonesia and Timor-Leste in Tilomar and Fatumea, Covalima through Evaluating Hydrological, Geological, and Socio-Economic Dynamics for Sustainable Management | Eduardo Aniceto Serrão |
| 15.30 -15.45 | Analysis Of the Relationship Between the Weight of Objects in Air, The Weight of Objects in Liquids, and the Upward Lift Force on Floating Objects in Dynamic Conditions | Fakhruddin |
| 15.45 -16.00 | Potential Utilization of Rosewood in Kupang Regency, Nusa Tenggara Timur Province | Elisa Iswandono |
| 16.00 -16.15 | Assessment of Hydro-Geomorphological Processes Using Remote Sensing and Sedimentation Rate Measurements, Hera Sub-Basin Watershed, Dili-Timor Leste | Osvaldo da Cruz Sarmento |

# IV. ROOM 3:

| **Session I:** | | |
|---|---|---|
| 11.00 -11.15 | Why are our children not learning Portuguese? | Karin N. R. Indart |
| 11.15 - 11.30 | Timorese masculinity represented in the works of Luís Cardoso: an analysis on "the pumpkin planter" | Marcos António Amaral |
| 11.30 - 11.45 | Education as a Strategic Instrument of Sovereignty: Examining Indonesia's Border Presence with Timor-Leste through the Asta Cita Vision | Melinda Ratu Radja |
| 11.45 -12.00 | Digital Civic Literacy in Responding to Political Issues (Kupang City Local Election 2024) on Social Media among Civic Education Students of FKIP Universitas Nusa Cendana | Fredik Lambertus Kollo |

| 12.00 - 12.15 | Technological Literacy And Learning Innovation Of Vocational High School Teachers In The Border Area Of Belu Regency | Damianus Manesi |
|---|---|---|
| 12.15 - 12.30 | Analysis of mathematics problem solving ability based on Polya's steps in Elementary School Teacher Education students on fraction | Rince S. M. Benu |
| 12.30 - 12.45 | Interdisciplinary actions in the physical and educational care of older adults in the community | João Dias Perrreira |
| **Session II:** | | |
| 14.30 -14.45 | The Production of a Trilingual Glossary in Portuguese, Tétum and English in the Area of Agroforestry | Marcos Elo |
| 14.45 -15.00 | Differentiation of Bunak Language Varieties | Rosa da Costa Tilman |
| 15.00 -15.15 | An analytical study of interpreting the poem "Esperanças Rasgadas" | Auxiliadora M. M. Soares |
| 15.15 -15.30 | Why is the Portuguese spoken in East Timor called Timor-Leste Portuguese (PTL)? | Flávia Maria Augusta Martins |
| 15.30 - 15.45 | Transformation of Pancasila Values in Digital Public Spaces: Realizing an Anti-Hate Speech Society | Fadil Mas'ud |
| 15.45 - 16.00 | Assessment candidate of Geosite and Geomorphosite in The Western Area of North Central Timor District and Oe Cusse As Geotourism Potential, Aspiring Geopark on The Indonesia – Timor Leste Border | Herry Zadrak Kotta |
| 16.00 - 16.15 | Several Behavioral Determinants Of Business Continuity PT. Timor Mitra Niaga East Nusa Tenggara | I Gusti M. N. Budiana |

## V.  ROOM 4:

| **Session I:** | | |
|---|---|---|
| 11.00 - 11.15 | The effect of cognitive load on retention ability in computational courses in the electrical engineering education department of Nusa Cendana University | Yetursance Y.Manafe |
| 11.15 - 11.30 | Optimization Of Traditional Salt Production To Reduce Downtime And Cost In West Oesapa | Damianus Manesi |
| 11.30 - 11.45 | Modernizing Tradition: Ikat and Batik Fusion in Handbags | T M C Tualaka, |
| 11.45 - 12.00 | Science Without Borders: Enhancing Social Research Capacity and Innovation Ecosystem between Indonesia - Timor Leste | Lenny Sofia Bire Manoe |
| 12.00 - 12.15 | Spatial Zoning in Levo Lamalera: A Typology of Vernacular Coastal Settlement | I G N W Hardya |
| 12.15 - 12.30 | Visual Political Communication Strategy on Social Media X (Analysis of Visual and Symbolic Representation of Presidential and Vice Presidential Candidates in the 2024 Presidential Election) | Petrus Ana Andung |
| **Session II:** | | |
| 14.30 - 14.45 | Analysis of Coffee Value Chain in Timor-Leste | Vicente de P. Correia |

| 14.45 - 15.00 | Assessing Food Security and Nutrition Status among Vulnerable Populations in Timor-Leste especially in RAEOA | Helio A. da Costa X. Mauquei, |
| 15.00 -15.15 | Economic Development Grand Design: Sustainable And Inclusive Economic Development Strategies For Congregations In The GMITMinistry Area | Rolland E. Fanggidae, |
| 15.15 - 15.30 | Senior Entrepreneurship in Indonesia: An Emerging Response to Aging And Economic Necessity | Antonio Eli Lomi Nyoko |
| 15.30 - 15.45 | Peace and Economic Living Conditions of Timorese Living on the Border Between Timor-Leste and Indonesia | Apolinário Magno |
| 15.45 - 16.00 | Analysis of the border market development strategy: a study in the special administrative region of Oé-Cusse, Ambeno (RAEOA) | Fernando Hanjam |
| 16.00 - 16.15 | Several Behavioral Determinants of Business Continuity PT. Timor Mitra Niaga East Nusa Tenggara | Frans Gana |

# VI. ROOM 5:

| Session I: | | |
|---|---|---|
| 11.00 -11.15 | Perception of Coastal Communities in Kupang City and Kupang Regency Regarding Political News on the 2024 Presidential and Vice Presidential Elections | Mas'Amah |
| 11.15 -11.30 | Dengue Hemorrhagic Fever in a Child Residing in a Dryland Archipelagic Area, Kupang City: A Family Medicine Case Report | Safira P. Kusumah |
| 11.30 -11.45 | Mapping Intervention to Alleviate Depression in Indonesian Medical Students : A Scoping Review | Maria N.Triwardani |
| 11.45-12.00 | Mindfulness-Based Intervention and Brain Plasticity in Psychiatric Population: A Systematic Review and Meta-Analysis With-Relevance to Transborder Mental Health | Hamdin P. Ilmi |
| 12.00 -12.15 | Neglected and stigmatized disease: Morbus Hansen in 37 Years Old Male. A Case report. | Gregorius K. Widyantoro |
| 12.15 -12.30 | Prevalence of Tobacco Use and Exposure to Secondhand Smoke in Timor-Leste: National Survey 2023 | Afonso de Almeida, |
| Session II: | | |
| 14.30 -14.45 | Suggested Strategies To Increase Students' Mental Health Based On Help-Seeking Behavior | Romana Da Costa Pinto |
| 14.45 -15.00 | Understanding Cognitive Experience During the Neoropsychology Battery Test in Eastern Indonesia: Participants' Subjective Perspectives | Lionesius P.Tay Huttu |
| 15.00 -15.15 | Understanding dog keeping and dog meat consumption practices in Ainaro: Public health implications for rabies control in Timor-Leste | Abrao J. Pereira |
| 15.15 -15.30 | Unveiling Socioemotional Experiences in Conducting the Adaptation of the Indonesian | Eduardus J. A. Huky |

| | Eastern Neuropsychological Test Battery (INTB): A Qualitative Neuropsychological Study | |
|---|---|---|
| 15.30 -15.45 | Relationship between Iron intake, Protein intake and Nutrition status with the incidence of anemia in pregnant women in the third Trimester at the Balibo Community Health Centre, Bobonaro Municipality | Hendriketa da Silva |
| 15.45 -16.00 | Relationship between eating habits, lifestyle, and nutritional status of adolescents aged 15 to 19 years at the catholic general secondary school of the Divine Word in Palaca, Bobonaro municipality, year 2024 | Afonso de Almeida |
| 16.00 -16.15 | The interference of the obstetrician in the prenatal surveillance consultation of the Maubara health center of the municipality of Liquica, Timor-Leste (2025). | Carlos Boavida Tilman |
| 16.15-16.30 | Why Are Medical Students Depressed? A Medical School Case Study | Ika F. Buntoro |

## VII.  ROOM 6:

| **Session I:** | | |
|---|---|---|
| 11.00 – 11.15 | When life becomes the battlefield: Life of East Timorese in West Timor | Mario A. Onggang |
| 11.15 – 11.30 | Modeling HIV-HBV Co-Infection Using the SVEIR Approach: A Case Study in Kupang | Maria Lobo |
| 11.30 – 11.45 | Between Tradition and Progress: Exploring the Architectural Struggles of Sabu-Raijua | Lommi Dida Kini |
| 11.45-12.00 | Strategy an d Policy for Increasing Financial Inclusion Through Pentahelix Approach in the Timor Leste and Indonesia Border Region | Frans Gana |
| 12.00 – 12.15 | Assessment of Business Policies and Conditions of Small and Medium Enterprises (SMEs) in light of Timor-Leste's ASEAN Membership: Challenges and Opportunities | Apolinário Magno |
| 12.15 – 12.30 | Family Sociology in Timor-Leste: Strengths, Weaknesses, and Theoretical Potential | Therese Nguyen Thi Phuong Tam |
| 12.30-12.45 | Strengthening the Indonesia–Timor-Leste Border Zone to Prevent Serious Crimes | Simplexius Asa |
| 12.45-13.00 | A Local Wisdom-Based Cross-Border Crime Prevention Model at the Indonesia–Timor Leste Border: *A Legal Pluralism Perspective and Cross-National Empirical Experience* | Karolus Kopung Medan |
| 13.00-13.15 | The Guidance of Juvenile in the Special Child Development Institution (LPKA) from a Restorative Justice Perspective at the Special Child Development Institution (LPKA) in Kupang | Alexander Simon Pally |
| **Session II:** | | |
| 16.00 - 16.15 | Geopolitics of East Timor: Navigating the Challenges of a Small State | Alarico da Costa Ximenes |

| 16.15-16.30 | Good Village Governance in Managing Village Funds and Its Constraints in Sanggoen Village, Lobalain Sub-District, Rote Ndao Regency | Maria M. Lino |
|---|---|---|
| 16.30 – 16.45 | Post-Independence Challenges: Timor-Leste's Diplomatic Relations and Regional Integration | Alarico da Costa Ximenes |
| 16.45-17.00 | Timor-Leste's Foreign Policy: Navigating identity in a Globalized World | Alarico da Costa Ximenes |
| 17.00 – 17.15 | Phenomenon of Partisanship of Governance in Public Administration: A Look at Timor-Leste | Francisco Soares |
| 17.15 – 17.30 | Critical analysis on the impact of child labor on education in Timor-Leste | Ireniu Viriatu Pires Martins |
| 17.30 – 17.45 | A Model of Organizational Capacity Development of Daughters to Achieve Sustainable Development Goals (SDGs) On Mother and Baby Deaths | Hendrik Toda |

# ABSTRACTS

# A
## AGRO-SCIENCES

# Assessment of Body Condition Scoring in Bali Cattle During Drought Periods in Bobonaro Municipality, Timor-Leste

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## Abstract

Body Condition Scoring (BCS) is an essential method for evaluating the nutritional status  and overall condition of livestock, particularly in periods of resource scarcity such as  droughts. This study aimed to assess the BCS of 200 Bali cattle (*Bos sondaicus*), ranging  in age from 15 to 30 months, in various sub-districts of Bobonaro Municipality, along  with 25 bulls from an intensive rearing system. The assessment involved morphometric  measurements, including live weight, body length, hip and shoulder heights, heart girth,  and leg length. These measurements were crucial for deriving a predictive equation for  BCS. A multiple regression analysis demonstrated that heart girth, body length, and body  weight gain (BWG) were significant predictors of BCS, yielding a strong correlation with  an $R^2$ value of 0.966 for the sample of 25 intensively reared bulls. The BCS scoring system was developed to range from one to five, based on the visual and physical  assessment of several anatomical features. Cattle assigned a score of 1 displayed  prominent bony structures, such as their hooks, vertebrae, ribs, and hollow hindquarters,  whereas cattle with a score of 5 exhibited well-rounded hindquarters, ample soft tissue  coverage, and well-defined musculature. The average BCS measurements across the sub-districts revealed the following values:  2.51 in Cailaco, 2.54 in Maliana, 2.32 in Atabae, and 2.41 in Balibo. The overall average  BCS for the municipality was calculated to be 2.44. Statistical analyses indicated that  there were no significant differences in BCS among the four extensive production systems  ($P>0.05$). In contrast, comparisons between the intensively reared and extensively reared  cattle showed significant differences in both BCS and BWG ($P<0.05$). Specifically, the  BWG of the intensive system averaged 356 g/d, while the extensive system  averaged only 210 g/d. These findings underscore the importance of monitoring body condition in Bali cattle  during drought conditions to ensure optimal animal welfare and production efficiency. Effective management strategies may need to be implemented to enhance the health and  productivity of cattle under extensive rearing conditions.

*Keywords: Bali Cattle, Body Condition Scoring, Production System, Drought, Weight Gain, Extensive Rearing.*

# Fourteen Years of Advancing Leucaena leucocephala cv. Tarramba: A Drought-Tolerant and Psyllid-Resistant Tree Legume for Sustainable Cattle Feeding in Timor-Leste

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## Abstract

Tree legumes are known for their high biomass production and high protein content for ruminants in tropical areas. *Leucaena leucocephala* cv. Tarramba is a relatively new hybrid tree legume introduced from Australia to West Timor in 2003. Proven to be drought-tolerant and psyllid-resistant, it was subsequently established throughout East Nusa Tenggara Province, Indonesia. In September 2011, this legume was introduced to Timor-Leste by an Indonesian research team from Universitas Nusa Cendana (Dr. Marthen L. Mullik) and Universitas Mataram (Dr. Dahlanuddin and Dr. Yusuf A. Sutaryono) in collaboration with a Timor-Leste (TLS) team, as part of an Australian government-funded project (ACIAR LPS-004). A nursery was established at the TLS Agricultural Research Centre in Loes for seedling production. In December 2011, the seedlings were planted at three sites using an alley cropping system, with crops (maize, cassava, and peanuts) planted in the alleys. The sites included: (1) 1.5 hectares at the Loes Research Centre, which served as a demonstration and learning site, (2) 0.5 hectares planted by 2 cattle farmers (in Loes and Sanirin village). All the three sites were located in Bobonaro District. The adoption rate by farmers at the early stage of Tarramba development in the country was very low. By mid-2012, only two cattle farmers had integrated Tarramba into their cropping lands. The main reason was that planting fodder was not part of the traditional cattle-rearing practices, as 90% of cattle farmers in Bobonaro District practiced free grazing. In addition, cattle fattening was not yet common in the area. To address this, a leucaena-based cattle fattening demonstration plot was established at the research station. Data from this plot showed that gross annual income from 1 hectare of the integrated crops–leucaena–cattle (ICLC) system was USD 7,676 compared to USD 3,124 from crops alone. Following this success, coordinators of livestock farmer groups from nearby villages were brought to the site study visit. As a result, two farmer groups and five individual farmers agreed to plant Leucaena. Based on this success story, the system became the foundation for cattle feeding practices implemented by two subsequent ACIAR projects (LPS-036 and LPS-038). From 2013 to 2018, the system was adopted by farmers in four other districts (Liquiçá, Manufahi, Lautém, and Oecusse). Since 2020, the ICLC system has been adopted as a national program to improve cattle production in TLS. Data recorded by the Ministério da Agricultura, Pescas, Pecuária e Florestas (MAPPF) show that by the end of 2024, *Leucaena leucocephala* cv. Tarramba had been widely established and used as cattle feed by farmers in nine districts (Bobonaro, Liquiçá, Manufahi, Lautém, Oecusse, Viqueque, Manatuto, Covalima, and Baucau). The remaining four districts are not suitable for Tarramba cultivation due to either high altitude and low temperatures (Aileu, Ainaro, and Ermera) or its urban environment (Dili). It can be concluded that within fourteen years of its initial introduction in 2011, *Leucaena leucocephala* cv. Tarramba has been successfully established and used as a protein source for cattle in all suitable agro-ecological areas of TLS.

*Keywords*: *Leucaena, alley cropping, Timor-Leste, psillid-resistant, drylands.*

# Enhancing Growth Performance and Meat Quality of Village Chickens in Timor-Leste Through Tamarind Leaf Flour Supplementation in Pelletized Diets

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## Abstract

Village chickens are a crucial asset for small-scale farmers in rural Timor-Leste, providing both subsistence and economic opportunities. This study investigates the impact of inclusion tamarind leaf flour (*Tamarindus indica L.*) into pelletized diets on the growth performance and meat quality of Village chickens or Manu-Timor. The study was conducted from December 4, 2023, to January 28, 2024, at the metabolic cage of the Agricultural Faculty's in Hera Campus. The 54-day trials aim to offer valuable insights into alternative feed ingredients. The primary objective was to evaluate the effects of varying levels of tamarind leaf flour supplementation (2%, 4%, and 6%) in diets composed of yellow corn, soybean, and rice bran on key performance metrics of Village chickens. The Randomized Block Design (RBD) with four treatment groups and four replications, where the trial employed 64 chickens aged 9 to 11 months, with five birds per treatment for robust statistical analysis. Outcomes measured included feed intake, average daily weight gain (ADG), feed conversion ratios (FCR), and organoleptic properties of the meat. The control diet (T0) served as a baseline for comparison. Statistical analysis revealed no significant variations (P>0.05) across treatments; however, observable trends emerged with the following key findings: The control group (T0) exhibited a significantly higher average daily feed consumption of 29.30±5.69 g/head, compared to 27.00±8.31 g/head for the 2% supplementation treatment (T1), indicating a substantial 7.85% reduction in feed intake with supplementation. Notably, T1 showed the highest ADG at 3.21±0.56 g/head, which was 27% greater than the lowest performance recorded in the 6% treatment (T3) at 0.62±0.31 g/head. FCR ranged from 6.99±1.65 (T1) to 8.71±1.06 (T3), showcasing an efficient feed utilization with the 2% and 4% treatments yielding better results. Meat quality analysis displayed a mean cooking loss of 18.55 ± 7.32% and a favourable water-holding capacity of 80.32±5.12%. Sensory evaluation further revealed that around 30% of panelists rated the meat from the experimental groups as notably tender, a significant improvement compared to the control. In conclusion, while tamarind leaf flour supplementation did not result in statistically significant enhancements in overall growth performance metrics, it did demonstrate positive trends in specific parameters and organoleptic qualities of the meat. These findings point to the potential benefits of using tamarind leaf flour as a dietary supplement for improving the quality of village chicken production in Timor-Leste.

*Keywords: Village chickens, tamarind leaf flour, diet, growth performance, meat quality.*

# Fibre Components and Their Relation to In Vitro Organic Matter Digestibility of Tropical Feedstuff Commonly Fed to Ruminants in The Province of East Nusa Tenggara, Indonesia

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## Abstract

A total of 23 feedstuffs commonly used for ruminant feeding in the province of Nusa Tenggara Timur were evaluated for their fibre composition and in vitro organic matter digestibility (IVOMD). Fibre components analyzed included crude fibre (CF), neutral detergent fibre (NDF), acid detergent fibre (ADF), acid detergent lignin (ADL), cellulose, and hemicellulose. Data were statistically compared among feed classes using analysis of variance, regression analyses were conducted to examine the relationship between fibre components and IVOMD. Results showed substantial variation in fibre content both among and within feed classes. Crude fibre content was significantly higher ($P<0.05$) in grasses and lowest in concentrate feeds. The NDF, ADF, and ADL contents were found to significantly influence IVOMD ($P<0.05$), whereas other fibre components did not show a significant effect. Among the fibre components, lignin ($R^2 = 0.520$) and ADF ($R^2 = 0.401$) were the best predictors of IVOMD. In conclusion, the fibre composition and digestibility of ruminant feedstuffs in Nusa Tenggara Timur vary widely across and within feed classes, with lignin and ADF content serving as the most reliable predictors of digestibility.

***Keyword**s: fibre composition, Organic matter digestibility, Acid detergent lignin, Nusa Tenggara Timur*

# Reducing The Anti-Nutritional Properties of *Chromolaena Odorata* Through Biofermentation For Use As A Potential Low-Cost Protein Source For Non-Ruminants

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## Abstract

The main constraint in utilizing *Chromolaena odorata* as an alternative low-cost protein source for livestock is its anti-nutritional properties, including anti-trypsin, tannins, oxalate, nitrate, phytate, and saponin. A series of studies conducted by researchers at Universitas Nusa Cendana in West Timor, Indonesia, found that biofermentation reduced these anti-nutritional compounds, making the plant safer for use as ruminant feed. However, those studies used whole aerial parts (leaves and stems) of *C. odorata,* resulting in a high fiber content in the meal. Therefore, it is unsuitable for non-ruminants, which are intolerant to high fiber levels. The present study aimed to assess the effects of biofermenting *C. odorata* leaves on crude fiber and the concentrations of anti-trypsin, tannins, nitrate, saponin, and oxalate in the fermented products. A controlled experiment was conducted using a completely randomized design with four treatments: non-biofermented Chromolaena leaves (NBL, control), biofermented freshly harvested leaves (FBL), biofermented air-dried leaves (DBL), and biofermented post-water-soaked leaves (SBL). Each treatment had five replicates. A total of 25 plastic containers (5 kg capacity each) were used as silos. After harvesting and separating the leaves from the stems, the leaves were divided into four portions and assigned to the treatments. Biofermentation followed silage-making principles, using 100 mL of commercial mixed effective microorganisms (EM4 for feed) per 100 kg of fresh leaves (vol/wt). The fermentation process lasted seven days. Samples from each silo were collected and analyzed in nutrition laboratory. The data were subjected to analysis of variance. Results showed that anti-trypsin content in the control group (4.06 mg/g) was significantly higher than in the treated groups (11.5–30.7 mg/g), with the lowest concentration (11.53 mg/g) found in the SBL treatment. Total tannin content followed a similar trend, with the highest value (3.74%) in the control group and the lowest (0.02%) in SBL. Similar trends were observed for saponin, phytate, and oxalate levels. It can be concluded that the concentrations of anti-trypsin, tannins, saponin, phytate, and oxalate were significantly reduced through biofermentation, with the lowest values observed in the post-water-soaked (SBL) treatment group.

***Keywords****: chromolaena leaf, antri-nutrients, biofermentation, protein source, non-ruminants.*

# Enhancing Growth and Nutritional Quality of Hydroponic Maize Fodder With Natural Liquid Fertilizers: *Insights From A Comparative Study*

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## Abstract

The utilization of hydroponic systems presents a promising and sustainable approach to mitigating fodder shortages, particularly in dryland and resource-constrained environments. This study aimed to assess the influence of natural liquid fertilizers, including bio-urine (BU), Chromolaena odorata extract (CO), and compost tea (CT), applied at varying concentrations (0%, 10%, 20%, and 30%), on the growth performance and chemical composition of hydroponic maize fodder. The findings revealed that fertilizer source significantly affected key nutritional parameters, including crude fiber, ether extract, and carbohydrate content. BU and CT treatments led to higher crude fiber concentrations, whereas CO application significantly enhanced ether extract levels. Additionally, fertilizer concentration had a notable effect on ether extract content and oven-dried biomass weight. Morphological attributes such as plant height, leaf length, and leaf width improved significantly with fertilizer application, with optimal responses observed at the 30% application level. In summary, the use of natural liquid fertilizers (bio-urine, Chromolaena odorata extract, and compost tea) shows strong potential to improve both the nutritional quality and biomass yield of hydroponically grown maize fodder. These findings highlight the value of eco-friendly fertilizer alternatives as practical and sustainable solutions to enhance forage availability, especially in dryland regions where conventional fodder production is often constrained.

*Keywords*: bio-urine, compost tea, Chromolaena odorata, hydroponic fodder, organic fertilizer.

# Analysis of Cattle Production Dynamics and Resource Utilization for Sustainable Beef Cattle Farming in Timor-Leste

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## Abstract

Beef cattle, particularly the Bali breed, is the primary source of beef production in Timor-Leste. This breed was domesticated from the Banteng (*Bos javanicus* or *Bos sondaicus*), which is native to the western part of Java, and has been raised in various regions of Indonesia and Timor-Leste. A significant challenge in the development of this breed stems from subsistence farming practices, which include inadequate year-round feed availability and the poor nutritional quality of natural pastures, especially during the dry season. The primary objective of this study was to analyze the dynamics of beef production in Timor-Leste and to identify strategies that could enhance the efficiency of cattle production. This objective was addressed through several key approaches: improving natural pasture productivity, optimizing the management of grass production systems in hydrographic areas, and increasing maize production for cattle feed. The study also aims to evaluate and develop typical production curves for local grasses while characterizing the quantitative and qualitative aspects of natural pastures and forages across selected municipalities: Bobonaro, Covalima, Manufahi, Viqueque, and Lautem. In addition, effective cultivation practices for imported grass species, such as elephant grass and King grass, were also explored. These strategies were intended to enhance cattle feeding practices by integrating introduced grasses into hydrographic zones to increase overall grass production. Results indicated that the average production of natural grasses across the five districts was $14.90 \pm 1.29$ tons/ha/year (dry matter), with a range of 14.01 to 16.59 tons/ha/year. In contrast, the average production of introduced grasses was $67.08 \pm 14.93$ tons/ha/year, with a range of 51.84 to 81.70 tons dry matter/ha/year. Regression analysis revealed no significant differences in natural grass production among the municipalities ($P>0.05$); however, significant differences were observed between local and intriduced grass production ($P<0.05$). Furthermore, local grasses can support approximately 4.54 animal units per hectare per year (assuming 3% dry matter intake per animal unit per day for a body weight of 300 kg), whereas introduced grasses can support about 20.42 animal units per hectare per year. This analysis provides critical insights into the resource dynamics that can enhance sustainable cattle production practices in Timor-Leste. Identifying effective management strategies will be essential to overcoming current challenges in beef production and ensuring food security in the region.

*Keywords: Bali cattle; local grass; imported grass; hydrographic area; sustainable production.*

# Effect of Effective Microorganism-4 Levels In Innoculum On Fiber Fractions of Fermented Dry Coffee Husks

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## Abstract

The objective of the study was to assess the effects of the levels of Effective Microorganism 4 (EM4) on the fiber components of fermented coffee husks. The study was designed using an experimental method with a Completely Randomized Design pattern, consisting of 6 treatments: (LI-0) coffee husk without EM4, (LI-2) coffee husk + 2 ml EM4, (LI-4) coffee husk + 4 ml EM4, (LI-6) coffee husk + 6 ml EM4, (LI-8) coffee husk + 8 ml EM4, and (LI-10) coffee husk + 10 ml EM4. Each treatment was repeated 4 times. The observed parameters were NDF, ADF, cellulose, hemicellulose, and lignin content. The data were analyzed using analysis of variance. The results showed that NDF content (ranging from 54.40–57.74%) and lignin content (ranging from 23.60–26.14%) were significantly affected by the EM4 inoculum level in fermented coffee husks. In contrast, ADF content (ranging from 44.94–47.65%), cellulose content (ranging from 17.43–23.69%), and hemicellulose content (ranging from 9.31–10.75%) were not significantly affected by the EM4 inoculum level in the fermented coffee husks. It can be concluded that the best treatment for NDF, ADF, and hemicellulose content was at the 8 ml level, while the best level for cellulose content was at 4 ml, and for lignin content, it was at 6 ml.

*Keywords: Dried Coffee Husk, EM4 Inoculum Level, Fermentation, Fiber Components.*

# Effect of Cutting Age on Leaf Size, Leaf Number, Stem-Leaf Ratio, and Stem Diameter of *Mucuna Bracteata* in Drylands of Timor Island

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## Abstract

*Mucuna bracteata* is a ground cover plant widely used mostly in wet tropics throughout palm plantations in Indonesian. This study aimed to evaluate the effect of cutting age on leaf size, number of leaves, stem diameter, and leaf-to-stem ratio of Mucuna bracteata grown in dryland in Timor Island. The study was conducted from September 2023 to June 2024 District of Kupang, East Nusa Tenggara Provinsi in West Timor. The experimental design employed was a Completely Randomized Design with three treatments and seven replications. The variables observed were leaf length, leaf width, number of leaves, stem diameter, and leaf-to-stem ratio. Data collected during the study were analyzed using analysis of variance. To determine differences between treatments, Duncan's Multiple Range Test (DMRT) was applied. The results showed that Mucuna bracteata grown on dry land exhibited increased leaf size at a cutting age of 180 days. At 240 days, an increase in the number of leaves and stem diameter was observed, accompanied by a decrease in the leaf-to-stem ratio. Among the treatments, the cutting age of 180 days produced the most favorable results compared to cutting ages of 120 and 240 days.

***Kata Kunci :*** *Mucuna Bracteata, Growth*

# Why Is The Growth Rate of Leucaena-Based Fattening Cattle Low In The Traditional Rearing Systems In West Timor?

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## Abstract

The Leucaena-based cattle production system in West Timor—particularly the Amarasi Model—is internationally recognized as one of the most efficient traditional cattle production systems in dryland areas. However, a critical question remains: How productive is this system? This is the central research question of the present study. A time-series survey was conducted from 2022 to 2024, involving 220 cattle farmers engaged in Leucaena-based cattle fattening systems in West Timor, Indonesia. Data collection employed a combination of questionnaire-guided interviews, observations, measurements, and focus group discussions. Initial interviews were conducted at the beginning of the study to establish a baseline of cattle production and management practices. Observations were carried out every two months to document daily cattle management and the rearing environment. Monthly body weight measurements were conducted on 200 fattened cattle from two cattle farming groups in four villages where leucaena-based cattle fattening has been practiced since late 1970es. Feed intake data and feed samples were collected for analysis of feed composition and nutrient content. Quantitative data were analysed using descriptive statistics. The results revealed that the average daily body weight gain was only 0.275 kg, with an average fattening duration of 22.5 months. Only 41.2% of cattle farmers applied specific selection criteria (based on experience rather than academic knowledge) when choosing feeder stock. Price of the feeder stock was the primary consideration in buying the stock. The average initial fattening weight was 147 kg, with an average age of 19 months. Feeding practices were not guided by an understanding of quantity, quality, feed composition, nutrient balance, and the animals' nutritional requirements. In conclusion, the productivity of the Leucaena-based cattle production system in West Timor is low, largely due to poor quality of feeder stock, and feed and nutrient imbalance.

*Key words: body weight gain, beef cattle, leucaena-based fattening, West Timor.*

# Inclusion of Copra Meal (*Cocos Nucifera*) in the Diet and its Effects on Production and Carcass Yield of Local Pigs

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## Abstract

In pig farming, feeding is one of the determining factors in achieving maximum production. Pig feeding is costly, accounting for about 70 to 75% of the total production cost. Therefore, identifying potential and low-cost alternative foods should be important to reducing production costs. The inclusion of coconut flour meal is considered one of the high-nutrient quality feed alternatives to meet the nutritional needs of pigs. The objective of the study is to identify the effects of the inclusion of copra flour in the diet and its effects on production performance and carcass quantity yield of local pigs in the growth phase. The research was conducted in the Laboratory area of the Faculty of Agriculture, UNTL, located in the Acanuno village, Hera, P.A. of Cristo Rei, Dili, from August 21 to November 30, 2023. An experimental method was used, using a randomized block design, consisting of four treatments and three replications., totalling 12 units of observations. A total of 12 local male pigs were used, with the initial body weight ranging from 9.40 to 30.40 kg and average initial weight of about $16.20 \pm 7.60$ kg. At the end of the research period, the pigs reached a final weight ranging from 26.15 to 61.30 kg and an average final weight of about $34.40 \pm 11.23$ kg. The treatments applied in this research namely T0 composed of 0% coconut meal, 45% yellow corn, 40% rice bran, and 15% blood meal. T1 composed of 15% coconut meal, 35% yellow corn, 35% rice bran. T2 consists of 20% coconut meal, 30% yellow corn, 35% rice bran, 15% blood meal and include. T3 consists of 25% coconut meal, 30% yellow corn, 35% rice bran, and 10% blood meal. The observed variables included feed consumption, feed conversion, average daily weight gain, and carcass yield. Statistical analysis showed no significant differences (P>0.05) among the treatments in this study. However, in quantitatively terms, treatment T1 (15% copra flour inclusion) yielded the best results, with the following average values: average daily weight gain of $250.20 \pm 68.25$ g, slaughter weight of $41.12 \pm 17.43$ kg, carcass weight of $30.02 \pm 14.79$ kg, and carcass percentage of $71.58 \pm 5.20\%$.)$250.20 \pm 68.25$g, Slaughter weight $41.12 \pm 17.43$ kg, Carcass weight $30.02 \pm 14.79$ kg, Carcass percentage $71.58 \pm 5.20\%$. The average value of the above-mentioned indicators is considered normal for pig production performance and carcass quantity results. Therefore, it can be recommended to stakeholders, especially pig farmers in rural areas, to adopt treatment (T1) to improve pig production efficiency.

*Keywords: Local pig, diet, copra flour, production, carcass yield.*

# Agroforestry Provides Multiple Benefits To Small-Farm-Holders In Timor-Leste

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## Abstract

Over 75% of subsistence rural farmers in Timor-Leste are challenged by unsustainable land use of slash-and-burn on degraded steep slopes, resulting in land and environmental degradation through soil erosion, poor crop yields, and food insecurity. Several international NGOs have recently delivered agroforestry projects to improve land productivity and farmers' livelihoods. However, their impact was unknown. The present study aimed at assessing i) the adoption of agroforestry projects by farmers, ii) soil erosion from different land uses of fallow and slash-and-burn, and iii) agronomic response to different land uses in Timor-Leste. The study was conducted in the Global Climate Change Alliance (GCCA) project site at Saraida, post administrative of Quelicai, municipality of Baucau during the rainy season from December 2021 to April 2022. A total of 35 farmers involved in the project were interviewed and consulted through focus group discussions. In addition, field soil erosion and pot experiments were assessed. Results of the study showed that majority of farmers claimed improved production and outcomes from growing trees, and they wanted to replicate the agroforestry systems showing adoption of the agroforestry into their farm system due to its multiple benefits in terms of soil improvement, the provision of animal feed and fuelwood, and environmental and biodiversity sustainability. Measures of soil loss and plant production confirmed the positive effects of agroforestry, which reduced soil erosion by approximately 15 times less using the fallow system, and increased crop growth and yields with both fallow and slash-and-much agroforestry systems. The current study provided crucial baseline measurements and fundamental guidance for improving future land management of small-farm-holder farmers in Timor-Leste.

***Keywords:*** *agroforestry, soil erosion, soil cover, soil improvement, crop response, environmental sustainability.*

# Physiological Responses of Soybeans During Water Stress Occurring At Pre-Anthesis And Post-Dehydration

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## Abstract

Droughts caused by climate change bring uncertainty for soybean (Glycine max [L.] Merr) growers in the US and around the globe, adversely interrupting the growth and yields of soybeans. The present study aimed to investigate the physiological characteristics of soybean genotypes with different maturity groups in response to water stress before and at flowering during reproduction and rehydration. The growth chamber study was delivered in a greenhouse of the IOWA State University, USA, from August to November 2024 using a completely randomized design (CRD) factorial 3 x 3 with three replications. The soybean genotypes of Bayer-Kansas (A32E33), Pioneer (P18A73E), and Xitavo (var. 03120254) were imposed to severe water stress before (SBF) and at flowering (SF) and rewatered to 90% FC until physiological maturity. Parameters investigated were plant physiology, including leaf relative water content (RWC), stomatal conductance (gsw), photosynthesis (A), leaf temperature, leaf water use efficiency (WUE$_l$), and grain yield. Water stress increased leaf temperature immediately, leading to decrease gsw within two days (SBF, SF) and A within three (SF) or four days (SBF) after stress imposition. Water stress significantly decreased RWC at three (SF) or five (SBF) days after stress imposition. Water stress increased WUE$_l$ as gsw decreased reaching the highest WUE$_l$ when gsw was at about 1 mol/m$^2$/s. Rewatering improved plant physiology and delayed maturity, compensating for seed yield loss due to water stress. Water stress imposed before (6.26 g/plant) and at flowering (5.49 g/plant) produced similar grain yield, but significantly decreased by 26.07% and 35.13%, respectively, less to control. Bayer-Kansas produced 26.34% and 30.54% less seed yield than Xitavo and Pioneer. This study concludes that soybeans avoid or tolerate dehydration under severe water stress through a rapid decrease in gsw in addition to growth and recovery after rehydration, compensating for seed yield loss due to water stress. The three genotypes did not accelerate seed filling when severe water stress required breeding intervention for better adaptation to terminal drought.

***Keywords***: *field capacity, wilting point, plant available water, moderate water stress, severe water stress.*

# Rote Sheep: *A Breed That Is Able To Thrive Under Harsh Climate*

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## Abstract

Rote sheep (DORET) is a thin-tailed sheep (TTS) breed and is the only sheep breed found in the Southeastern islands of Indonesia. Its origin is not known with certainty, nor when or by whom it was brought to Rote Island. Some speculate that it originated from India/Bangladesh, and was brought to Rote Island via the silk and spice trade routes from India to the Moluccas, and then carried by sailors from the Moluccas to Rote. This study aimed at analyzing various biological parameters of the sheep that enable it to thrive in the dry biophysical environment of Rote Island, East Nusa Tenggara, Indonesia. Considering that the data collected consists of both primary and secondary data, the research method chosen was Rapid Rural Appraisal (RRA), and all types of RRA approaches were used, namely topical, systematic, and participatory. The stages of activities include desk review, direct observations, semi-structured field surveys, and official meetings. For direct observations and field surveys, all villages were divided into three clusters based on sheep population: high (>1,000 heads), medium (500–1,000 heads), and low (<500 heads). Two villages from each cluster were selected as samples. In each village, four farmers were selected using snowball sampling technique for interviews, and observations and measurements were also carried out on the sheep owned by the selected farmers. Official meetings were conducted with veterinary officers at sub-district level, agricultural extension workers, and head of livestock Department of Rote Ndao District. Literature review was conducted for journal articles, development reports, and statistical data for the past 10 years. Quantitative data were analyzed using descriptive statistics, while qualitative data were analyzed and described. The results showed that DORET has adapted well and continues to grow and spread across all sub-districts in Rote island (although not in all villages). For the last ten years, average sheep population grows at a rate of 5.03% or equal to 1,079 sheep per year. In 2024, the population reached 28,931 head and was raised by 679 farming households, averaging 43 sheep per household, yet some farmers own between 400 and 500 head per household. Distribution of DORET is uneven and does not correlate with land area of the sub-districts; for example, in Rote Barat Daya Sub-district, which has an area of 114.57 km², the sheep population is 7,530 head, compared to Rote Tengah Sub-district, which covers 162.50 km² but has only 700 head of sheep. The sheep are raised using a semi-intensive system, where they graze in pastures during the day (around 07:00–17:00) and are sheltered at night. No supplementary feed is provided, making sheep productivity highly dependent on the availability of forage in the pasture. This results in relatively low livestock productivity. In terms of productivity, DORET sheep have relatively small body frame, with the average adult male weighing 27.8 kg and the female 20.3 kg. Production and reproduction performance data from Rote-Ndao Livestock Department are as follows: average birth weight is $1.4 \pm 0.08$ kg, lambing interval is 10–12 months, litter size is 1–2 lambs per birth, and mortality rate is around 3%. It might be concluded that DORET is a thin tail sheep has been raised by farmers in Rote island since long time ago, and it has adapted very well to hot and dry environment. It can be seen from an average annual sheep population growth 5.03%. However, its productivity is relatively low due to management issues.

*Keywords: Domba Rote, draught tolerant, Rote Island, sheep productivity.*

# Effect of Native Grass and *Mucuna bracteata* Proportions in Silage Production on the Content of Tannins, Saponins, and Anti-Trypsin

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## Abstract

This study aimed to determine the effect of different proportions of natural grass and Mucuna bracteata in silage production on the content of anti-nutritional factors: tannins, saponins, and anti-trypsin. The study used a Completely Randomized Design consisting of 3 treatments and 5 replications, resulting in a total of 15 experimental units. The treatments were mixture native grass and *Mucuna bracteata* at a ratio of 40%:60% (P1), 50%:50% (P2), 60%:40% (P3). The variables observed were the content of tannin, saponin, and anti-trypsin. The data were analyzed using analysis of variance to assess the effect of the treatments on the measured parameters. To determine differences between treatments, an LSD (Least Significant Difference) test was conducted. The results showed that the proportion of natural grass and Mucuna bracteata in silage production had no significant effect on the anti-nutritional contents of the silage. In treatment P1, tannin content was 12.19%, saponin content was 5.89%, and anti-trypsin content was 0.12%. In treatment P2, tannin content was 11.27%, saponin content was 5.50%, and anti-trypsin content was 0.13%. In treatment P3, tannin content was 11.87%, saponin content was 5.72%, and anti-trypsin content was 0.13%. These results indicate no significant differences among the treatments. It can be concluded that varying proportions of natural grass and Mucuna bracteata in silage do not significantly affect the levels of anti-nutritional compounds. However, the resulting silage still maintains good quality for use, suggesting that the presence of anti-nutritional factors does not compromise the feed's nutritional value.

*Keywords*: anti-nutritional factors, Mucuna bracteata, natural grass, silage.

# Characteristics of the Traditional Extensive Management System of Droughtmaster Cattle in Lautem Administrative Post, Timor-Leste

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## Abstract

The extensive traditional system of rearing Droughtmaster cattle in Timor-Leste is characterized by free-range grazing along coastal areas, with no structured housing, health management, or reproductive control. While Droughtmaster cattle demonstrate resilience to harsh tropical conditions, the absence of vaccination, parasite control, and breeding management significantly limits their productivity and exposes them to disease and genetic degradation. Droughtmaster cattle, developed in northern Australia through the crossbreeding of Bos indicus (Brahman) and Bos taurus (Shorthorn), are well-suited for tropical climates due to their heat tolerance and disease resistance. Introduced to Timor-Leste in the 1980s under the Indonesian administration through the Banpres program, they were selected for their adaptability and robustness. Today, they contribute to both beef and, increasingly, milk production, particularly in the eastern regions of the country. This study aims to assess the characteristics of the traditional extensive management system of Droughtmaster cattle in the Lautem Administrative Post (AP), Timor-Leste, and to propose recommendations for improving productivity, livestock health, and reproductive management. Field observations and semi-structured interviews were conducted with livestock owners, suco chiefs, and veterinary and agricultural technicians. Data collected included information on management practices, health conditions, infrastructure, reproduction, and disease control measures. The analysis was conducted using descriptive and qualitative methods. Under the current system, Droughtmaster cattle are managed extensively, roaming freely along the coast without permanent shelters. There are no formal health programs in place, such as vaccination or parasite control. The cattle graze on natural pastures and drink from nearby rivers. Some farmers practice collective grazing, allowing their cattle to roam together in shared areas. Natural mating occurs freely, including crossbreeding with locally adapted Bali cattle, without owner intervention. This unregulated management system limits productivity and increases susceptibility to disease. The lack of housing and veterinary infrastructure hampers routine health interventions and disease control. Moreover, uncontrolled breeding risks the genetic integrity of the breed. Despite these challenges, Droughtmaster cattle hold significant potential for both meat and milk production. To realize this potential, the following improvements are recommended: Development of basic housing and crush pens, Implementation of regular vaccination and health management programs, Introduction of artificial insemination to regulate breeding, and Strengthening livestock management capacity through farmer training and technical support. These measures are essential for enhancing cattle productivity, improving animal health, and promoting sustainable livestock farming in Timor-Leste.

***Keywords:*** *Droughtmaster cattle; Extensive management; Livestock health; Natural breeding; extensive traditional system, Timor-Leste*

# The Perception of Consumers in Timor-Leste Regarding the Risk of Frozen Chicken Meat

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## Abstract

The low production of chicken meat in Timor-Leste's poultry sector, combined with changes in consumer meat consumption habits, has led to an increased demand for frozen meats. According to data from the National Directorate of Quarantine and Biosafety in Timor-Leste, between 2018 and 2020, frozen chicken meat accounted for 88% of the total consumption of imported frozen meats of animal origin (including beef, lamb, pork, and turkey). The main objective of this research was to evaluate consumer perceptions in Timor-Leste regarding the risks associated with frozen chicken meat. The specific objectives were to (a) identify and profile consumers of frozen chicken meat, (b) analyze consumption patterns, and (c) understand consumer perceptions of the risks involved in consuming frozen chicken. To achieve this, an online questionnaire was distributed to a sample of 1,066 individuals across the 13 municipalities of Timor-Leste. The respondents were predominantly female, aged between 18 and 58, and possessed higher education qualifications. The results showed that consumer perception of frozen chicken meat is influenced by socio-demographic factors such as gender, occupation, monthly income, education level, and municipality of residence. Additionally, consumers' awareness and reflection on potential risks associated with frozen chicken meat were found to shape their perception of those risks. The risks most commonly associated with frozen chicken meat by consumers include bacterial contamination, low quality, improper storage, and incorrect thawing. However, the perception of health risks does not appear to influence the decision to purchase frozen chicken. Instead, the most significant factors driving consumption are the availability of frozen chicken meat and its more affordable price.

***Keywords***: *frozen chicken meat, risk perception, consumer, eating habits, food safety*

# Formalin Contamination in Seafood and Frozen Meat Imported into Timor-Leste

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## Abstract

Studies were carried out to detect formalin contamination and the levels of formalin contamination in imported seafood, frozen meat, and a few locally produced foods. One hundred and twenty-one (121) imported seafood and frozen meat samples from supermarkets situated within Dili city were purchased and tested using Colorimetric determination with a color card and sliding comparator. Formalin was detected in all the supermarkets surveyed and also in the locally produced seafood. Meat and fish are contaminated at different levels. The highest contamination (50%) was found in fish with 13 positive samples with a contamination level of 2.25 mg/kg to 25.5 mg/kg. The second highest (23.1%) level of formalin contamination was found in chicken with 6 samples positive with different levels of contamination varied between 0.9 mg/kg to 9 mg/kg. The third most contaminated with formalin was detected in prawn/shrimp with 3 samples positive at different levels of contamination varied between 2.25 mg/kg to 13.50 mg/kg. The level of contamination is mostly above the maximum limit of 5 mg/kg and poses a threat to public health in Timor-Leste.

*Keywords: Formaldehyde, Formalin, Fish, Meat, seafood.*

# Preliminari Assessment of Draughtmater Cattle in Timor-Leste: A New Opportunity For Meat and Rural Development

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## Abstract

In Timor-Leste, crossbreeding Droughtmaster with the locally adapted Bali cattle is a strategic approach to enhance meat and milk production while preserving traits such as environmental resilience and disease tolerance. This genetic improvement is critical for boosting herd productivity and supporting rural development initiatives under challenging tropical conditions. This preliminary study aimed to assess the current distribution, productivity potential, health status, and crossbreeding practices of Droughtmaster cattle in Lautem Municipality and to explore their potential contribution to rural development programs, particularly school feeding initiatives. A field survey was conducted across five sucos within three administrative posts: Mehara, Titilari, and Maina, Serelau, and Ililai. Data were collected through interviews and consultations with livestock and veterinary technicians, suco chiefs, and agricultural extension officers. Observations of herd health and crossbreeding activities were also recorded during the field visits. A total of approximately 280 Droughtmaster cattle were documented. Most cattle were managed in about 45 herds, primarily located in coastal areas, indicating the breed's adaptation to such environments. Results suggested that Droughtmaster cattle were introduced into Timor Timur (now Timor-Leste) around 1980s. Presently, significant populations are only found in Lautem and Baucau municipalities. Historically, Droughtmaster cattle in Timor-Leste have been used solely for beef production. However, field data indicate that the breed is capable of producing approximately 4–6 liters of milk per cow per day under appropriate management. This presents a valuable opportunity to integrate Droughtmaster cattle into school feeding programs, contributing to child nutrition and linking livestock production to public health outcomes. Natural crossbreeding with Bali cattle was observed during the survey. Farmers reported that the Droughtmaster-Bali crossbreeds showed promising performance under existing local management systems. Preliminary health assessments showed possible infections with brucellosis and the presence of internal and external parasites. Limited access to veterinary services and feed resources were also identified as major constraints to optimizing cattle production. It is concluded that Droughtmaster cattle represent a valuable but underutilized resource for rural development in Timor-Leste. Their dual-purpose potential (meat and milk), adaptability, and suitability for crossbreeding programs align well with national agricultural development goals.

***Keywords***: *Droughtmaster cattle; Timor-Leste; Crossbreeding; Meat production; Milk production; Rural development.*

# Assessing Food Security and Nutrition Status among Vulnerable Populations in Timor-Leste especially in RAEOA

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## Abstract

This research investigates food security and nutritional status among vulnerable populations in Timor-Leste, with a particular focus on the Authority of the Special Administrative Region of Oe-Cússe Ambeno (RAEOA). This study aimed to assess the multifaceted factors contributing to food insecurity and malnutrition. The study drawn on demographic data, food consumption patterns, and access to nutrition services— factors essential to understanding the challenges faced by vulnerable groups in the region. Timor-Leste, and especially the RAEOA region, experiences significant levels of food insecurity. Vulnerable groups, including children, pregnant women, and rural communities, face considerable barriers to adequate nutrition. A 2019 study revealed that only 25% of the population was food secure. While many households can afford diets that meet their energy needs, nutritious food remains inaccessible to the majority. The country's dependence on food imports—accounting for 60% of its food supply— combined with low agricultural productivity further exacerbates this insecurity. The RAEOA region is particularly at risk due to its geographic isolation and limited resources. Food insecurity here is driven by a complex interplay of factors, including poverty, inadequate infrastructure, limited educational opportunities, and cultural practices. Additionally, climate change and agricultural constraints pose ongoing threats to food production and availability. Marked disparities between urban and rural areas also contribute to unequal access to nutritious food and healthcare services. This study seeks to assess the extent of food insecurity and malnutrition in Timor-Leste, with a special emphasis on RAEOA. Its objectives are twofold: first, to collect demographic data, and second, to evaluate household food security through questions on food access, meal frequency, and experiences of hunger. It also examines dietary patterns, including fruit and vegetable intake and access to clean drinking water. Nutritional status will be assessed through indicators such as weight loss, appetite changes, and signs of malnutrition in children and pregnant or lactating women. In addition, the study explores access to healthcare services, the distance to such facilities, and barriers to nutrition education or counseling. Economic factors, including sources of income, recent income changes, and participation in government assistance programs, will be analyzed to understand household vulnerability. The research will also consider the role of community support networks and traditional coping mechanisms in addressing food shortages and economic hardship. The findings will inform policy and interventions aimed at improving food security and nutrition among vulnerable populations in Timor-Leste, particularly in the RAEOA region. By assessing food access, nutritional status, and influencing factors, the research will generate valuable data to support targeted interventions, enhance health outcomes, and advance sustainable development goals in the country.

***Keywords*** *: Food Security, Malnutrition, Vulnerable Populations, RAEOA Region, TLS*

# Effect of Cow Rumen Fluid Inoculum Levels on the Content and *In Vitro* Digestibility of Crude Protein and Crude Fiber of Fermented Coffee Husks

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## Abstract

This study was conducted in Oesapa Selatan Subdistrict, Kupang City, from April to June 2024. It aimed to determine the effect of different levels of cow rumen fluid inoculum on the content and in vitro digestibility of crude protein and crude fiber in fermented coffee husks. The study employed a completely randomized design (CRD) consisting of 5 treatments and 4 replications, totaling 20 experimental units. The treatments were as follows: no inoculum (ICR0), and rumen fluid inoculum at 10 ml (ICR10), 20 ml (ICR20), 30 ml (ICR30), and 40 ml (ICR40) per kg of substrate. The mixtures were fermented for 28 days. Observed variables included crude protein content, crude fiber content, and the in vitro digestibility of crude protein (IVCPD) and crude fiber (IVCFD). Data were analyzed using Analysis of Variance (ANOVA), and treatment differences were assessed using Duncan's Multiple Range Test. The results showed that increasing levels of rumen fluid significantly decreased crude fiber content from 28.09% to 23.64%, increased crude protein content from 8.83% to 10.41%, enhanced IVCPD from 52.06% to 64.45%, and improved IVCFD from 22.83% to 28.87%. It can be concluded that cow rumen fluid is effective as a starter inoculum for fermenting coffee husks, as indicated by increased nutrient content and digestibility, and reduced crude fiber content. The best results were observed at the level of 40 ml/kg of substrate.

*Keywords*: inoculum, coffee husk, nutrient content, in vitro digestibility

# Development of Training Strategy of Catfish Nugget Production for Village-Owned Enterprise Managers in South Central Timor Regency

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## Abstract

Catfish aquaculture presents a promising avenue for economic development among Village-Owned Enterprises (BUMDes) in South Central Timor Regency. However, limited post-harvest processing skills—particularly in the development of value-added products such as catfish nuggets—have constrained its economic potential. This study aims to formulate an effective, context-appropriate training strategy to enhance BUMDes managerial capacity in the production, packaging, and marketing of catfish nuggets. A literature review was conducted, supplemented by field data from a community service initiative in collaboration with the Tafena Munif Kuan Foundation. The study synthesizes relevant models of vocational training, food processing, and rural entrepreneurship. Key components identified include modular and experiential learning, phased capacity building, institutional collaboration, and continuous mentoring. Practical training sessions significantly improved participants' competencies in hygienic processing, packaging aesthetics, and product quality. Findings indicate that a participatory, locally rooted training model is effective in empowering rural communities to generate added value from indigenous aquaculture resources. This model offers potential for replication in other regions as a strategy for advancing sustainable rural agroindustry.

***Keywords:*** *catfish nuggets, training strategy, BUMDes, rural agroindustry, community empowerment, food processing, South Central Timor*

# The Impact of Various Biochar Types on Calcareous Soil Physical Properties, and Growth and Yield of Mung Bean (*Vigna radiata* L.)

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## Abstract

Biochar has gained attention as a soil amendment capable of enhancing soil quality, particularly its physical properties. However, its effectiveness is strongly influenced by the type of feedstock used. This study evaluated the effects of biochar derived from cow dung, chicken manure, and rice husk on selected soil physical properties and on the growth and yield of mung bean (*Vigna radiata*) cultivated in calcareous soil. A polybag experiment was conducted using a randomized block design with six replications per treatment. Biochar was manually produced and applied at a rate of 150 g per polybag (equivalent to 20 tons ha$^{-1}$), thoroughly mixed into 20 kg of soil one week before sowing. Plants were irrigated daily to maintain field capacity. Measured parameters included soil organic carbon, bulk density, porosity, aggregate stability, soil moisture content, plant biomass, and yield. ANOVA, followed by Duncan's multiple range test, was employed for statistical analysis. Results indicated that all biochar treatments significantly improved soil physical attributes and plant performance compared to the control. Rice husk biochar more effectively enhanced soil structure indicators, whereas cow dung biochar led to superior plant biomass, pod number, yield, and water use efficiency. These findings highlight the importance of feedstock selection in optimizing biochar use and warrant further validation under field conditions.

***Keywords***: *biochar, calcareous soil, soil physical properties, mungbean, organic amendments*

# Opportunities for Shrimp and Milkfish Aquaculture Development Through Market Demand Analysis in Timor Region

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## Abstract

This study was conducted to examine opportunities for shrimp and milkfish aquaculture development in Timor region through market demand analysis in Timor Region. Market demand data for West Timor were obtained through a market demand survey conducted on 28 fish traders/seafood restaurant managers spread across 6 cities in West Timor, while market demand to Timor Leste was based on fisheries trade flow data at the Indonesia-Timor Leste border post. The matrix tabulation method was used to calculate the per capita consumption of shrimp and milkfish of the Timor Leste population, as well as the projection of shrimp and milkfish demand in the Timor Leste region in 2014-2025 based on population growth projections in the Timor region. The results of the study showed that the demand for shrimp was stronger and was found in 6 urban markets in the West Timor to Timor Leste region, while milkfish was only in demand in the local market. The demand for shrimp in the Timor region in 2025 reached 3671.79 tons while milkfish in the local market only reached 787.3 tons. The development of shrimp cultivation can be a logical choice in order to meet the market demand in the Timor Region.

***Keywords**: aquaculture development, shrimp, milkfish, market demand, Timor region*

# The Effect of Fermentation Duration Using Effective Microorganism-4 As Inoculum on the Nutrient Content of Coffee Husks

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## Abstract

This study aimed to determine the effect of fermentation duration on the nutrient content of fermented coffee pulp flour. A Completely Randomized Design (CRD) was used with 6 treatments: LF-0 (0 days of fermentation), LF-2 (2 days), LF-4 (4 days), LF-6 (6 days), LF-8 (8 days), and LF-10 (10 days). Each treatment was repeated 4 times. The observed parameters were dry matter content, organic matter, crude protein, and crude fibre. Data were analysed using analysis of variance (ANOVA) and Duncan's test. The results showed that fermentation duration had a significant effect ($P<0.05$) on the contents of dry matter, organic matter, crude protein, and crude fibre. Fermentation of coffee pulp increased dry matter content at 4 days of fermentation (64.47%), organic matter at 10 days (93.32%), and crude protein at 2 days (10.45%), while it decreased crude fibre content at 4 days of fermentation (3.67%). It was concluded that the nutrient content of coffee pulp depends on the fermentation duration, with the best fermentation time being 2 days.

*Keywords*: *Leucaena, alley cropping, Timor-Leste, psillid-resistant, drylands.*

# Potential of Hydrochar From A Combination of Local Biomass And Non-Productive Marine Biomass As A Candidate Material For Dryland Soil Restoration

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## Abstract

Restoring dryland soils with calcareous characteristics and a high alkaline pH presents a significant challenge for the sustainable management of agroecosystems, particularly in the Timor Islands. This study employs a novel technique that involves producing hydrochar from local biomass, including wild weeds and agricultural residues, and applying a chitosan coating sourced from mangrove crab shell waste (Scylla serrata). A hydrothermal carbonization process at low temperatures is utilized to generate hydrochar, preserving its pore structure and enhancing the material's functional properties. The application of a chitosan coating enhances the hydrochar's physicochemical characteristics, such as cation exchange capacity, water retention capacity, and nutrient stability. Laboratory evaluations are conducted to assess the modifications in surface structure and nutrient retention capabilities. Hydrochar is examined as a growing medium for horticultural crops, notably water spinach (Ipomoea aquatica), in calcareous dryland soils. Initial findings indicate that chitosan-coated hydrochar enhances the physical and chemical properties of the soil, while also promoting plant growth performance under challenging conditions. This method offers a sustainable approach to using local biomass waste, concurrently aiding in environmentally responsible dryland management. This presentation will explore the potential advancement of hydrochar technology based on local biomass as an innovative solution for the restoration of dryland soils and its integration into agricultural systems reliant on local resources.

***Keywords**: Chitosan, Calcareous soil, Dryland restoration, Hydrochar, Local biomass.*

# Supplementation of Cellulase Enzyme in a Complete Feed Based on Fermented Banana Stem On Nutritional Digestibility of Fattened Bali Cattle

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## Abstract

One of the main constraints to increasing beef cattle production in East Nusa Tenggara, particularly on Timor Island, is the insufficient feed quality provided by farmers, which often fails to meet the dry matter requirements for beef cattle. This highlights the need for effective supplementation strategies. The addition of exogenous cellulase enzymes offers a potential solution to improve feed digestibility in the rumen, particularly in areas with extended dry seasons where available feed consists largely of agricultural and plantation waste. The objective of this study was to evaluate the effectiveness of exogenous cellulase enzyme supplementation at different inclusion levels. The study used nine male Bali cattle aged 1 to 1.5 years, with body weights ranging from 108 to 116 kg (average 112.79 kg; CV = 5.72%). A Completely Randomized Design was applied with three treatments and three replications. The treatments were as follows: $P_0$ = 70% *Lamtoro* green fodder + 30% complete feed (control), $P_1$ = 70% *Lamtoro* green fodder + 30% complete feed + 5 g cellulase enzyme/kg dry matter of complete feed, $P_2$ = 70% *Lamtoro* green fodder + 30% complete feed + 10 g cellulase enzyme/kg dry matter of complete feed. The results showed that dry matter digestibility ranged from 72.4% to 74.0%, organic matter digestibility ranged from 71.48% to 75.22%, and crude protein digestibility ranged from 65.05% to 69.58%. Cellulase enzyme supplementation significantly improved the digestibility of dry matter and organic matter but had no significant effect on crude protein digestibility. It is concluded that cellulase enzyme supplementation in complete feed based on fermented banana stem can enhance the digestibility of dry matter and organic matter in fattened Bali cattle, although it does not significantly affect crude protein digestibility across different **enzyme levels.**

*Keywords*: *banana stem, cellulase, fermentation, complete feed, Bali cattle.*

# Intercropping of Sorghum and Horticultural Crops: Its Potential as Ruminant Feed on Various Types of Soil

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## Abstract

The pattern of cultivating horticultural crops cannot be separated or eliminated from the community agricultural model in the context of cultivating food crops, farming with this system only produces one production result. Soil conditions, characteristics, and water availability also determine plant productivity, both for food and forage. Intercropping is one of the most commonly used cultivation practices in sustainable farming systems, as it plays an important role in increasing land productivity and yield stability. This study aims to determine the potential of sorghum plants planted in intercropping with horticultural crops (Farmer Model), including productivity and production on various types of soil in dry land on Timor Island. This experiment used a completely randomized factorial design with 2 factors (3x3) and 3 replications. The first factor is the type of horticultural plant: Pare (H1), Cucumber (H2), and Long Bean (H3). The second factor is the type of soil, namely litosol soil (LS), grumusol soil (GS), and alluvial soil (AS). This experiment was carried out for 100 days since the land was cultivated in the experimental demonstration plot. Data were analyzed using analysis of variance. The results showed that there was no interaction between treatments $p>0.05$ on plant height, number of leaves, fresh material production, and dry material production. The factor of differences in types of horticultural plants on intercropping planting patterns also had an insignificant effect of $p>0.05$, but the factor of differences in soil types had a significant effect of $p<0.05$ on plant height, number of leaves, fresh material production, and dry material production. It was concluded that different types of soil had different effects on plant height, number of leaves, fresh material production, and dry material production, and the highest was found in the grumusol type of soil, while different types of horticultural plants did not have a significant effect.

***Keywords:*** *Horticultural Crops, intercropping, potential, soil type, sorghum plants, ruminant feed*

# Analysis of the Use of Remittances from Workers Employed Abroad in the Village of Mau-Meta and Metagou, Bazartete, Liquiça: *A Case Study of Workers from Mau-Meta and Metagou work in the United Kingdom*

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## Abstract

Timor-Leste has a population of 1.3 million people and from this around 66% engaged in agriculture sector. Indeed, there are number of challenges faced by population in the country including multidimensional poverty, malnutrition, food insecurity, and unemployment. Additionally, the country's economy remains heavily dependent on the Petroleum Fund, which accounts for 81% of national expenditure. The objective of this study is to analyze and identify the use of remittances sent by workers employed in United Kingdom to their family in the village of Metagou and Mau-Meta, Liquica municipality.  Data from LFS 2016 shows that with the annual growth rate of the population in Timor-Leste of 2.4% and the working age (15 + years) of about 700,000 people and the youth (15-24) labor force participating rate of 25.8%, these pose huge challenges in the employment sector in particular for youth in Timor-Leste. This situation clearly contributed to rising of unemployment among young people. According to data from SEFOPE, in 2021 the number of unemployed individuals reached 12,700 people with a minimum wage of only 115 US dollars per month. In addition, the youth in the village of Metagou and Mau-Meta is also facing the reality of lack of employments in their villages.  As a result, it drives many of the them to migrate to the United Kingdom and other countries in search for employment with the ultimate goal to improve their family's well-being. In this context, the present study aims to understand how the recipient families utilize the remittances they receive.  The workers who were employed in United Kingdom represent an important element in this study. In order to better understand their identities, income, professions, and the remittances they send to their families, it is important to explore how these funds are used for investments in areas they prioritize. Respondents began working in England in 2013, but many of them started working in 2022. Their salaries fortnight ranges from a minimum of $1,000 to a maximum of $2,200, depending on the type of works. The money earned that sent back to Timor-Leste, primarily used according to the needs of investment.  The study reveal that the large portion of these remittances are investing in building houses, purchasing land, education purposes, and agriculture among other uses.  The study also shows that although most families rely on agriculture for their livelihood however, the main priority of the investment is not in this sector. Indeed, building houses, purchasing land and education are the three most important investments using remittances sent by workers employed in the United Kingdom. This will be contributed negatively to the development of agricultural sector in general and further resulted in more unemployment in Metagou and Mau-Meta and Timor-Leste as a whole.

***Keywords****: Remittances, Employment, Poverty, Income, Agriculture sector.*

# Assessing the Potential of Droughtmaster Cattle for Livestock Improvement in Timor-Leste: A Comparative Review of Production, Reproductive, and Health Performance in Australia and Indonesia

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## Abstract

Droughtmaster cattle, a composite Bos indicus × Bos taurus breed developed in northern Australia, are valued for their adaptability to tropical conditions, including heat tolerance, disease resistance, and solid production traits. This review assesses their performance in Australia and Indonesia and explores their potential for livestock improvement in Timor-Leste. In Australia, Droughtmasters demonstrate moderate birth weights (30–35 kg), strong growth (0.9–1.2 kg/day), and mature weights of 800–1000 kg (bulls) and 550–700 kg (cows). Reproductive traits include puberty at 12–15 months, first calving at 24–27 months, and 12–14 month calving intervals. They also produce 4–6 liters of milk daily over 180–210 days. Their resistance to parasites, tropical diseases, and heat stress reduces the need for veterinary intervention, making them ideal for low-input systems. In Indonesia, where Droughtmasters have been introduced since the 1980s, performance remains strong despite nutritional constraints. Daily gains average 0.7–1.0 kg, with first calving at 28–32 months and calving intervals of 14–16 months. Health outcomes remain positive with basic care. For Timor-Leste, where cattle productivity is hindered by poor genetics and limited health services, Droughtmasters offer significant potential. Their dual-purpose role in meat and milk production could support school feeding and nutrition programs while increasing rural incomes. Daily milk yields of 4–6 litres under proper management could help address child malnutrition. Successful integration will require targeted investment in breeding, animal health, feeding systems, and cooperative-based milk distribution. This review provides a foundation for policymakers and stakeholders to support sustainable cattle development and nutrition improvement in Timor-Leste.

***Keywords:*** *Droughtmaster cattle, reproduction, production performance, health status, Timor-Leste, dual-purpose cattle*

# Carcass Production and Economic Benefits of Slaughtering Cull Bali Cows at Different Ages

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## Abstract

The majority of beef demand in the Province of Nusa Tenggara Timur is sufficed by slaughtering cull Bali cows. However, there is lack of information regarding the best age to slaughter cull Bali cows producing highest carcass weight and economic return. This study aimed to evaluate the carcass yield and economic benefits of slaughtering cull Bali cows at different ages. A total of thirty cull Bali cows were categorized into three age groups: 2–4 years, >4–7 years, and >7–10 years, and were slaughtered at CV Aldia slaughterhouse. Live weight at slaughter, carcass weight, and non-carcass weight were recorded and analysed using analysis of variance (ANOVA). Economic returns were also compared across the age groups. The results showed no significant differences ($P>0.05$) in live weight or weight loss after 12 hours of fasting among the age groups. Similarly, carcass weight and dressing percentage did not differ significantly ($P>0.05$). However, younger cull cows had significantly higher non-carcass weights ($P<0.01$) than older cows. Slaughtering older cows (7–10 years) yielded the highest economic returns. In conclusion, although live weight and carcass production were similar across age groups, slaughtering older cull Bali cows is economically more advantageous.

***Keywords***: *cull Bali cows, age, slaughter, live weight, carcass, non-carcass, economic return.*

# Nutrient Content and *In Vitro* Digestibility of Indigofera Grown with Sorghum

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## Abstract

The shortage of animal feed in dryland areas with arid climates is a recurring issue each year, necessitating efforts to promote sustainable feed provision. One promising source of tree legumes that is relatively adaptive to such conditions is *Indigofera*, which can be cultivated either as a monoculture or in intercropping systems. This study aimed to determine the nutrient content of the tree legume *Indigofera zollingeriana* when intercropped with sorghum. *Indigofera* was planted with a spacing of 2 x 2 meters, eight weeks before the sorghum. At the time of sorghum planting, the *Indigofera* seedlings had reached heights of 10–15 cm. Sorghum was then planted between the *Indigofera* rows, and the *Indigofera* was harvested when the sorghum plants reached the generative phase. The results showed that *Indigofera* growth was suppressed by competition with the sorghum, particularly due to shading by the sorghum canopy. The height of *Indigofera* at the time of harvest ranged from 66 to 143 cm, with an average of 119.75 cm. Fresh biomass production was relatively low at 387.5 kg/ha. Nutrient analysis revealed the following: dry matter content was 31.79%, crude protein 18.75%, crude fiber 18.97%, and nitrogen-free extract (NFE) 48.29%. The in vitro digestibility values for dry matter and organic matter were 68.49% and 66.36%, respectively. Rumen fermentation parameters, as indicated by concentrations of volatile fatty acids (VFA) and ammonia ($NH_3$), were 144.41 mM and 12.79 mM, respectively. Cell wall component analysis showed neutral detergent fiber (NDF) and acid detergent fiber (ADF) contents of 46.06% and 31.79%, respectively. Based on these findings, it can be concluded that *Indigofera* has good nutritional quality—especially its crude protein content—which is sufficient to meet the nitrogen requirements of rumen microbes, as reflected by the elevated levels of $NH_3$ and VFA fermentation products.

***Keywords:*** *Indigofera, crude protein, cell wall, in vitro digestibility*

# The Effect of Rice Husk Biochar and Tofu Waste Liquid Fertilizer on the Efficiency of Nitrogen Fertilization and the Yield of Mays (*Zea mays ceratina* L.)

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## Abstract

Low of soil organic matter and nitrogen content, is one of the main problems in agricultural soils in the tropics. To increase the productivity of maize grown in tropical drylands, it is necessary to improve soil fertility by adding organic matter and fertilizing nitrogen, especially by using locally available resources. In this case, the study analysed the effect of the interaction of rice husk biochar and tofu waste liquid fertilizer on the efficiency of nitrogen fertilization and corn yield. The study was performed using a completely randomized block design arranged with two treatment factors. The first factor was the dose of rice husk biochar consisting of three different levels: B0 (0 t/ha), B1 (5 t/ha) and B2 (10 t/ha)., and the second factor was the concentration of tofu liquid waste fertilizer which consists of four levels : P0 (0 mL/L), P1 (150 mL/L), P2 (300 mL/L) and P3 (450 mL/L). The observation data were analysed with analysis of variance and the Duncan Multiple Range Test. The variables observed were: organic carbon and total nitrogen of soil, nitrogen fertilization efficiency, and weight of corn. The results showed that there was an interaction between the dose of rice husk biochar and the concentration of tofu waste liquid fertilizer on the total nitrogen of soil and the efficiency of nitrogen fertilization. The best treatment was a combination of 10 t/ha of rice husk biochar and 450 mL/L of tofu waste liquid fertilizer.

*Keywords*: *rice husk biochar, tofu waste liquid fertilizer, nitrogen absorption*

# Synthesis and Antibacterial Activity of C-Methoxyphenyl Alix[4]resorcin aryl octa cinnamate Compound Against Bacteria That Cause Banana Diseases

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## Abstract

Banana blood disease (BDB) is a bacterial infection that primarily affects bananas, particularly those used as raw materials for processed banana products. The disease is characterized by rotting and browning of banana flesh, as well as leaf wilting. The causative agent of this disease is Ralstonia syzygii subsp. celebensis. This study focuses on evaluation of C-methoxy phenylcalix[4]resorcinaryl octacinnamate (CMPCROC). CMPCROC was synthesized through the esterification of C-methoxy phenylcalix[4]resorcinarene (CMPCR) using cinnamoyl chloride. The structure of the synthesized compound was characterized by IR, $^1$H-NMR, and MS spectroscopy. Antibacterial activity was assessed using the Kirby-Bauer disc diffusion method. The synthesis yielded a yellow solid with a melting point of 215–220 °C and a yield of 67.05%. Antibacterial testing revealed inhibition zone diameters for CMPCROC against Ralstonia syzygii subsp. celebensis at concentrations of 5%, 10%, and 20% as 0.93 cm, 0.63 cm, and 0.33 cm, respectively. For comparison, the positive control showed an inhibition zone diameter of 0.37 cm. These findings indicate that CMPCROC exhibits strong antibacterial activity against Ralstonia syzygii subsp. celebensis.

***Keywords***: *Synthesis, characterization, antibacterial activity, Ralstonia syzygii subsp. celebensis, banana blood disease*

# Identification of Insect Pests Causing Gall of Eucalyptus urophylla And Eucalyptus alba and Intensity of Their Damage in Fatumnasi, Fatukoko and Noinbila, West Timor

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## Abstract

Low of soil organic matter and nitrogen content, is one of the main problems in agricultural soils in the tropics. To increase the productivity of maize grown in tropical drylands, it is necessary to improve soil fertility by adding organic matter and fertilizing nitrogen, especially by using locally available resources. In this case, the study analysed the effect of the interaction of rice husk biochar and tofu waste liquid fertilizer on the efficiency of nitrogen fertilization and corn yield. The study was performed using a completely randomized block design arranged with two treatment factors. The first factor was the dose of rice husk biochar consisting of three different levels: B0 (0 t/ha), B1 (5 t/ha) and B2 (10 t/ha)., and the second factor was the concentration of tofu liquid waste fertilizer which consists of four levels : P0 (0 mL/L), P1 (150 mL/L), P2 (300 mL/L) and P3 (450 mL/L). The observation data were analysed with analyses of variance and the Duncan Multiple Range Test. The variables observed were: organic carbon and total nitrogen of soil, nitrogen fertilization efficiency, and weight of corn. The results showed that there was an interaction between the dose of rice husk biochar and the concentration of tofu waste liquid fertilizer on the total nitrogen of soil and the efficiency of nitrogen fertilization. The best treatment was a combination of 10 t/ha of rice husk biochar and 450 mL/L of tofu waste liquid fertilizer.

***Keywords***: *rice husk biochar, tofu waste liquid fertilizer, nitrogen absorption*

# Downstream Development of the Indonesian Seaweed Industry: *A Case Study from East Nusa Tenggara Province, Indonesia*

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## Abstract

The seaweed industry represents a strategic economic sector in East Nusa Tenggara (NTT), Indonesia, particularly in West Timor, where seaweed cultivation is widespread. This study examines the downstream development of the region's seaweed industry by evaluating current processing capacities, analyzing the impact of national policies, and identifying opportunities for value chain enhancement. Drawing on data from government reports, industry publications, and market sources, we assessed production output, firm capacity utilization, and policy outcomes. The findings reveal that although regional processors such as Algae Sumba Timur Lestari and Rote Karaginan Nusantara have a combined annual capacity of 13,104 tons, they operate at only 32% efficiency. Meanwhile, small-scale enterprises like Agar Kembang on Semau Island are pioneering alternative marketing strategies for raw dried seaweed as eco-labeled products. The 2022 ban on raw seaweed exports, designed to stimulate local value addition, resulted in a sharp price decline (from IDR 40,000 to IDR 13,000–15,000 per kg) and led to unintended consequences, including informal trade practices. Despite these constraints, rising global demand for seaweed-derived hydrocolloids and non-hydrocolloid products presents significant downstreaming potential. The study concludes that targeted infrastructure investment, enhanced regulatory enforcement, and market-oriented innovation are critical for unlocking the region's full processing capacity and advancing inclusive economic development.

***Keywords***: *seaweed industry, downstream processing, carrageenan, East Nusa Tenggara, value addition, export policy*

# Climate Change Adaptation Strategies of Smallholder Farmers in Timor-Leste

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## Abstract

Climate change brings about changes in temperature caused by global warming. This phenomenon generates problems in various sectors, including the agricultural sphere. Adverse weather conditions can lead to a reduction in agricultural production and contribute to food insecurity. Hence, mitigation and adaptation strategies to climate change are crucial in tackling climate change-related problems. The purpose of the study was to examine climate change adaptation strategies of smallholder farmers in Timor-Leste. In five villages of Manufahi and Manatuto, 465 farmer households were randomly selected, consisting of 176 adopters of Conservation Agriculture (CA) and 289 non-adopters. Face-to-face interviews were conducted using a structured questionnaire. Statistical analyses, including t-tests, factor analysis, and descriptive analysis, were conducted to examine climate change adaptation strategies. The results indicated that both conservation agriculture (CA) farmers and non-CA farmers implemented various strategies to address climate variability. These strategies included reducing tillage, practicing zero tillage (ZT) maize, using crop residues as soil cover, planting early, laser land leveling, crop rotation, intercropping, reducing fertilizer use, utilizing manure, adopting new seed varieties, planting stress-tolerant crops and varieties, increasing seed rates, substituting crops, and diversifying crops and livestock. Conservation agriculture was identified as a crucial factor in adapting to climate change-related challenges. These findings provide valuable information to the Timorese government for developing better policies and to agricultural practitioners for effective adaptation to climate change.

***Keywords:*** *Conservation agriculture, climate change adaptation strategies and farm households*

# Nutrient Status and Soil Reaction as the Basis for Horticultural Crop Development in Ainaro District

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## Abstract

The research was conducted in thea areas designated horticultural agricultural lands, Ainaro District. The soil in these areas is generally sandy clay in texture, with rather slow drainage, salt-free conditions, and hilly physiography. The study was carried out over a period of three months, from September to December 2024, with the aim of assessing the nutrient status—specifically organic carbon (C-organic), available phosphorus (P), and potassium (K)—as well as soil reaction, to improve the production of horticultural crops such as cabbage, carrots, and green beans. The materials and tools used in this study included GPS, clinometer, auger, sample rings, plastic bags, permeameter, soil test kits, pH meter, EC meter, digital scales, 50 ml measuring cups, beakers, distilled water (aqua dest), and other necessary equipment. The study employed a free land survey method based on a physical land approach and composite sampling. Composite soil samples were collected diagonally from a depth of 0–20 cm before land processing. Individual soil samples from each sampling point were combined in a bucket, mixed thoroughly, and then a composite sample was extracted. Approximately ½ kg of each composite sample was placed in plastic bags and sent to the Laboratory of Soil Science, UNTL, for analysis. The parameters and analysis methods included pH-$H_2O$, organic carbon, and available phosphorus and potassium, which were measured calorimetrically using a soil test kit as the main parameters. Additional parameters included soil texture (ribbon method), permeability, and soil salinity (using an EC meter). The data were analysed and compared against theoretical standards to determine quantitative values. The results showed that the soil reaction was slightly acidic, with a pH range of 6.1–6.4, indicating limited nutrient availability, particularly nitrogen (N), phosphorus (P), and potassium (K). Organic carbon levels ranged from 0.2–0.7%, available phosphorus from 10.3–18.0 ppm, and available potassium from 15–22.8 me/100g. Organic carbon was identified as the primary limiting factor for the production of cabbage, carrots, and green beans, followed by available phosphorus and potassium. To address these limitations and improve crop production, the application of organic and inorganic fertilizers is recommended. Organic materials such as compost, plant residues, or livestock manure should be applied at a minimum rate of 2 tons per hectare for each site. Inorganic fertilizers may include Urea, SP-36, and KCl, with recommended doses of 200, 525, and 300 kg/ha, respectively, for the Fatukhun and Boltama sites. The same dosage can be applied in Builico and Nugufu, except for KCl, which should be adjusted to 185 kg/ha. For Kanurema and Mau'ulo, the recommended doses are 200 kg/ha of Urea, 400 kg/ha of SP-36, and 300 kg/ha of KCl. These efforts aim to address nutrient and soil reaction limitations in the horticultural lands of Ainaro District.

*Keywords: Nutrients, soil reaction, crops.*

# Seaweed Cultivation Practices in East Sumba District, East Nusa Tenggara Province in Supporting Coastal Ecosystem Health

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## Abstract

East Sumba Regency is one of the largest centres of seaweed production in East Nusa Tenggara Province. With a cultivated area of 583.70 hectares, approximately 65.55% of this land is located in the eastern part of the regency. This study focuses on four specific locations within that area. The research uses a survey method with a quantitative approach, collecting data directly from respondents. Seaweed cultivation in the region is primarily conducted using the off-bottom method, which is implemented with consideration for the preservation of seagrass beds and coral reef ecosystems. This method minimizes the use of plastic bottles as floats, thereby reducing plastic waste. However, cultivators still rely heavily on nylon or PE rope, as there are currently no viable alternatives. To extend the rope's durability against ocean currents and wave action, farmers employ a spiral tying method for attaching seaweed seedlings. Challenges in seaweed cultivation in East Sumba include the lack of high-quality, superior seed stock and increasingly unpredictable weather patterns. The seeds currently in use have been recycled for approximately 15 years. Despite these challenges, coastal communities in East Sumba demonstrate a strong commitment to preserving coastal and marine ecosystems.

*Keywords: Cultivation Techniques, Seaweed, environmentally friendly, cultivation waste*

# Quality of *Na'an Maran* Given Alcohol with Different Concentrations

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## Abstract

The purpose of this study was to determine the effect of adding Sophia with varying alcohol concentrations on the quality of *na'an maran* (dried meat). The study employed a Completely Randomized Design (CRD) with a 4 × 5 factorial arrangement. The treatments applied were: P0: Beef + 2% salt (Control), P1: Sophia with 10% alcohol content, P2: Sophia with 12% alcohol content, P3: Sophia with 14% alcohol content. The parameters measured included pH, moisture content, protein content, fat content, ethanol content, and meat microstructure. Data were analysed using ANOVA. The results indicated that the addition of Sophia with different alcohol concentrations significantly reduced the pH value by 0.45–0.77 (P < 0.01), but had no significant effect on moisture, protein, fat, or ethanol content. The addition of alcohol also influenced the meat texture, leading to improved tenderness in na'an maran. In conclusion, the decrease in pH resulted in a more acidic environment in na'an maran, which can inhibit the growth of pathogenic and spoilage microorganisms. Additionally, the inclusion of alcohol contributed to improved texture and tenderness of the product

***Keywords***: *Na'an maran, Alcohol, pH, Microstructure*

# Optimization of Traditional Salt Production To Reduce Downtime And Cost In West Oesapa, West Timor

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## Abstract

Traditional salt production in West Oesapa Village still relies on conventional methods with low efficiency. The process of heating saltwater for six hours using firewood results in high operational costs, while the selling price of salt is insufficient to cover these expenses. This study aimed to improve the salt production process by applying a time and motion study approach to reduce downtime and production costs. A descriptive case study method was used, involving direct observation and time tracking of each production activity across five groups of traditional salt farmers. The data were analyzed to identify value-added and non-value-added activities, followed by simple recommendations related to workflow optimization, equipment placement, and time management. The results showed that the average production cycle duration before intervention was 7 hours and 15 minutes, with approximately 2 hours spent on unproductive waiting. After implementing improvements based on the time and motion analysis, the average production time was reduced to 5 hours and 30 minutes. Fuel efficiency improved by 18% due to the reorganization of furnace placement and adjustments to the combustion process. Additionally, salt output increased by 12% per cycle, and average operational costs decreased by approximately 20.3%. These findings demonstrate that the time and motion study method can significantly enhance production efficiency in traditional home-based industries. The study recommends applying this approach to other salt-producing regions with similar characteristics to improve the competitiveness of local farmers.

*Keywords: Traditional Salt Production, Time and Motion Study, Downtime, Production Efficiency, West Oesapa*

# Fusarium Wilt of Shallots in Semau Island, Kupang Regency: Pathogen Identification and Biocontrol Potential of Locally Isolated *Trichoderma asperellum*

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## Abstract

Shallot (*Allium cepa* var. *aggregatum* L.) cultivation across Indonesia is severely threatened by Fusarium wilt (twisted disease), caused by the *Fusarium oxysporum* species complex (FOC). However, information on the presence and incidence of this disease in Kupang Regency, particularly on Semau Island, remains limited. This study aimed to assess the occurrence and disease incidence of Fusarium wilt in main shallot-producing District on Semau Island, and to isolate and evaluate the biocontrol potential of indigenous *Trichoderma* spp. against the disease. Disease incidence varied across surveyed sites. Molecular identification using ITS4/ITS5 primers confirmed the presence of multiple Fusarium species, including *F. acutatum* and *F. longipes*, complicating disease management efforts. Trichoderma isolates obtained from healthy shallot rhizospheres were identified as *Trichoderma asperellum*. In vitro dual culture assays demonstrated significant suppression of Fusarium pathogens, with the *T. asperellum* isolate T.UT3 achieving 33.66–56.33% inhibition across various Fusarium strains. Given the unsustainability of traditional chemical controls, these findings highlight native *T. asperellum* strains as promising biocontrol agents for integration into Integrated Disease Management (IDM) strategies. This approach offers a sustainable solution to mitigate Fusarium wilt, enhance soil health, and protect shallot production in Nusa Tenggara Timur. Future research should focus on field application and bioformulation development to optimize biocontrol efficacy at scale.

***Keywords:*** *biocontrol, fusarium wilt, Integrated disease management, shallot, trichoderma asperellum*

# The Effect of Mycorrhiza and Type of Organic Matter on Chemical Properties and Corn Yields on Alfisol

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## Abstract

The low availability of phosphorus is one of the main constraints on the lime-parent Alfisol soil on the island of Timor, although the total phosphorus content in the soil is very high. To increase the availability of phosphorus in corn plantations planted on Alfisol, soil fertility improvements are needed, for example, by applying mycorrhiza and organic matter that could increase the availability of phosphorus. This study aims to determine the effect of the combination of mycorrhizal and organic matter on the availability of soil phosphorus, as well as phosphorus absorption, and corn yield. This study used a Randomized Completely Blok Design with eight treatments and three replications, namely: No mycorrhiza + No organic matter (M0B0), No mycorrhiza + Rice husk biocar (M0B1), No mycorrhiza + Cattle manure biocar (M0B2), Mycorrhiza + Cattle manure (M0B3),: Mycorrhiza + No organic matter (M1B0), Mycorrhiza + Rice husk biocar (M1B1), Mycorrhiza + Cattle manure biocar (M1B2), and Mycorrhiza + Cattle manure (M1B3). Data were analyzed with analysis of variance and the Duncan Multiple Range Test. The observed variables were: organic C, total phosphorus, available soil phosphorus, phosphorus absorption, cob length, and 100-grain weight. The results showed that the combination of mycorrhiza and the type of organic matter significantly affected available of soil phosphorus, phosphorus absorption, cob length, and and 100-grain weight. The M1B3 treatment has the highest available soil phosphorus, phosphorus absorption, cob length, and weight of 100-grain weight.

*Keywords: mycorrhiza, organic matter, chemical properties.*

# Mini Weather Station Design Based on IOT for Dry Land Agriculture

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## Abstract

Research has been carried out to build an integrated sensor system that will be applied to island dry land agriculture integrated with IoT (Internet of Things). In this research, two prototype measuring instruments were built for two different measuring parameters: an anemometer and rainfall integrated with IoT. The built sensor system can work well with consistent and real-time data presentation. The prototype anemometer built has a good level of precision but relatively low accuracy where the coefficients of determination are respectively $R^2 = 9 \times 10^{-6}$, $R^2 = 0.1634$, and $R^2 = 0.0239$, with a percentage difference in relative values of 21.29%, 25.14%, and 25.46%. The Tipping-Bucket Rain Gauge Prototype in measuring rainfall has quite good measurement accuracy with a measurement accuracy percentage of 95.55%.

***Keywords:*** *IoT, Anemometer, Tipping-Bucket Rain Gauge, Dry Land, Precision Agriculture*

# Mapping And Characteristics Crustacea Fishing Locations In Kupang Bay Waters

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## Abstract

The waters of Kupang Bay serve as important fishing grounds for both finfish and crustaceans. Although the area is a major centre for fishing in Indonesia, it still holds significant untapped potential for economically valuable marine biota. Crustacean fishing is typically carried out alongside finfish fishing by local fishermen. This study aims to map and analyse the characteristics of crustacean fishing locations based on the fishing activities of local fishers. The targeted crustaceans include species caught in trawl or gill nets, regardless of whether they are commonly consumed. Fishing locations were determined using GPS (Geographic Information System) tools and based on information provided by local fishermen. Mapping and characterizing these fishing sites help identify their specific locations, physical and chemical parameters, substrate types, and fishing seasons. This information is essential for promoting environmentally friendly and sustainable fishing practices. Furthermore, understanding the water and substrate characteristics serves as a reference for future crustacean aquaculture initiatives in Kupang Bay. The results of the study indicate that the main crustaceans caught include mangrove crabs, swimming crabs, mantis shrimp, turtle crabs, white shrimp, tiger shrimp (black shrimp), and red shrimp. These findings highlight the richness of crustacean resources in Kupang Bay. However, current utilization remains limited, with individual catches ranging from only 1 to 25 kilograms per fisherman.

*Keywords: mapping, bay, Kupang, shrimp, crab, swimming crab*

# Fungal Endophytes of a Timorese Forest Resource: Morphological Identification from Santalum album L

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## Abstract

Low levels of soil organic matter and nitrogen content are among the main challenges in agricultural soils in tropical regions. To enhance maize productivity in tropical drylands, it is essential to improve soil fertility by adding organic matter and nitrogen fertilizers, particularly through the use of locally available resources. This study investigated the effects of the interaction between rice husk biochar and tofu waste liquid fertilizer on nitrogen fertilization efficiency and maize yield. The experiment was conducted using a completely randomized block design with two treatment factors. The first factor was the rice husk biochar application rate, consisting of three levels: B0 (0 t/ha), B1 (5 t/ha), and B2 (10 t/ha). The second factor was the concentration of tofu waste liquid fertilizer, consisting of four levels: P0 (0 mL/L), P1 (150 mL/L), P2 (300 mL/L), and P3 (450 mL/L).
The collected data were analyzed using analysis of variance (ANOVA) and the Duncan Multiple Range Test. The variables observed included soil organic carbon, total soil nitrogen, nitrogen fertilization efficiency, and maize yield. The results showed a significant interaction between rice husk biochar application and tofu waste liquid fertilizer concentration on total soil nitrogen and nitrogen fertilization efficiency. The best results were obtained with the combination of 10 t/ha of rice husk biochar and 450 mL/L of tofu waste liquid fertilizer.

*Keywords: rice husk biochar, tofu waste liquid fertilizer, nitrogen absorption*

# Improvement Total Nitrogen, Exchangeable Potassium content of Alfisol and Yield of Tomato (*Solanum lycopersicum* Mill) by application combination treatment of Shallot Peel Waste, Rice Washing Water and Powder Active of Cassava

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## Abstract

Generally, Alfisol has low nutrients such as Total Nitrogen and Exchangeable of Potassium results in less supporting growth, development and yield of plant. This condition could be improved by application liquid organic fertilizer (LOF) such as shallot peel waste and rice washing water. This is mainly due those LOFs contain some nutrients such as Nitrogen, Phosphorus, and Potassium which in could be used to improve soil nutrients and yield of plant. Moreover, the capability of LOF could be increased by application powder active of cassava (PAC), due to PAC might improve activity of soil microorganism which results in improvement of physical characteristic of soil. Research had been done at Technical Unit of Laboratory Dry lands island, University of Nusa Cendana April 2024 to March 2025. Research designed on Randomized Completed Block Design with three replications. Treatments of the research were P0 (no application of shallot peel waste, rice washing water and powder active of cassava), P1 (application 250 ml of shallot peel waste and 750 ml of rice washing water), P2 (application 500 ml of shallot peel waste and 500 ml of rice washing water), P3 (application 750 ml of shallot peel waste and 250 ml of rice washing water), P4 (application 250 ml of shallot peel waste and 0.05 g of powder active), P5 (application 500 ml of shallot peel waste and 0.06 g of powder active), P6 (application 750 ml of shallot peel waste and 0.07 g of powder active). All data were analyzed by using Anova and followed by Orthogonal Contrast Test. Result of the research showed that P6 (application 750 ml of shallot peel waste and 0.07 g of powder active) significantly effect to total Nitrogen content of Alfisol (0.17 %) and fresh weight of tomato by 920.67 g per plot. However, all treatments did not affect significantly to Exchangeable of Potassium. Moreover, the research show that application shallot peel waste combined by powder active of cassava of results in a higher total Nitrogen content and fresh weight of tomato compare to application shallot peel waste combined by rice washing water.

***Keywords****: alfisol, liquid organic fertilizer, nitrogen, potassium, rice washing water, shallot peel waste.*

# Tracing the existence of the Flores giant rats in Ruteng Nature Park

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## Abstract

Flores Island is part of the Wallacea region, which is characterized by high biodiversity but low population densities of individual species. This region extends from the island of Sulawesi to the eastern part of Nusa Tenggara. Historical records indicate that there are eight mammal species of the Muridae family endemic to Flores. These include *Papagomys theodorverhoeveni*, *Papagomys armandvillei*, species from the genus *Hooijeromys*, *Hooijeromys nusatenggara*, *Spelaeomys florensis*, species from the genus *Floresomys*, *Floresomys naso*, and *Komodomys rintjanus*. To date, *Papagomys armandvillei* and *Komodomys rintjanus* are the only native species that are still considered widespread and can be found on Flores. In addition, introduced species such as *Rattus exulans* and *Rattus hainaldi* are also present on the island. This research represents an initial study aimed at identifying the presence, distribution, and habitat characteristics of Muridae species in Ruteng Nature Park (TWA Ruteng). We employed a line transect method, with site selection based on previous sighting reports and overlaid with a land use map. Five iron traps measuring 60 cm × 30 cm × 25 cm were used, along with nylon snares. Trap installation and monitoring were conducted periodically in the mornings and evenings. In total, 14 active nests, 6 abandoned nests, and 5 signs of presence (e.g., tracks and scratch marks) were recorded. However, no individuals were directly observed. Search efforts totaled 189 person-hours across three resort areas: Ranaka, Ranamese, and Golo Lusang. The absence of observed individuals during the 9-day survey period is likely due to seasonal factors affecting species activity. Specifically, the rainy season—with rainfall exceeding 201 mm/month in December 2024—may reduce the foraging activity of these fossorial species.

*Keywords*: *Endemic, Flores native, Papagomys, Ruteng, trap.*

# Analysis of Red Seaweed Gracilaria as an Alternative Source of Primary Metabolites for Food Sustainability in Tesabela, Kupang Regency, East Nusa Tenggara Province, Indonesia

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## Abstract

The increasing urgency of global food security demands the exploration of sustainable, nutrient-rich alternative resources. Red seaweeds (Rhodophyta), known for their high content of primary metabolites—carbohydrates, proteins, and lipids—represent a promising candidate in this context. This study investigates the metabolite composition of two red seaweed species, *Gracilaria gracilis* and *Gracilaria salicornia*, through species identification, proximate analysis, and a targeted literature review on nutritional applications. Results indicate that *G. gracilis* contains 72.41% carbohydrates, 5.74% protein, and 12.2% fat, while *G. salicornia* presents 70.62% carbohydrates, 4.76% protein, and 8% fat. Both species also exhibit low ash and moisture content. In addition to their nutritional profile, red seaweeds offer advantages in terms of rapid cultivation (45-day cycles), minimal resource input, and low environmental impact. These findings highlight red seaweeds as viable candidates for integration into sustainable food systems.

*Keywords: red seaweed, primary metabolites, Gracilaria gracilis, Gracilaria salicornia, sustainable food resources*

# Atauro And Its Neighboring Indonesian Islands: Informal Maritime Movements And Exotic Animal Disease Transmission Risks

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## Abstract

Animal movement across different geographic settings is widely recognized as a key pathway for spreading infectious diseases. However, so far, no study has examined cross-border animal movement between a tiny Timorese island called Atauro and its neighboring Indonesian islands. Thus, this rapid qualitative inquiry was held in October 2023 to describe cross-border movements between Atauro and its neighboring Indonesian islands. Data collection was done through in-depth face-to-face interviews, using a semi-structured questionnaire. A total of 29 key informants of diverse backgrounds were purposively selected and were interviewed in Atauro. The interviews were audio-recorded and transcribed afterward. Deductive thematic analysis was done using a coding matrix developed in Microsoft Excel 2016. This study revealed active informal cross-border interactions through informal channels between communities in Atauro and neighboring islands, mainly with communities in Liran, followed by Alor and Wetar islands. The community members in Atauro who have the most interactions with the neighboring islands are reportedly those who reside in Beloi and Biqueli villages. These interactions are driven by family ties, trade, and socio-cultural events, and involve informal live animal import into Atauro. The top imported animal species were goats, pigs, chickens, cattle, and dogs. Our findings indicate porous maritime borders, and lack of quarantine checks for imported animals which poses the risks of introducing and spreading exotic diseases of animal health and public health importance. We also found lack of awareness about exotic diseases within the communities. This study emphasized an urgent need to strengthen maritime border management, especially through the enforcement of quarantine protocols to prevent unregulated animal movements. It also highlights the need for targeted community awareness about the risks associated with the spread of exotic diseases through informal animal imports.

*Keywords*: *Atauro island, cross border, animal movement, Indonesia.*

# Understanding Dog Keeping And Dog Meat Consumption Practices In Ainaro: Public Health Implications For Rabies Control In TLS

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## Abstract

Dogs they are well-known for its role as rabies reservoir. In Timor-Leste, dogs have been part of Timorese society's livelihoods, and dog meat consumption has also been reported but there is a limited understanding of dog demographic characteristics and dog meat consumption practices. Having such an understanding is useful to have targeted interventions to address dog-mediated rabies which has increasingly become a major public health concern in Timor-Leste. The first human rabies outbreak in the country was mid-2024. This was a cross-sectional study to investigate dog ownership patterns and characterize dog meat consumption practices with their implications for rabies transmission. A total of 247 study participants were estimated using Statulator based on a margin of error of 5%, a confidence level of 90%, and an expected proportion of 65% based on a prior study. Interview data were collected from households using a structured questionnaire developed in a mobile data-gathering platform known as *Epicollect5*. Face-to-face interviews were held between January and February 2025. Descriptive and inferential statistics were calculated using Jamovi. Human-to-dog ratio was also calculated. Our study showed that 96% of households own dogs in an average of two dogs (range: 1-11 dogs). Human-to-dog ratio of 1:2.3. The majority (71%) of the households have been raising local dogs (99%) for five years or more with major sources of dogs from breeding at home (56%) or received as gifts from friends and families (42%). Key reasons for owning dogs were to serve as house guards (99%), used as sacrificial offerings during cultural rituals, for dog meat (63%), and for dog sale (28%) with a median price for an adult dog USD 40 (range: USD 20-70). The majority (87%) of the study participants reported that their dogs have never been vaccinated against rabies. However, almost all of them (98%) were willing to be involved in dog vaccination campaign if introduced by the government. Dog meat consumption was prevalent among 90% of the respondents. Male (OR: 2.9; p-value: 0.01) and younger people (<42 years old) (OR:4.2; p-value:0.003) were more likely to consume dog meats. Dog meat commonly consumed during communal work (94%), rituals (85%), and consumption of alcohol during social bonding (41%). Most (66%) participants have not heard of rabies, and only 65% knew that rabies is transmissible through dog bite. Around 22% of the participants reported dog bite events in the last 12 months. This study revealed a very high proportion of dog ownership but a lack of rabies vaccination in Ainaro despite being close to rabies-infected areas such as Covalima. There is a need for targeted awareness campaigns to improve rabies awareness and introducing dog vaccination campaign as a means to prevent rabies in humans. While this study provides valuable insights, further study is required in other municipalities to comprehensively understand dog- keeping and dog meat consumption practices and their broader implications for rabies in TLS.

*Keywords: Dog, rabies, dog meat, Ainaro, Timor-Leste.*

# Effect of Substituting Kume Grass Silage with Hydroponic Maize Fodder on Energy Utilization in Male Kacang Goats

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## Abstract

This study aimed to evaluate the effect of substituting Kume grass silage with hydroponic maize fodder on energy utilization in male Kacang goats. A Latin Square Design (LSD) was used, involving three male goats, each receiving three dietary treatments in a crossover sequence over three periods. Each period lasted 15 days, consisting of 10 days of adaptation and 5 days of data collection. The treatments tested were: FCG0 (70% Kume grass silage + 30% concentrate), FCG1 (35% Kume grass silage + 35% hydroponic maize fodder + 30% concentrate), and FCG2 (20% Kume grass silage + 50% hydroponic maize fodder + 30% concentrate). The results showed that substituting Kume grass silage with hydroponic maize fodder had no significant effect (P>0.05) on energy intake (3.63–5.17 MJ/day), energy digestibility (68.12–91.12%), digestible energy (DE), urinary energy (E_urin), methane energy ($CH_4$_E), or metabolizable energy (ME). It can be concluded that hydroponic maize fodder can be partially used as a substitute for Kume grass silage in the diet of male Kacang goats without reducing the efficiency of energy utilization, although it does not significantly improve energy utilization.

*Keywords: Kacang goats, hydroponic maize fodder, Kume grass silage, energy tilization, digestible energy, metabolizable energy.*

# The Effect of Substitution of Kume Grass Hay with Hydroponic Corn Fodder Hay on Energy Utilization of *Kacang* Goats

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## Abstract

This study aimed to evaluate the impact of replacing Kume grass hay with hydroponic maize fodder hay on energy utilization in *Kacang* goats. A change-over design was employed over two periods, using four dietary treatments with two replications. The treatment diets were as follows: DMF0 (70% Kume grass hay + 30% concentrate), DMF1 (52.5% Kume grass hay + 17.5% hydroponic maize fodder hay + 30% concentrate), DMF2 (35% Kume grass hay + 35% hydroponic maize fodder hay + 30% concentrate), and DMF3 (17.5% Kume grass hay + 52.5% hydroponic maize fodder hay + 30% concentrate). Parameters measured included energy intake, energy digestibility, digestible energy (DE), metabolizable energy (ME), nitrogen excretion, and methane emissions. The results showed that increasing the proportion of hydroponic maize fodder hay significantly ($P < 0.05$) improved energy intake, energy digestibility, DE, ME, and nitrogen utilization efficiency. However, higher substitution levels also led to increased nitrogen excretion and methane production. In conclusion, replacing Kume grass hay with increasing levels of hydroponic maize fodder hay enhances energy utilization in Kacang goats. Hydroponic maize fodder hay offers a promising alternative forage to improve nutritional performance and metabolic efficiency. Nonetheless, its inclusion should be carefully managed to ensure nutrient balance and minimize potential environmental impacts.

***Key words****: Digestible energy; hydroponic maize fodder; Kacang goats; kume grass hay, metabolizable energy*

# Effect of Substituting Kume Grass Hay with Hydroponic Maize Hay Fodder on the Blood Profile of Kacang Goats

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## Abstract

This study aimed to evaluate the effect of substituting Kume grass hay with hydroponic maize hay fodder on the blood profile of male Kacang goats. Eight goats aged 6–8 months and weighing 10–15 kg were used in a change-over design, receiving four dietary treatments: DMF0 (70% Kume grass hay + 30% concentrate), DMF1 (52.5% Kume grass hay + 17.5% hydroponic maize hay fodder + 30% concentrate), DMF2 (35% Kume grass hay + 35% hydroponic maize hay fodder + 30% concentrate), and DMF3 (17.5% Kume grass hay + 52.5% hydroponic maize hay fodder + 30% concentrate). Blood parameters measured included leukocytes, erythrocytes, hemoglobin, and hematocrit (PCV), and data were analyzed using ANOVA with SPSS version 25. The results showed that substituting Kume grass hay with hydroponic maize hay fodder had no significant effect ($P > 0.05$) on all measured blood parameters. Mean values ranged from 9.612 to 19.975 $\times10^3$/μL for leukocytes, 12.920 to 18.773 $\times10^6$/μL for erythrocytes, 6.875 to 10.125 g/dL for hemoglobin, and 19.925% to 30.200% for hematocrit. It can be concluded that hydroponic maize hay fodder is a viable alternative forage that does not negatively impact the blood profile of Kacang goats, thereby supporting metabolic balance and overall animal health.

***Keywords***: *Kacang goats, hydroponic maize hay, Kume grass hay, blood profile, forage substitution, hematological parameters*

# The Effect of *Chromolaena odorata* Biofermentation Duration Using Palm pith Flour As A Carbon Source On Fiber, Calcium, And Phosphorus Content of the Fermented Product

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## Abstract

This study aimed at evaluating the effect of biofermentation duration of *Chromolaena odorata* using palm pith flour as a carbon source on the fiber, calcium, and phosphorus content of the fermented product.The experimental design used was a Completely Randomized Design (CRD) to test 4 treatments, each replicated 4 times. The treatments were: fermentation duration of *C. odorata* for 21 days (LB-21), 14 days (LB-14), 7 days (LB-7), or no fermentation (LB-0). The observed variables included fiber, calcium, and phosphorus content. The data obtained were analyzed using analysis of variance (ANOVA) to determine the effect of the treatments, and Duncan's Multiple Range Test was used to detect differences between treatments. The results showed that biofermentation of *C. odorata* significantly reduced the NDF (Neutral Detergent Fiber) content in a linear pattern, from 79.19% in the non-fermented *C. odorata* (LB-0) to 70.44% with the longest fermentation time (21 days; LB-21). Similarly, ADF (Acid Detergent Fiber) content significantly decreased from 45.21% in LB-0 to 32.09% in LB-21. Conversely, calcium and phosphorus content increased significantly. Calcium increased from 0.64% (LB-0) to 0.87% (LB-21), while phosphorus content increased from 0.41% (LB-0) to 0.52% in LB-21. It can be concluded that longer biofermentation of *C. odorata* decreases NDF and ADF content, but increases the mineral content of calcium and phosphorus in the product, with the optimal fermentation duration being 21 days.

*Keywords*: *biofermentation, Chromolaena odorata, rumen fluid, palm pith*.

# B
# ECONOMICS

# Strategies and Policies To Increase Financial Inclusion In Indonesia–Timor-Leste Border Region Using Penta-helix Approach

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## Abstract

A 2020 survey conducted by the National Council for Financial Inclusion Secretariat revealed that 81.4% of the population uses products or services offered by formal financial institutions. Despite this, poverty remains a significant issue in regional areas. Efforts to address inequality and poverty within the framework of inclusive economic development have not been widely implemented, particularly at the regional level in Indonesia. This study explores strategies and policies to enhance financial inclusion in the Indonesia–Timor Leste border regions using the pentahelix approach. Employing a qualitative research method, the study emphasizes the involvement of five key stakeholders—government, academia, businesses, media, and civil society—in promoting financial inclusion. The findings indicate that the Government of the Republic of Indonesia, in collaboration with various stakeholders in the RI-RDTL (Republic of Indonesia–Democratic Republic of Timor Leste) border area, has implemented initiatives such as providing incentives to financial institutions, micro, small, and medium enterprises (MSMEs), and educational institutions. However, several challenges persist, including limited internet connectivity, low levels of financial literacy, and suboptimal coordination among stakeholders. To address these issues, enhancing human resource capacity through integrated education and technology programs is crucial. The government is encouraged to consider the study's recommendations to strengthen financial inclusion in the RI-RDTL border region, ultimately contributing to its socio-economic development.

***Keywords****: Strategy, Policy, Financial Inclusion, Pentahelix, Indonesia Border Region.*

# Analysis of The Border Market Development Strategy: A Study in the Special Administrative Region of Oe-Cusse, Ambeno (RAEOA)

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## Abstract

The objectives of this study were: (1) to investigate and evaluate the internal and external environmental conditions influencing the development of markets in the border area; and (2) to analyze and formulate strategic recommendations for the development of the RAEOA border market. This research adopted a mixed-methods approach, incorporating both qualitative and quantitative methods. SWOT analysis was employed to identify local potential, including the capacity of natural and human resources to support border market development. Furthermore, a second-order factor analysis model was applied to prioritize the resulting SO (Strength-Opportunity), ST (Strength-Threat), WO (Weakness-Opportunity), and WT (Weakness-Threat) strategies. The study involved 12 informants, comprising six key informants (regional authorities) and six supporting informants (local border officials). Data were collected through interviews and field observations. The results of the strategic positioning matrix indicate that the institution currently lies in a state of vulnerability, where existing weaknesses may intensify the impact of external threats. As such, strategic development must prioritize identifying and addressing internal deficiencies to better respond to these external challenges. Ultimately, the findings suggest that the institution should adopt strategies that leverage its strengths, address its weaknesses, capitalize on available opportunities, and mitigate threats. These efforts are essential for fostering sustainable development and enhancing socio-economic resilience in the border region.

***Keywords:*** *border market, development strategy, SWOT analysis*

# Analysis of Coffee Value Chain In Timor-Leste

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## Abstract

For decades, coffee has been Timor-Leste's largest agricultural export and has become one of the key non-oil export commodities that contribute significantly to the country's economy. The main objective of this analysis is to examine the value chain of coffee in Timor-Leste and to identify both constraints and opportunities, particularly with regard to youth employment. Coffee production is highly vulnerable to climate change, as evidenced by the low harvest in 2023, which totaled 7,819 tons, with a very low yield of only 155 kg/ha. Of the total production, around 88% is destined for the export market. Coffee production is dominated by an estimated 44,000 smallholder households, representing approximately 25% of the total population. There is a typical flow in the coffee value chain in Timor-Leste, from production to end consumers. Coffee is cultivated by about a quarter of the population across five main production centers: Ermera, Aileu, Liquica, Ainaro, and Manufahi. The majority of coffee produced is Arabica (80%), with the remainder being Robusta. Labor is generally provided by family members, although hired labor is occasionally used, particularly during the harvest season. The coffee produced is organic. After harvesting, the coffee is distributed to agribusiness firms and cooperatives such as CCT, Timor Global, and others. These firms and cooperatives handle the processing of both wet and dry coffee. The beans then undergo grading, packing, branding, and transportation before being exported to destination countries. Most of the coffee is exported, with only a small volume sold on the domestic market. This analysis reveals several opportunities that could be pursued to maximize farmers' revenue and increase production—thereby generating more employment opportunities for youth in rural areas. These opportunities include (i) intercropping coffee with other crops such as food crops, fruits, or forestry crops. Currently, only small areas of coffee plantations are intercropped with crops like vanilla, konjac, taro, and clove; (2) producing organic fertilizer from coffee husks, which are generated by smallholder coffee farmers. At present, only CCT produces coffee husk-based organic fertilizer in large quantities and sells it back to farmers. However, several challenges were cafed by the sector, including: (1) Most of the existing coffee trees are too old, resulting in low productivity., (2) there is a lack of training in value-added processing and waste utilization, (3) many young people are not motivated to engage in agriculture, including the coffee sector, (4) low production and low output prices make it difficult for farmers to manage their coffee effectively, and (5) the majority of coffee farms are owned by smallholders who lack the necessary skills and financial resources.

***Key Words****: Value chain, export, Arabica coffee, organic, intercropping.*

# Assessing Food Security and Nutrition Status among Vulnerable Populations in Timor-Leste especially in RAEOA

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## Abstract

The research on food security and nutritional status among vulnerable populations in Timor-Leste, particularly in the Authority of the Special Administrative Region of Oe-Cússe Ambeno (RAEOA), aimed to assess the multifaceted factors influencing food insecurity and malnutrition. The study draws on various indicators, including demographic data, food consumption patterns, and access to nutrition services—factors essential for understanding the challenges faced by vulnerable groups in the region. The context in Timor-Leste, especially within the RAEOA region, was marked by widespread food insecurity. Vulnerable groups such as children, pregnant women, and rural communities face significant challenges. A 2019 study found that only 25% of the population was food secure. While many households can afford diets that meet basic energy needs, nutritious foods remain unaffordable for the majority. The country's heavy reliance on food imports—approximately 60% of its food supply—further exacerbates the issue, especially given the low productivity of the domestic agricultural sector. The RAEOA region faces unique challenges related to geographic isolation, limited resources, and infrastructure deficiencies. Food insecurity in this area is driven by a complex interplay of factors, including poverty, inadequate infrastructure, limited access to education, and entrenched cultural practices. Additionally, climate change and agricultural constraints worsen the already critical situation, impacting food production and availability. Socioeconomic, cultural, and environmental disparities between urban and rural areas also significantly affect access to nutritious food and healthcare services.This study focuses on assessing the degree of food insecurity and malnutrition among vulnerable populations in Timor-Leste, with a particular emphasis on the RAEOA region. The objectives of the research are twofold: first, to collect demographic data; and second, to assess household food security by exploring indicators such as food access, meal frequency, and experiences of hunger. The study also aims to evaluate household dietary patterns, including the frequency of fruit and vegetable consumption and access to clean drinking water. Nutritional status will be assessed through questions related to weight loss, changes in appetite, and observable signs of malnutrition in children, as well as in pregnant and lactating women. Moreover, the research will examine access to healthcare, including the distance to health facilities and barriers to obtaining nutrition education or counseling. Economic factors will also be explored, such as sources of income, recent changes in household earnings, and participation in government assistance programs. These data points will provide a comprehensive view of household livelihoods and their vulnerability to food insecurity. The study will further investigate the role of community-based support networks and traditional practices in helping households cope with food shortages and economic challenges. The findings from this research are expected to inform evidence-based policies and interventions aimed at improving food security and nutrition among vulnerable populations in Timor-Leste, particularly in the RAEOA region. By assessing food security, nutritional status, and the underlying factors affecting food access, this research seeks to generate valuable data to guide interventions that address food insecurity, improve health outcomes, and contribute to the achievement of the country's sustainable development goals.

*Key words* : *Food Security, Malnutrition, Vulnerable Populations, RAEOA Region.*

# Digitalization of MSMEs in Timor: *Technological Integration as a Strategy to Increase Competitiveness in the Era Without Borders*

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## Abstract

The digital transformation of Micro, Small, and Medium Enterprises (MSMEs) is increasingly recognized as a critical pathway for enhancing regional economic resilience and competitiveness. This study investigates the digitalization of MSMEs in Timor, a peripheral region in Indonesia, with a focus on identifying structural constraints and proposing a collaborative strategy for technological integration. Employing a qualitative-descriptive methodology, data were gathered through literature review, field observation, and semi-structured interviews with MSME owners, ICT providers, and local government officials. The findings highlight three primary barriers to digital adoption: limited digital literacy among MSME actors, inadequate ICT infrastructure in rural areas, and insufficient coordination across institutional stakeholders. To address these issues, the study proposes a regionally adapted triple helix framework—linking academia, industry, and government—to foster inclusive digital transformation. The research contributes to the discourse on digital inclusion by emphasizing context-sensitive strategies for MSME empowerment in underdeveloped regions.

***Keywords:*** *digital transformation, MSMEs, triple helix model, ICT infrastructure, Timor, inclusive innovation.*

# Senior Entrepreneurship In Indonesia:  *An Emerging Response to Aging And Economic Necessity*

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## Abstract

The phenomenon of senior entrepreneurship—entrepreneurial activity among individuals aged 50 and above—is gaining traction in Indonesia. Amid increasing life expectancy, economic uncertainty, and evolving perceptions of retirement, older Indonesians are turning to entrepreneurship as a means of financial stability, personal fulfillment, and social engagement. This paper explores the motivations, challenges, and opportunities facing senior entrepreneurs in Indonesia, drawing from current literature, demographic data, and policy frameworks. It highlights key barriers such as age-related stigma and limited access to capital while also identifying drivers like life experience, social capital, and family support. The study concludes by recommending inclusive policies and training programs to support this growing demographic in their entrepreneurial journeys.

*Keywords:* *Senior Entrepreneurship, Indonesia, Aging, Economic Participation, Older Adults, Retirement, SME.*

# Dynamics of Leading Sectors in Agrarian and Urban Areas: *A Comparative Study of Kupang District and Kupang City*

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## Abstract

The identification of leading economic sectors is a strategic approach to strengthening the structure of sustainable regional economies. This study aims to identify and compare the leading sectors in Kupang Regency and Kupang City, East Nusa Tenggara Province, during the period 2018–2023, in order to inform policy directions based on regional sectoral potential. The research utilizes secondary data on Gross Regional Domestic Product (GRDP) at constant prices and employs four analytical methods: Location Quotient (LQ), Dynamic Location Quotient (DLQ), Shift Share Analysis (SSA), and Klassen Typology. The results reveal that in Kupang Regency, the Agriculture, Forestry, and Fisheries sector recorded an LQ of 2.78 and a DLQ of 1.24, identifying it as both a basic and prospective sector. Additionally, the Construction sector (LQ 1.21; DLQ 1.11) and the Trade sector (LQ 1.18; DLQ 1.03) exhibited sustained competitiveness. In contrast, Kupang City's economy is dominated by the tertiary sector, with Information and Communication (LQ 2.51; DLQ 1.43) and Accommodation and Food Services (LQ 1.92; DLQ 1.36) emerging as leading sectors. These sectoral orientations reflect distinct development patterns: Kupang Regency as a resource-based area and Kupang City as a hub for services and technology. The policy implications underscore the need for differentiated regional development strategies—such as reinforcing agro-industrial development in rural areas and accelerating digital transformation in urban centers.

*Keywords*: GRDP; sector; leading; development; region; economy.

# *Tofu* and *Tempeh* Enterprises Under Financial Review: *A Case Study of* CV. Sumber Hidup in East Nusa Tenggara, Indonesia

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## Abstract

The tofu and tempeh agroindustry plays a vital role in supporting food security and serves as a key income source for Micro, Small, and Medium Enterprises (UMKM) in Indonesia. This study aims to assess the financial feasibility of tofu and tempeh agroindustry operations at CV. Sumber Hidup, located in Mata Air Village, Kupang Tengah District, Kupang Regency. A case study method with a quantitative approach was employed, utilizing both primary and secondary data. Financial feasibility was evaluated using indicators such as the Revenue-to-Cost (R/C) ratio, Break Even Point (BEP), Net Present Value (NPV), Internal Rate of Return (IRR), Net Benefit-Cost Ratio (Net B/C), Return on Investment (ROI), and Payback Period. The findings reveal that the tofu business generates an annual income of IDR 695,037,025 with an R/C ratio of 1.30 and ROI of 49%, indicating that every rupiah spent yields IDR 1.30 in revenue, with a favorable return on investment. The tempeh business demonstrated even stronger performance, with annual revenue reaching IDR 2,133,540,500, an R/C ratio of 1.94, a high ROI of 778%, and a very short payback period of just 4.9 months. Both NPV and IRR values significantly exceeded standard thresholds, suggesting highly profitable and sustainable investment potential. These results confirm that well-managed tofu and tempeh enterprises can provide substantial financial returns and serve as a model for local economic empowerment. The implications extend beyond feasibility, offering strong evidence that soy-based agroindustries can be effective instruments in regional economic development. The findings also provide strategic insights for other UMKM actors, local governments, and support institutions in formulating more targeted and sustainable empowerment policies.

*Keywords: financial feasibility, agroindustry, tofu, tempeh, UMKM, investment analysis.*

# Assessing the Role of Maize in Farmers' Household Economy: *A Socioeconomic Perspective of East Nusa Tenggara*

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## Abstract

Maize plays a significant role as a source of food and income for farmers in East Nusa Tenggara (NTT), Indonesia. However, it has yet to become the main economic pillar for rural households. This study aims to analyze the influence of socioeconomic factors on maize farming income and assess its contribution to household income in Pukdale Village, East Kupang District, Kupang Regency. While maize is a key agricultural commodity in the region, it has not provided optimal economic impact for farming families. This research applies a quantitative approach using surveys and multiple linear regression analysis. The sample consisted of 60 maize farmers randomly selected from a total population of 400. Primary data were collected through structured questionnaires and direct interviews. The findings show that out of six socioeconomic variables examined, four significantly affect maize farming income: land size, farming experience, labor input, and fertilizer prices. Land size, experience, and labor input had positive effects, whereas fertilizer prices negatively affected income. Variables such as age and non-formal education were not statistically significant. The contribution of maize farming to total household income was 33.45%, indicating that maize serves more as a supplementary income source rather than a primary one. These findings highlight the need for targeted policy interventions, including technical training, improved access to production inputs, and institutional capacity-building for farmers. The study provides an empirical foundation for sustainable agricultural development and improving the welfare of maize farmers in underdeveloped regions such as NTT.

*Keywords: maize; income; social; economic; household.*

# Economic Development Grand Design: *Sustainable And Inclusive Economic Development Strategies For Congregations In GMIT Ministry Area, Indonesia*

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## Abstract

This research examined the role of the Evangelical Church in Timor (GMIT) in promoting congregational economic development as a response to the persistent challenges of poverty in Indonesia. Employing a structured approach, the study formulates a comprehensive grand design to empower communities through education, skills training, and social support. In this context, GMIT functions not only as a place of worship but also as an agent of change, leveraging its social infrastructure and networks to improve the welfare of its congregation. Through in-depth analysis, this research adopts several theoretical frameworks, including Empowerment Theory—which underscores the importance of building individual and community capacity—and Social Capital Theory, which highlights the value of social relationships in achieving collective goals. According to data from the Central Bureau of Statistics, the Human Development Index (HDI) in East Nusa Tenggara remains low, indicating an urgent need for more effective poverty alleviation interventions. This study aimed to design concrete and actionable strategies to strengthen the local economy and reduce poverty through the implementation of inclusive, community-based approaches. The findings are expected to make a significant contribution to the realization of GMIT's vision of cultivating self-reliant and mission-oriented congregations, while addressing broader socio-economic challenges. Ultimately, this research provides a strategic foundation for sustainable economic development that aligns with the church's moral and spiritual values.

***Keywords:** Evangelical Church in Timor (GMIT); Economic Empowerment; Economic Development Strategy; Congregational Welfare.*

# Several Behavioural Determinants of Business Continuity PT. Timor Mitra Niaga East Nusa Tenggara, Indonesia

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## Abstract

This study aims to examine the sustainability of PT. Timor Mitra Niaga by exploring the roles of corporate social responsibility (CSR), leadership, and corporate culture. Specifically, it seeks to describe each of these variables and analyze their partial and simultaneous influence on business sustainability. The research was conducted at PT. Timor Mitra Niaga, located in West Lamboya District, West Sumba Regency, East Nusa Tenggara. A total of 100 respondents were selected from the company's 200 employees using purposive sampling. The data were analyzed using partial regression and multiple regression analyses. Partial regression was employed to measure the individual impact of CSR, leadership, and corporate culture on sustainability, while multiple regression assessed their collective influence. The results indicate that CSR, leadership, and corporate culture significantly and simultaneously affect business sustainability. Furthermore, each of these variables also demonstrated a significant individual influence. These findings suggest that CSR initiatives, leadership style, and a strong corporate culture are critical to ensuring the long-term sustainability of PT. Timor Mitra Niaga.

*Keywords*: *business sustainability, corporate social responsibility, leadership, corporate culture, leadership style.*

# Beetween Tradition and Progress: *Exploring the Architectural Struggles of Sabu-Raijua, Indonesia*

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## Abstract

Sabu-Raijua, a remote island regency in eastern Indonesia, possesses a rich tradition of vernacular architecture, where elevated houses made from natural materials such as lontar sheets,lontar leaves, wood, and thatch are well-adapted to the climate and deeply embedded in cultural identity. However, in recent decades, the region has experienced architectural stagnation, marked by a growing disconnection between traditional living spaces and the evolving aspirations of its people. Despite the thermal comfort and symbolic significance of traditional houses, many residents have begun to adopt stone or concrete houses—often less suited to the environment—under the influence of modern development narratives and government programs. This study aims to investigate the underlying factors contributing to this shift, focusing on how Sabunese communities understand, negotiate, and reshape their concept of home amidst competing values of tradition and modernity. Using a qualitative research approach grounded research the study explores the complex relationships between human and non-human actors involved in shaping architectural choices. Through ethnographic fieldwork, spatial analysis, and interviews with residents, builders, and local officials, the research uncovers how traditional materials and practices are increasingly marginalized in favor of state-endorsed models of modern housing. The findings reveal that while traditional homes offer comfort, familiarity, and cultural continuity, they are gradually abandoned as concrete houses become symbols of progress, safety, and social mobility. This transition is not solely driven by preference, but by a network of influences that reconfigure architectural meaning and value. Ultimately, the study concludes that architectural stagnation in Sabu-Raijua stems not only from a lack of creativity, but from disrupted and unequal actor-networks that marginalize local knowledge. To move forward, development initiatives must embrace a more inclusive and culturally responsive approach, allowing traditional architecture to evolve meaningfully in dialogue with contemporary needs rather than be erased by them.

*Keywords: Sabu-Raijua, vernacular achitecture, traditional housing, modern housing.*

# Good Village Governance in Managing Village Funds and Its Constraints in Sanggoen Village, Lobalain Sub-District, Rote Ndao District, Indonesia

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## Abstract

Village Fund Management is expected to realize good village governance. The purpose of this study is to analyze Good Village Governance in the management of Village Funds and to find inhibiting factors as obstacles to Good Village Governance in the management of Village Funds in Lobalain District, Rote Ndao Regency. Using a qualitative approach with a descriptive method. Data collection was carried out using interview, observation and documentation techniques. Data analysis techniques include data condensation, data presentation and drawing conclusions. Data validity test through source triangulation. The theory in this study refers to Permendagri No. 20 of 2018 that village financial management includes planning, implementation, administration, reporting and accountability. As well as the theory of Haris Fause (2023) that Good Village Governance in village financial management through the principles of transparency, participation and accountability. The results of the study indicate that the Village in the management of Village Funds starting from planning, implementation, administration, reporting and accountability with the principle of good village governance has been running. However, the participatory principle is still limited to the planning and implementation stages but not at the administration, reporting and accountability stages. The principle of transparency is still limited to village information boards and billboards. The principle of accountability has not been running well because it is still often late in submitting reports. This is due to several limitations, namely the low capacity of the apparatus both in management and mastery of IT and facilities and infrastructure that are also still minimal. Therefore, the village government needs to pay attention to increasing the capacity of village officials with various skills and knowledge training in addition to the procurement of the required facilities and infrastructure, especially the use of village information media so that the principles of transparency and accountability become better.

*Keywords: Governance, Good Village Governance, Village, Management, Village Funds.*

# C
## EDUCATION

# Transformation of *Pancasila Values* in Digital Public Spaces: *Realizing An Anti-Hate Speech Society*

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## Abstract

The advancement of digital technology has transformed the way society interacts in the public sphere, particularly in expressing opinions and responding to socio-political issues. However, freedom of expression in digital media is often misused to spread hate speech, which threatens social cohesion and national unity. This article aims to analyze how the values of Pancasila can be transformed and internalized within the digital public space as a strategic effort to build an inclusive, hate-free society. A qualitative approach through literature study is employed to explore the role of digital ethics, character education, and legal regulations in instilling the values of humanity, unity, and social justice as reflected in the five principles of Pancasila. The study reveals that the digital transformation of Pancasila values requires synergy among digital literacy, active citizen participation, and state policies that uphold civilized democratic principles. Thus, Pancasila serves not only as the foundation of the state but also as a moral compass in shaping a healthy and tolerant digital ecosystem.

**Keywords:** *Pancasila, digital public sphere, hate speech, value transformation, digital ethics.*

# Technological Literacy and Learning Innovation of Vocational High School Teachers in the Border Area of Belu District

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## Abstract

The primary objective of this study is to examine the level of technological literacy and forms of learning innovation implemented by vocational high school teachers in the engineering field in border area of Belu District, East Nusa Tenggara. A key concern addressed is the limited application of educational technology, primarily due to inadequate infrastructure and insufficient digital training in underdeveloped regions. The study employed a mixed-methods approach using a sequential explanatory design. Quantitative data were collected through surveys completed by 30 instructors across three technical vocational schools, while qualitative data were obtained through interviews and classroom observations. The findings indicate that 63% of instructors possess a moderate level of technological proficiency, 27% demonstrate low proficiency, and only 10% exhibit high proficiency. Major barriers identified include limited internet connectivity (83%), lack of ICT training (70%), and insufficient digital resources (60%). Despite these challenges, educators have begun adopting innovative, context-based strategies such as the use of offline media, self-produced video tutorials, and project-based learning tailored to local resources. The study recommends enhancing localized ICT training programs, providing accessible adaptive technologies, and promoting supportive policies to strengthen the digital competencies of teachers in border areas.

*Keywords: educational technology, digital literacy, learning innovation, vocational school teachers, border areas, vocational education, ICT*

# Nurturing A Literacy Ecosystem For Climate Action In Primary Schools In Timor

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## Abstract

This paper explores the development of a literacy ecosystem that fosters climate awareness and action among primary school students in Timor. Situated at the intersection of education, environmental stewardship, and community resilience, the study highlights the pivotal role of primary schools—particularly in rural and border regions—as catalysts for nurturing climate-conscious citizens from an early age. Drawing on participatory research and community-based practices in both Timor-Leste and Indonesia (NTT), the paper examines how culturally relevant texts, localized curriculum design, and school-community partnerships contribute to building climate literacy. This initiative aligns with the shared mission of UNTL and UNDANA to enhance research, teaching, and community engagement, offering scalable models for transnational collaboration in addressing environmental and educational challenges across the island. By leveraging indigenous ecological knowledge and integrating it into foundational learning, schools not only deepen students' understanding of their local environment but also instill a sense of responsibility and agency as climate action champions. The research underscores the significance of cross-cultural teacher exchanges, inclusive pedagogies, and the integration of climate justice principles in shaping future curricula and localized lesson plans. Recommendations emphasize policy integration, teacher capacity-building, and the inclusion of indigenous knowledge in climate education. Ultimately, this paper argues that cultivating climate literacy at the primary school level is essential for fostering adaptive and resilient communities in Timor and beyond.

*Keywords: ecosystem literacy, clinate education, environment, Timor*

# Education As A Strategic Instrument of Sovereignty: *Analyzing Indonesia's Border Presence With Timor-Leste through Asta Cita Vision*

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## Abstract

Border regions are more than peripheral spaces; they are strategic socio-political frontlines that represent a nation's presence, authority, and responsibility toward its citizens. The Indonesia–Timor-Leste border has long faced challenges such as developmental imbalances, limited government visibility, and weak national integration. In this context, education emerges not only as a fundamental right but also as a strategic instrument for reinforcing sovereignty and cultivating national identity. Aligned with President Prabowo Subianto's *Asta Cita* vision—particularly the third goal of ensuring national security and state presence, and the fifth goal of promoting public welfare through equitable development—education serves a dual function: promoting unity and supporting national defense. This research investigates the role of education in asserting state sovereignty in Indonesia's border regions with Timor-Leste and examines how current policies align with and advance the *Asta Cita* framework. Using a qualitative case study approach, the research focuses on primary schools in Belu District and neighboring districts. Data collection involved field observations, semi-structured interviews with educators, community leaders, and policymakers, as well as analysis of policy documents, literature, and education budget allocations. Findings indicate that the presence of educational institutions significantly strengthens state integration, reduces cross-border dependencies, and enhances public trust in the central government. Nevertheless, challenges remain, including uneven teacher distribution, inadequate infrastructure, and the absence of localized curricula. Encouragingly, recent policy developments show stronger alignment with *Asta Cita*, especially in integrating civic values and expanding equitable access through border education initiatives. In conclusion, education in border regions must be viewed not merely as a social service, but as a strategic pillar of national sovereignty. Educational reforms focused on border areas and grounded in the Asta Cita vision offer a sustainable model for reinforcing Indonesia's presence and fostering long-term peace and resilience along its frontier with Timor-Leste.

***Keywords****: Border education, state sovereignty, Asta Cita, national integration, civic nationalism, educational infrastructure.*

# Exploring the Complexities of Language Policy in Multilingual Classrooms in Timor-Leste

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## Abstract

The implementation of language policy in Timor-Leste remains a complex issue, particularly for primary and secondary school teachers navigating the dual use of the official languages - Portuguese and Tetun. Despite government efforts to strengthen language education, significant challenges persist in aligning policy directives with classroom realities. This study examined teachers' experiences in implementing language policy, focusing on their strategies, challenges, and perceptions regarding the use of Portuguese and Tetun in educational settings. The research explored the gap between policy expectations and the practical constraints faced by educators. Employing a qualitative descriptive approach, data were collected through in-depth interviews, classroom observations, and document analysis (including lesson plans and textbooks). Thematic analysis was used to identify key themes related to policy adaptation and classroom dynamics. Findings reveal a substantial policy–practice gap. Many teachers struggle with limited proficiency in Portuguese, a shortage of appropriate teaching resources, and curricula that are not culturally aligned with students' lived experiences. In response, teachers adopt adaptive strategies such as code-switching, simultaneous translation, and the incorporation of local languages to facilitate comprehension and engagement. However, limited professional development opportunities and insufficient government support further hinder effective policy implementation. To bridge this gap, the study recommends ongoing teacher training, the development of flexible and context-sensitive policies, and increased teacher involvement in the policy-making process. Strengthening institutional support and promoting a more inclusive approach to multilingual education are essential to improving language learning outcomes in Timor-Leste.

**Keywords:** *Language policy, Education implementation, Multilingualism, Teacher adaptation.*

# Digital Civic Literacy And Political Engagement on Social Media: A Study of Civic Education Students at FKIP Universitas Nusa Cendana During the 2024 Kupang City Local Election

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## Abstract

Social media has become a dominant platform for the dissemination of various issues, including political discourse, particularly during the 2024 local election (Pilkada) in Kupang City. In this context, students of the Civic Education Study Program (PPKn) at the Faculty of Teacher Training and Education, Universitas Nusa Cendana (FKIP Undana), are expected to possess strong digital civic literacy as future educators. However, navigating political content in digital spaces with critical and ethical awareness remains a recurring challenge. This study aims to explore the experiences of PPKn FKIP Undana students in engaging with political issues—especially those surrounding the Kupang City local election—on social media, analyzed through the lens of digital civic literacy.Employing a qualitative phenomenological approach, this research seeks to uncover the subjective meanings embedded in students' responses to political content on digital platforms. Data were obtained through purposive interviews with selected students and analyzed using a four-step qualitative data analysis technique: data collection, reduction, display, and conclusion drawing.The findings indicate that students demonstrate varied levels of digital civic awareness. A number of participants were able to critically evaluate political information, maintain neutrality, and engage in constructive discussions on social media. Conversely, some students exhibited emotionally driven participation, including the uncritical sharing of unverified political content. These contrasting responses underscore the complexity of civic engagement in the digital era.In conclusion, PPKn FKIP Undana students exhibit diverse capacities in digital civic literacy when responding to political discourse during the 2024 Kupang City local election. While some show critical and ethical digital engagement, others remain susceptible to disinformation and lack reflective participation. These findings highlight the need for integrative civic education strategies that strengthen students' digital competencies in political contexts.

***Keywords:*** *digital literacy, civic education, social media, local election, disinformation, phenomenology.*

# Teaching At The Right Level To Improve Higher Order Thinking Skills (HOTS) of Mathematics Education Students In Calculus

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## Abstract

This study aimed to improve the Higher Order Thinking Skills (HOTS) of mathematics education students at Nusa Cendana University in the topic of Integral Calculus through Teaching at the Right Level (TaRL) approach. This research was a continuation of a previous study on the HOTS profile of mathematics education students in relation to Calculus, which revealed that mathematics students at the Faculty of Teacher Training and Education (FKIP) of Nusa Cendana University (Undana) have not yet achieved a HOTS level. The research method used in this study was Classroom Action Research. The study was conducted in one of the Integral Calculus II course classes. The results showed that implementation of the TaRL approach in Integral Calculus material improved HOTS of the mathematics education students at FKIP Undana. This improvement was evidenced by the final test results of each cycle, which showed that more than 75% of students have HOTS in the "good" category, corresponding to levels C4 to C6. In general, students were able to distinguish between different forms of integrals and apply appropriate methods in problem-solving. Furthermore, students were able to effectively solve problems involving various types of integral models.

*Keywords*: *Teaching at the Right Level, Higher Order Thinking Skills, Vector Space.*

# Research in University Extension of Sports, Recreation, and Community Health: *An Integrative Approach*

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## Abstract

Teaching, research, and outreach are the three substantive functions of higher education, and they are closely interconnected. It is impossible to discuss the academic component without considering research and outreach. University research not only benefits those directly involved but also positively impacts society. Through these studies, solutions are generated in diverse areas, ranging from health and well-being to technology and the social sciences. Outreach projects drive innovation and contribute to the academic and professional development of both students and faculty. This research identifies the scientific problem: *How can we contribute to research in university outreach in sports, recreational activities, and community health using a comprehensive approach?* The objective of the researchers is to design actions with a comprehensive approach to university extension research in sports, recreational activities, and community health. The study employed both descriptive-quantitative and descriptive-qualitative methods. The actions focused on aerobic gymnastics for the adult population; physical activities and health programs for older adults in the community; physical and sports activities; sports and recreational festivals; and included biomechanical and morphofunctional control actions in sports. The integrative approach is structured in five stages namely (i) planning sports and recreational activities; (ii) designing the objectives and content of the activities; (iii) proposing methodological guidelines; (iv) implementing the activities; and (v) assessing and improving the planning of sports and recreational activities. In each outreach activity, the knowledge contributed by the university community is integrated with the knowledge and expertise present in the sociocultural and socio-productive environments in which the initiatives take place. It is evident that research and outreach complement and strengthen each other, working together to achieve a positive impact on society.

***Keywords***: *Research, University Outreach, Integrative Approach.*

# Why Our Children Are Not Learning Portuguese?

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## Abstract

This paper brought together various studies conducted between 2010 and 2024 with students from the Department of Basic Education Teacher Training and the Department of Portuguese Language, focusing on general learning and, more specifically, the learning of Portuguese within the context of Basic Education in Timor-Leste. All of these studies were supervised and followed by me, and for this presentation, I draw upon their findings to examine more broadly the process of teaching this official—yet non-native—language. We infer that the limited success in Portuguese language acquisition over the past two decades of independence is due to a range of factors. Although school infrastructure has improved since the emergency years, it remains common to find overcrowded classrooms lacking adequate desks and chairs, with teachers often relying solely on a blackboard and textbook as instructional materials. However, these are not the primary challenges. The limited linguistic proficiency of teachers and the instability in language policy implementation—despite legal regulation—create widespread insecurity in Portuguese language instruction.Traditional teaching methods dominate, and the absence of communicative competence in classroom practices results in lecture-based, grammar-focused lessons that hinder students from using Portuguese in meaningful ways. In-service teacher training tends to emphasize technical content delivery and rote reproduction, rather than fostering educators' ability to reflect on their context and adapt teaching methods to their specific school realities. Overall, the research shows that many teachers still conceive of teaching as the transmission of theoretical knowledge. "Teaching" is often understood as copying content from textbooks onto the board, while "learning" is seen as students copying that content into their notebooks. While instructional materials are in Portuguese, explanations are most often delivered in Tetum, according to most observed cases. In the post-independence period, many teachers interviewed or observed tend to attribute students' poor academic performance to a lack of capacity or motivation. However, when students are asked about their teachers' methodologies—regardless of subject or use of Portuguese—the data suggest that teachers frequently do not take responsibility for effective teaching or for their central role in the learning process. This paper thus aims to demonstrate how blame for academic failure is often shifted onto students, while responsibility for education is deflected from teachers.

***Keywords****: language teaching and learning – Portuguese language in Timor-Leste.*

# D

## ENVIRONMENTAL SCIENCES

# A Study On Carbon Value And Economic Added Value of Biomass As A Renewable Energy Source For Power Plant

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## Abstract

The issue of global warming, reaffirmed during the COP26 Conference in Glasgow, has encouraged countries to intensify their commitments to clean energy transitions. Indonesia, through its Long-Term Strategy and Nationally Determined Contribution (NDC), has included the development of renewable energy sources—such as biomass from lamtoro (*Leucaena leucocephala)*—as part of its energy mix, particularly in East Nusa Tenggara Province. This study aims to analyze both government policy frameworks and the economic value added from biomass production using lamtoro as a coal substitute in the co-firing process at the Bolok Steam Power Plant on Timor Island. The research applies Economic Value Added (EVA) analysis and the Hayami method to calculate the value added per kilogram of biomass product. The findings indicate that regional government policies have been formalized through village regulations and multi-stakeholder cooperation agreements. The EVA analysis yielded a positive value of IDR 606,982,844, reflecting the company's strong financial performance. Additionally, the value added per kilogram of biomass was IDR 133.23/kg, or 18% of the processed product's value—indicating efficient production, although slightly lower than the value from processed biomass briquettes. The study recommends enhancing policy support, developing supporting infrastructure, and promoting continuous innovation to accelerate sustainable biomass energy development in Eastern Indonesia.

*Keywords: Biomass, EVA analysis, Regulations, environment policy.*

# The Sense of *Atoin Meto* In a Landscape of Drought: Understanding Socio-Ecological Dynamics In Southwest Timor

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## Abstract

Understanding social–ecological interactions through an ethno-ecological perspective requires deep engagement with local norms and cultural frameworks to grasp indigenous conceptions of well-being. This research was based on fieldwork conducted in Kolbano sub-district from November to December 2024. Kolbano was selected due to the impact of certain government policies and the expansion of stone mining activities in the area. Using the socio-ecological systems framework, this paper explores the identity and lived experiences of the *Atoin Meto*—"the people of the drylands"—to understand how their attachment to the ecological landscape has evolved over time. Adopting a transdisciplinary approach, the study incorporates biographical narratives gathered through in-depth interviews and focus group discussions, alongside micro-climate data derived from land surface temperature, precipitation records, and land use mapping. The Atoin Meto of Southwest Timor have historically adapted to their arid, low-rainfall environment by developing resilient survival strategies. This symbiotic relationship between Kolbano people and their ecological surroundings has shaped their livelihoods and cultural identity. However, shifts in staple food systems and agricultural practices have emerged with the advancement of modern development agendas. What was once a subsistence-oriented agricultural model is increasingly oriented toward income generation. Yet, the region's limited rainfall and scarce water resources pose significant constraints on sustaining such economic transitions. Framed within the context of environmental justice, this study argues for an expansion of *Atoin Meto* agency—envisioning alternatives that move beyond extractive and monocultural regimes. It calls for a restorative paradigm grounded in solidarity and sustainability, where the Atoin Meto can reimagine their relationship with the land in ways that honor both cultural heritage and ecological resilience.

***Key words:*** *social-ecology system, atoin meto, environment justice, abolition movement, micro-climate, Kolbano*

# ARIMA Modeling of ETCCDI Extreme Climate Indices in Southeast Asia: Insights from CMIP6 Projections

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## Abstract

Southeast Asia is one of the most climate change-exposed regions, particularly in relation to variations in extreme weather. In this study, we investigate past trends and future estimates of significant Expert Team on Climate Change Detection and Indices) climate extremes from the CMIP6 multi-model ensemble data. Specifically, we focus on four indices: maximum daily maximum temperature (TXX), maximum 1-day precipitation (RX1DAY), consecutive dry days (CDD), and consecutive wet days (CWD). Projection implies a uniform increase in TXX across the region by up to 2°C by 2050, with a general decline in RX1DAY, suggesting a potential reduction in short-duration extreme rainfalls. Concurrently, the number of CDDs is projected to rise considerably, particularly over central Indonesia, whereas CWDs will likely decline, with the greatest declines in mainland SEA, particularly in Thailand, Cambodia, and Vietnam. Overall, these trends suggest a higher risk of droughts and potentially a trend towards drier climatic conditions in some parts of the region. To investigate deeper the CWD trends, we built an ARIMA model from historical data from 1900 to 2014. The default ARIMA parameters (p=0, d=1, q=0) gave flat future forecasts for CWD, which is the reverse of the declining trend. Through hyperparameter tuning by grid search method, we had a better model (p=2, d=1, q=3) with an optimized lower RMSE of 1.956 days. This model portrayed the historical sequence more accurately but also maintained imperfections in terms of reproducing maximum values and abrupt nonlinear alterations. Seasonal decomposition of the time series pointed toward a diminishing trend for CWDs as well as the rise in the amplitude of the seasonal component, suggesting potential increased performance by the utilization of a Seasonal ARIMA approach. While ARIMA performed well in capturing short-term patterns and provided interpretable forecasts, its applicability to long-term forecasts is minimal. Model performance was much poorer than that in CMIP6 projections for SSP2-4.5 and SSP5-8.5 scenarios, particularly in not being able to simulate the amplitude and frequency of occurrence of extreme precipitation events. This highlights the ability of dynamical climate models to simulate intricate, nonlinear climate behavior under varying greenhouse gas emission scenarios. Overall, ARIMA modeling offers a low-complexity and pragmatic approach to the short-term forecasting of extreme precipitation indices such as CWDs. However, its limitations in capturing nonlinear trends and long-term variability suggest integrating ARIMA with seasonal components or hybrid machine learning models. Higher-resolution temporal modeling (e.g., weekly) and ensemble-based approaches that combine statistical and dynamical modeling methods should be explored in future research. These advances will allow us to better forecast climate extremes and enable adaptive planning in climate-vulnerable regions like Southeast Asia.

# Ecological and Socioeconomic Perspectives on Sonokeling (*Dalbergia latifolia*) Management in East Nusa Tenggara

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## Abstract

The Sonokeling tree (*Dalbergia latifolia* Roxb) is recognized as a valuable timber species used in the manufacture of high-end furniture, veneers, wooden flooring, door and window frames, musical instruments, and wood carvings. Due to concerns over the species' potential depletion, the Governor of East Nusa Tenggara issued Instruction No. 1 of 2019 on the Suspension of Sonokeling Wood Distribution, effective since January 29, 2019. This study was conducted in July 2021 in Kupang Regency, East Nusa Tenggara Province, aiming to assess the distribution and utilization potential of Sonokeling in the region. The research employed plot line sampling and vegetation analysis, alongside in-depth interviews to explore the social and economic dimensions of Sonokeling utilization among local communities. The findings revealed that the volume of Sonokeling trees suitable for trade as a commodity was relatively high, amounting to 95.98 m³/ha, with the highest concentrations in South Amfoang District (68.67 m³/ha) and Central Amfoang District (27.22 m³/ha). Vegetation in the surveyed areas was predominantly composed of cultivated species, with Sonokeling dominating at the tree, pole, and sapling growth stages. Biodiversity levels were categorized as low (12) to very low (H<1). Sonokeling trees tend to grow naturally during fallow periods, with some retained as land boundaries, while others are cleared for agricultural cultivation. Local communities sell Sonokeling wood to collectors at approximately IDR 5,000 per bundle or around IDR 50,000 per cubic meter. The study concludes that Sonokeling wood still holds significant potential in Kupang Regency, suggesting that its trade could be sustainably revitalized.

**Keywords:** *Dalbergia latifolia, Sonokeling, timber potential, vegetation analysis, community utilization.*

# Harnessing Machine Learning to Address Climate Change in Southeast Asia: A PRISMA-Guided Systematic Literature Review

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## Abstract

Southeast Asia (SEA) is one of the globe's most climate-exposed areas, with escalating risks from sea-level rise, weather extremes, and land degradation. To combat these, machine learning (ML) has proven a valuable resource to support climate change studies and decision-making. This systematic literature review combines findings from 19 peer-reviewed articles from 2014 to 2025 that apply ML to address climate concerns in SEA. Articles were found through keyword searching on SCOPUS academic database, focusing on empirical studies with a specified ML component. The reviews analyzed employ diverse ML techniques—random forests, support vector machines, neural networks, self-organizing maps, fuzzy c-means, and genetic programming. Most of the articles (74%) apply remote sensing or satellite data, i.e., Landsat, Sentinel-2, and TRMM, with applications varying from fire prediction, mangrove and crop mapping, carbon stock estimation, and drought monitoring. Thematically, studies addressed climate change mitigation (e.g., forest carbon sequestration), adaptation (e.g., planning rainfed agriculture), and impact assessment (e.g., Natech risk analysis). Geographically, studies are mainly concentrated in Indonesia, the Philippines, and Malaysia, whereas Laos, Cambodia, Timor-Leste and Myanmar are considerably underrepresented. Despite advancements, the significant challenges remain. Data scarcity and heterogeneity limit model generalizability, especially in rural or transboundary settings. Methodologically, supervised ML is most common in most studies, with hybrid and unsupervised models not yet being fully investigated. A minority of studies integrate ML with domain-specific tools such as hydrological models or socio-economic data. Moreover, only two studies directly engage with policy stakeholders or local communities. This review stresses the growing maturity of ML applications in climate science in SEA but underscores the need for growing methodological diversity, interdisciplinary integration, and regional equity in research. Future studies should prioritize open data sharing, hybrid modeling approaches, and co-designed research with policy actors to enhance real-world climate resilience.

*Keywords*: *Machine Learning, Southeast Asia, Climate Change, Remote Sensing, Adaptation, Mitigation.*

# Analysis of Community Structure And Carbon Potential of Mangrove Forests In Manuwolu Village, Mamboro Sub-district, Central Sumba District, Indonesia

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## Abstract

Mangrove forests are vital ecosystems that provide numerous functions and benefits for both humans and other living organisms. These forests are typically composed of tree species capable of thriving in tidal, muddy coastal areas. This study aimed at assessing the structure of the mangrove forest community and evaluating its carbon potential in Manuwolu Village, Mamboro Sub-district, Central Sumba District, East Nusa Tenggara Province. The research was conducted from July 26 to August 26, 2023, along a 250-meter observation transect consisting of five plots. The plot sizes were designated as follows: 2 × 2 meters for seedlings, 5 × 5 meters for saplings, and 10 × 10 meters for mature trees. The mangrove forest community in Manuwolu Village comprises six species: *Acanthus ebracteatus, Avicennia alba, Rhizophora apiculata, Rhizophora mucronata,* and *Sonneratia alba*. The Importance Value Index (IVI) averaged 60%, indicating a low structural category. The diversity index (1.18) falls within the moderate diversity category, while the dominance index (0.40) suggests medium dominance within the forest structure. The estimated carbon potential was 52.17 tons C/ha, with carbon storage measured at 24.52 tons C/ha and carbon uptake at 88.99 tons C/ha. Given the ecological significance of mangrove ecosystems, it is essential to recognize their role in supporting local livelihoods and biodiversity. Therefore, active participation from both the local community and the government is crucial in promoting the sustainable management and conservation of mangrove forests in Manuwolu Village and surrounding areas.

*Keywords*: mangrove Manuwolu, community structure and carbon potential.

# Carbon And Economic Added Value of *Leucaena leucocephala* Biomass As A Source of Renewable Energy For The Power Plant In West Timor, Indonesia

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## Abstract

Concerning Timor Island, which has been assigned as a source of biomass for endeavors to realize the vitality blend target, this research is to follow up on multiple-helix participation related to the improvement of "Lamtoro" (Leucaena leucocephala) vegetated vitality woodlands, to create biomass as a coal substitute for a power plant. The issues raised related to the carbon footprint created from the co-firing through the vitality blend between coal and biomass at the power plant, and the overall financial value created. The research suggests that the calorific value (HHV) of the coal and biomass blend with a proportion of 95%:5%, is 4,342 Kcal/kg. The commerce of biomass created from "lamtoro" (*Leucaena leucocephala* (Lam.) stems as a substitute for coal within the co-firing control plant in Timor Island is financially productive as prove by EVA of the company which is more prominent. This indicator showing the company's great monetary execution and surpasses the normal budgetary execution of the wood industry in common. Analysis of the financial esteem included in the biomass generation commerce showed that each kilogram of biomass contributed IDR 133.23/kg to the whole esteem of prepared items. This critical esteem shows the proficiency of the generation prepared and great showcase potential for biomass items.

*Keywords: power plant, Timor island, Leucaena leucochepala, carbon foot print.*

# Analysis of Physical-Chemical And Biological Parameters In Public Water Supply And Well Water In The  Municipalities of Bobonaro And Liquiçá According To Existing Legislation

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## Abstract

Water found on the Earth's surface, with potential for use by humans and other living beings, whether as  surface water (rivers and other waterways, lakes, etc.) or as groundwater, may contain various  contaminants such as substances with concentrations that may be harmful to living beings and even  pathological microorganisms. In several municipalities in East Timor, the quality of water intended for  human consumption is still not monitored. Two of these municipalities are Liquiçá and Bobonaro where  the majority of the population, both in urban and rural areas, continue to use water from various sources  without knowing whether this water is in good condition for human consumption. To ensure water quality  that is suitable for human consumption and for other living beings, the competent public bodies must  periodically analyse various physical, chemical and biological parameters to verify the potability  conditions of the water, in accordance with the parameters established in the legislation. Unfortunately, this does not happen due to the lack of adequate laboratories and qualified technical personnel. According  to Decree-Law No. 5/2009, drinking water is defined as water that has undergone laboratory analysis and  is considered suitable for human consumption by health services. The research described in this paper aimed to evaluate the quality of water used for human consumption,  coming from both the public network and wells, in the municipalities of Liquiçá and Bobonaro, verifying  compliance with the values established in the legislation in force in Timor-Leste. The quantitative study was carried out through the analysis of the physical-chemical and microbiological  parameters defined in Annex I of Decree-Law No. 31/2020. Fourteen samples were analysed: seven  samples from Bobonaro: spring (AC1), rivers (AC2), water treatment station (AE2), reservoir (TC),  consumer (AC), and two wells (APB1 and APB2), and another seven samples from Liquiçá: river (AC1),  reservoir (AC2), consumer (AC3), four wells (AP1, AP2, AP3 and AP4). The results showed that all tested  samples were in accordance with the established parameters. However, five Bobonaro samples: AC2, AE2,  AC, AP1 and AP2 presented results outside the acceptable limits in relation to microbiological parameters.  Based on these results, it is necessary to pre-treat the water before consumption, such as adding a  disinfectant or heating it, so that the water can be considered suitable for human consumption and thus  avoiding risks to public health. Furthermore, this work also explored the communities' perception of the importance of the quality of the  water they consumed. To this end, questionnaires were prepared with questions related to water quality  and were applied through personal interviews to local authorities, representatives of the BTL company  responsible for analysing water quality, health professionals and some consumers in general.

*Keywords: Water Quality, Public Supplay, Wells, Qualitative-Quantitative Study,*

# Integrated Assessment of the Mota-Masin Transboundary Watershed Between Indonesia and Timor-Leste in Tilomar and Fatumea, Covalima through Evaluating Hydrological, Geological, and Socio-Economic Dynamics for Sustainable Management

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## Abstract

Transboundary watersheds, such as the Mota-Masin watershed located between Timor-Leste and West Timor, Indonesia, encompass complex ecological, hydrological, and socio-economic dynamics. This study aims to establish a comprehensive baseline assessment of the watershed to inform effective management practices. Field surveys conducted from February 2 to 7, 2022, evaluated hydrological features, geological characteristics, climatic conditions, socio-economic factors, and risks associated with drought and flooding. The results revealed significant variability in water volume and flow rates among springs. Notably, Spring Weikmahar exhibited a volume of 11.19 mm³ and a flow rate of 0.2 liters/second, indicating limitations in meeting local demands, while springs such as Belulik Avo Feto and Wemutik, with a volume of 23.99 mm³ and flow rates of 0.3 to 0.4 liters/second, demonstrated robust hydrological capability, supporting agricultural and domestic needs. Additionally, the main river's flow decreases significantly during dry seasons, with instances of complete drying recorded, leading to the formation of a lake in the downstream section near the coastline. Geological analyses identified five primary soil types within the watershed: Alfisols, Ultisols, Entisols, Mollisols, and Inceptisols. Soils were predominantly clay and sandy clay, with a pH range of 6.9 to 8.1, highlighting potential deficiencies in iron (Fe) and zinc (Zn) that necessitate sustainable agricultural practices. Climate assessments revealed a warm, humid tropical climate with average temperatures ranging from 25ºC to 27ºC and annual rainfall between 1,000 mm and over 2,000 mm, characterized by significant variability influenced by the El Niño and La Niña phenomena. Socio economic assessments indicated that approximately 93.68% of the 4,028 individuals in the watershed depend on subsistence agriculture as their main income source, thus exposing them to vulnerability from climatic fluctuations. Agricultural practices include the cultivation of staple crops such as maize (296.65 ha) and cassava (202.5 ha), with an estimated total annual yield of approximately 3,288.6 tons, surpassing the community's estimated demand for food. The findings emphasize the necessity for integrated management strategies that address water resource efficiency, soil health, and community engagement. Recommendations include promoting agroforestry practices, enhancing water conservation measures, and fostering community cooperation in resource management. This study contributes valuable insights for sustainable development in the Mota-Masin watershed, aiming to strengthen ecological integrity while supporting local livelihoods, ultimately ensuring resilience against the anticipated impacts of climate change.

*Keywords: Transboundary Watershed, Mota-Masin, Hydrology, Soil Types, Climate Change, Socio Economic Assessment.*

# Climate Change Adaptation Strategies of Smallholder Farmers in Timor-Leste

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## Abstract

Climate change brings about changes in temperature caused by global warming. This phenomenon generates problems in various sectors, including the agricultural sphere. Adverse weather conditions can lead to a reduction in agricultural production and contribute to food insecurity. Hence, mitigation and adaptation strategies to climate change are crucial in tackling climate change-related problems. The purpose of the study was to examine climate change adaptation strategies of smallholder farmers in Timor-Leste. In five villages of Manufahi and Manatuto, 465 farmer households were randomly selected, consisting of 176 adopters of Conservation Agriculture (CA) and 289 non-adopters. Face-to-face interviews were conducted using a structured questionnaire. Statistical analyses, including t-tests, factor analysis, and descriptive analysis, were conducted to examine climate change adaptation strategies. The results indicated that both conservation agriculture (CA) farmers and non-CA farmers implemented various strategies to address climate variability. These strategies included reducing tillage, practicing zero tillage (ZT) maize, using crop residues as soil cover, planting early, laser land leveling, crop rotation, intercropping, reducing fertilizer use, utilizing manure, adopting new seed varieties, planting stress-tolerant crops and varieties, increasing seed rates, substituting crops, and diversifying crops and livestock. Conservation agriculture was identified as a crucial factor in adapting to climate change-related challenges. These findings provide valuable information to the Timorese government for developing better policies and to agricultural practitioners for effective adaptation to climate change.

***Keywords***: *Conservation agriculture, climate change adaptation strategies and farm households.*

# Runoff Estimation For Loes Watershed In Timor-Leste Using Soil Conservation Service-Curve Number (SCS-CN)

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## Abstract

Measuring runoff is crucial for watershed management in Timor-Leste, as it is not only for forecasting floods but is imperative for water resource management. Scholars have widely used numerous methods to measure the runoff; however, every method has advantages and disadvantages regarding data availability, resources, time, and equipment use. In Timor-Leste, the runoff in the watershed is rarely estimated due to a lack of equipment to conduct direct measurement, limited human resources to measure the runoff, and a low national budget allocated for the mandated department (Watershed Management Department at the Ministry of Agriculture, Fisheries, Livestock, and Forestry, or the National Directorate of Water and Sanitation (DNAS) at the Ministry of Infrastructure) to conduct the runoff measurement. Thus, the Soil Conservation Service-Curve Number (SCS-CN) is seen as a less resource-intensive, low-budget, and the most popular method used to measure the runoff, and is assumed to be a model for the future runoff measurement of other watersheds in Timor-Leste. Therefore, this study used SCS-CN to estimate the runoff of the Loes watershed. The study conducted in January to-March 2024. Loes watershed lies between 9° 12' 49.78" to the 8° 44' 5.09" South latitude to 125° 1' 42.50" to the 125° 6' 19.82" East longitude. The daily rainfall data from 2018 to 2020 were used for the Antecedent Moisture Condition (AMC). The weighted curve number obtained from land use land cover (LULC) generated by the University of Maryland for ASEAN, and the hydrological soil group (HSG) determined according to the soil texture obtained from the ISRIC Soil Data Hub. The result of the study revealed that up to 64 % of the total precipitation becomes runoff. The runoff peak occurs in December, but starts from October until May. Thus, this study concludes that the runoff in the Loes watershed is medium to high; thus, recommended to intensify the land management to increase infiltration and enhance land cover within Loes watershed area.

***Keywords****: Watershed, Runoff, SCS-CN.*

# E

## HEALTH, MEDICINE, AND LIFE SCIENCES

# Temporal and Spatial Analysis of Dengue Cases in the Municipalities of Timor-Leste In the Priod of 2019 - 2022

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## Abstract

This study aimed to analyze dengue fever incidence in the country, comparing annual rates, and identifying risk areas and associated factors. The research involved comparing incidence rates across different health regions and hospitals, identifying temporal trends and spatial distribution of cases, and analyzing the relationship between social factors and dengue fever incidence. The results revealed an increasing trend in dengue fever incidence from 2019 to 2022, with a significant peak in 2022, particularly during the rainy season. Dili recorded the highest number of cases, although Baucau and Liquiça also showed a considerable increase in 2022. Children and adolescents comprised the largest proportion of cases, notably in 2022, when they accounted for 42% of the total. Incidence rates were significantly higher during the rainy season compared to the dry season, with children under 5 and adolescents being the most affected age groups. The temporal analysis showed a stationary trend across age groups and health regions, except for the 50-59 age group, which experienced an increase in incidence rate. Spatial analysis, using the Global and Local Moran's I index, highlighted distinct spatial patterns over the period. In 2019, Dili formed a High-High cluster, indicating a high incidence of dengue, while municipalities like Ainaro and Ermera presented Low-Low clusters. Over subsequent years, spatial dynamics varied, with Liquiça exhibiting a Low-High cluster in 2021 and 2022, and Manatuto displaying a High Low cluster during the same period. These spatial and temporal patterns are crucial for understanding dengue's evolution in Timor-Leste and for guiding more effective interventions in high-risk areas, especially in regions with atypical characteristics, such as the Liquiça Low-High and Manatuto High-Low clusters.

***Keywords:*** *Temporal analysis, spatial analysis, Dengue, Moran's Index, Age groups, Timor-Leste*

# Relationship Between Eating Habits, Lifestyle, And Nutritional Status of Adolescents Aged 15 To 19 Years At The Catholic General Secondary School of The Divine Word In Palaca, Bobonaro District

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## Abstract

This study aimed to investigate the relationship between eating habits, lifestyle, and nutritional status among adolescents aged 15 to 19 years at the Catholic General Secondary School of the Divine Word College in Palaca, Bobonaro Municipality, in 2024. Employing a quantitative, descriptive, and cross-sectional design, the research involved 202 students and utilized structured questionnaires and anthropometric assessments based on Body Mass Index (BMI) to evaluate dietary behaviors, lifestyle factors, and nutritional status. The results revealed that a significant portion of adolescents exhibited inadequate dietary patterns. More than half of the students (58%) demonstrated poor eating habits, characterized by a high consumption of ultra-processed foods, fried items, fast food, sweets, and sugary drinks, coupled with a low intake of fruits, dairy products, and whole grains. In contrast, only 42% exhibited healthy dietary behaviors. Statistical analysis indicated a significant correlation between eating habits and nutritional status ($\rho = 1$; $p = 0.000$), suggesting that poor dietary patterns are associated with higher rates of malnutrition. Regarding lifestyle, 59% of students reported engaging in healthy behaviors such as abstaining from smoking and alcohol, participating in physical activity, and maintaining good hygiene practices. However, 41% reported unhealthy lifestyles, including physical inactivity, irregular sleep patterns, and the use of harmful substances. A significant correlation was also found between lifestyle and nutritional status ($\rho = 1$; $p = 0.000$), indicating that healthy behaviors are strongly linked to improved nutritional outcomes. The assessment of nutritional status revealed an alarming situation: 62% of the students were affected by some degree of malnutrition (17% severely and 45% moderately). Only 30% fell within the normal BMI range, while 8% were classified as obese (7% moderately and 1% severely). These figures underscore a concerning level of nutritional insecurity, with potential adverse effects on adolescents' growth, cognitive development, and immune function. Correlation analyses further demonstrated that students with poor eating habits and unhealthy lifestyles had a higher prevalence of moderate and severe malnutrition. Conversely, those with healthier diets and lifestyles were more likely to have normal nutritional status, highlighting the direct influence of these factors on adolescents' physical and mental well-being. It could be concluded that improving adolescents' nutritional health requires an integrated approach involving schools, families, and public policy. Promoting healthy behaviors from a young age is essential to ensuring a healthier and more productive future.

**Keywords:** *eating habits, life style, malnutrition, body mass index.*

# Relationship Between Intake of Iron, Protein, And Nutrition Status With the Incidence of Anemia In Pregnant Women In The Third Trimester At Balibo Community Health Centre, Bobonaro District

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## Abstract

The incidence of anemia in pregnant women is influenced by the lack of protein and iron intake in the mother's body during pregnancy. Poor nutritional status is related to the production of too few red blood cells in the body or the production of red blood cells that do not function properly. This research aimed to determine the relationship between iron intake, protein intake, and nutritional status with the incidence of anemia in pregnant women in the third trimester at the Balibo Community Health Center, Bobonaro district in 2024. A quantitative descriptive analytical approach is used, with a cross-sectional study. The target population in this research is pregnant women in the third trimester. With a total sample of 101 respondents, the non-probability sampling technique and the total sampling approach are used. The data collection technique is carried out by measuring CBG, Questionnaire, and also Hemoglobin Levels of Pregnant Women and the Chi-Square statistical test is used. The Results of this research on pregnant women who have ANC consultations at the Balibo community Health Center. Iron intake based on iron-containing foods p-value = 0.013 and for the frequency of consumption of iron-containing foods p-value = 0.024. Protein intake based on protein-containing foods p-value = 0.000 and for the frequency of consumption of protein-containing foods p-value = 0.023. CBG nutritional status obtained results from the Chi-square statistical test P value < 0.05, based on the chi-square result 0.000 < 0.05. P value < 0.05, based on the chi-square result 0.000 < 0.05, which means the Null Hypothesis is rejected and the Alternative Hypothesis is significant. **The conclusion** that the research results show that there is a Relationship between Iron Intake, Protein Intake, and Nutritional Status with the Incidence of Anemia in Pregnant Women in the Third Trimester.

*Keywords: Iron Intake, Protein Intake, Nutritional Status, and Gestational Anemia.*

# Prevalence of Tobacco Use And Exposure To Secondhand Smoke In Timor-Leste: National Survey 2023.

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## Abstract

The National Integrated Survey on Tobacco Use and Risk Factors for Non-Communicable Diseases (NCDs)**,** conducted in Timor-Leste between October and December 2023, revealed high levels of tobacco use among adults aged 18 to 69 years. The nationally representative sample included 3,517 surveyed households, with a total of 3,317 respondents, 40.3% of whom were male and 59.7% female. The majority of participants (63.7%) were aged between 18 and 44 years. The findings show that approximately 8 out of 10 men and 4 out of 10 women are current tobacco users, including both smoked and smokeless tobacco products. Specifically, about 7 out of 10 men are current smokers, compared to just 1 out of 10 women. Daily smoking is common among men (6 out of 10), while only a small proportion of women report smoking daily. The average age of smoking initiation is considerably lower among men, indicating an early start in tobacco use for males. Among current daily smokers, around 90% of both men and women smoke manufactured cigarettes. Regarding smokeless tobacco, usage is more prevalent among women: 3 out of 10 are current users, compared to 2 out of 10 men. However, daily use of smokeless tobacco is lower, with only 0.5 out of 10 men reporting daily use, and an even smaller percentage among women. Secondhand smoke exposure is alarmingly high: around 8 out of 10 men and women reported being exposed to tobacco smoke in their homes. At the workplace, 3 out of 10 men and 2 out of 10 women reported exposure to secondhand smoke. Although the use of electronic cigarettes remains low, some respondents reported use, signaling a trend that may require monitoring. In terms of the impact of health warnings on cigarette packaging, only 3 out of 10 male and female smokers said they considered quitting after seeing the warnings. This suggests the need for stronger and more effective public health messaging. In summary, tobacco use continues to pose a significant public health challenge in Timor-Leste. The high prevalence among men, the early age of smoking initiation, and widespread exposure to secondhand smoke highlight the urgent need for more effective tobacco control measures. These should include stronger implementation of preventive policies, public education campaigns, and enhanced health service support for smoking cessation.

*Keywords*: *Tobacco usage, Timor-Leste, Risk-factors, smoking, public health.*

# Association Between Maternal Dietary Diversity and Nutritional Status of Children in Timor-Leste

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## Abstract

Dietary diversity is crucial for ensuring adequate nutrition, especially in regions with a high prevalence of food insecurity. This study aimed to analyze the relationship between maternal dietary diversity and the nutritional status of their children. This study used data from the Timor-Leste Food and Nutrition Survey, including 11,216 children aged 0 to 59 months and 8,991 mothers aged 15 to 49 years. Maternal dietary diversity was assessed using a Food and Agriculture Organization tool, including the intake of eight food groups consumed the previous day, classified as high (consumption of $\geq 5$ food groups) or low. The nutritional status of the children was evaluated through anthropometric measurements (weight, height, and arm circumference), and body mass index (BMI) and z-scores for height-for-age, weight-for-height, and weight-for-age were calculated. Individuals were classified based on the World Health Organization reference values. The weight and height of the mothers were measured, their BMI calculated, and sociodemographic and health variables of the mothers and children, children's dietary diversity, food security, and household wealth index were collected through questionnaires. The mean (SD) maternal dietary diversity was 5.17 (2.05) food groups consumed. It was observed that 42.3% of the mothers had low nutritional diversity. Among the children analyzed, the prevalence of very low/low height-for-age was 49.5%, very low/low weight-for-age was 32.3%, and low weight-for-height was 7.8%. Maternal dietary diversity was positively associated with the nutritional status of the children. The B coefficients for all variables analyzed (arm circumference, weight-for-age, height-for-age, and weight-for-height) were positive and highly significant (p<0.001). Higher maternal dietary diversity was associated with better child nutritional indicators. The development of nutrition programs and public health policies should include promoting maternal dietary diversity to contribute to better child nutritional status.

***Keywords:*** *Dietary Diversity; Child Nutrition; Maternal Education; Food Insecurity; Timor-Leste.*

# Coronary Intervention In A Patient With Angina Pectoris

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## Abstract

The cardiovascular system has as its primary function the provision of blood circulation to the various organs of the human body, including the heart itself. The disease of the coronary arteries, which, through various mechanisms, results in a reduction (either absolute or relative) in coronary blood flow, is known as ischemic heart disease, and it is the leading cause of death globally. According to official data from the World Health Organization, 17.9 million people die annually from cardiovascular diseases, with more than half of these deaths occurring in Asia, showing a rapid increase from 5.6 million in 1990 to 10.8 million deaths in 2019. The majority of deaths from cardiovascular diseases are due to ischemic heart disease. By 2020, deaths from coronary diseases in Timor-Leste accounted for 11.5% (814 recorded cases), and the age-adjusted mortality rate was 126.6 per 100,000 inhabitants. This data placed Timor-Leste in the 69th position worldwide. Ischemic heart disease is a condition of the coronary arteries that, through various mechanisms, leads to a reduction (either absolute or relative) in coronary blood flow, and is the leading cause of death worldwide. Stable angina pectoris is the most prevalent form of ischemic heart disease that, from a clinical point of view, is characterized by precordial pain with characteristic radiation, triggered by exercise or emotions, and relieved by rest or nitroglycerin. This study case shows the effectiveness of treatment Stable Angina Pectoris with special emphasis on invasive coronary angiography and angioplasty as methods of diagnosis and treatment of the disease. The case of a patient with angina pectoris was presented, who, despite medical treatment, continued to be symptomatic. The most striking finding in the examination and non-invasive tests was severe mitral insufficiency. However, invasive coronary angiography revealed multivessel disease with severe obstructive lesions, which, when treated with a drug-eluting stent, not only improved the patient's symptoms but also the severity of the mitral insufficiency. This demonstrated the usefulness of coronary angioplasty in controlling symptoms and complications in patients with stable angina. Finally, a real clinical case of a patient with angina pectoris was presented and discussed, in which coronary angioplasty associated with medical treatment was able to improve the patient's sign and symptoms and reduce the severity of severe mitral insufficiency.

***Keywords:*** *Angina pectoris; Ischemic heart disease; Invasive coronary angiography; Coronary angioplasty.*

# A Photovoice Study of Post Traumatic Growth (PTG) in Flash Flood Survivors of the Typhoon Seroja on Adonara Island, Indonesia

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## Abstract

Natural disasters have a profound psychological impact on individuals who experience them. This impact is heightened by the suddenness, threat, and challenges that such events bring. Survivors who undergo the post-disaster adjustment process may experience significant positive psychological changes, known as post-traumatic growth. This study aims to explore the post-traumatic growth of flash flood survivors on Adonara Island following the Seroja tropical cyclone in 2021. Five survivors from Waiwerang City, East Adonara, participated in photovoice and interview sessions. Thematic analysis revealed four main themes: (1) the evocation of traumatic memories, (2) support from close relationships, (3) spirituality and religious belief as a means of recovery, and (4) coping strategies for healing from the flash flood disaster. The findings suggest that survivors who experienced growth developed a deep sense of gratitude for life. The four themes identified in this study can serve as a model for individuals, families, mental health professionals, and stakeholders to support the rehabilitation process of natural disaster survivors in East Nusa Tenggara. Without psychological rehabilitation, the traumatic effects of such disasters may leave lasting emotional scars.

***Keywords:*** *Flash flood, Typhoon Seroja, Post-Traumatic Growth (PTG), survivors.*

# Why Are Medical Students Depressed? A Medical School Case Study

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## Abstract

Some medical students do not graduate on time and face significant challenges during their clerkship year, which can impact medical school accreditation. Studies have shown that 27–32% of medical students experience depression. The findings of this study provide important policy recommendations to enhance students' resilience and well-being, particularly in rural medical schools with limited resources. This qualitative study aimed to explore the stressors, risk factors, and support systems encountered by students during their clerkship. In-depth interviews were conducted with nine clerkship students from a rural medical school in Nusa Tenggara Timur Province, Indonesia. Participants were purposively selected based on specific criteria: students who struggled academically (i.e., failed ≥3 clinical rotations or failed the national competence exam ≥3 times). All participants volunteered to join the study. Data saturation was reached after nine interviews, so no additional participants were recruited. The interviews were conducted between July 2022 and March 2023. Transcripts were thematically analysed using Richardson's Resiliency Model as the theoretical framework. The transcripts were coded using pre-developed codes based on the model, and the resulting codes were organized into subthemes and overarching themes. Several stressors were identified, with the most modifiable being related to the role of clinical supervisors in the teaching and learning process. Both risk and protective factors affecting students' resilience and well-being were noted, particularly those linked to academic processes. Clinical supervisors play a crucial role in fostering student resilience. Therefore, training is needed to help supervisors transition from being potential sources of stress to becoming supportive figures in the students' learning journey.

*Keywords*: *clinical clerkships; medical students; psychological stressors; resilience.*

# Unveiling Socioemotional Experiences in Conducting the Adaptation of the Indonesian Eastern Neuropsychological Test Battery (INTB): A Qualitative Neuropsychological Study

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## Abstract

The adaptation of the Neuropsychological Test Battery has been periodically conducted in Indonesia and is known as the Indonesian Neuropsychological Test Battery (INTB). This adaptation aims to support the development of cognitive assessments encompassing attention, memory, language, and spatial skills. However, the adaptation process has not been comprehensively implemented across the country, particularly in Eastern Indonesia. Recently, the Indonesian Neuropsychology Consortium initiated an adaptation effort in East Nusa Tenggara, a region within this underrepresented cluster. This study qualitatively explores the socio-emotional responses of nine participants from diverse cultural backgrounds, age groups, and genders in East Nusa Tenggara. All participants had previously completed the INTB and were re-recruited to provide feedback on the socio-emotional aspects of the test. Data were collected through semi-structured interviews to capture in-depth, context-specific socio-emotional responses not accessible through quantitative methods. The findings are presented thematically, summarizing the data into three key areas: (1) Affective experiences prior to testing, (2) Self-regulation during the test, and (3) Environmental influences on cognitive assessment. Participants who completed the INTB reported distinct socio-emotional experiences in response to cognitive tasks. These findings highlight the importance of considering socio-emotional factors in adapting the INTB for Eastern Indonesia. Incorporating these elements can help ensure equitable and psychologically safe cognitive assessments, allowing individuals to process and communicate cognitive information more accurately during test administration.

***Keywords**: Indonesian Neuropsychological Test Battery (INTB), Eastern Indonesian, Socioemotional Experiences, Qualitative Neuropsychological Research.*

# Understanding Cognitive Experience During The Neoropsychology Battery Test in Eastern Indonesia: Participants' Subjective Perspectives

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## Abstract

This study aims to explore understanding of the cognitive experiences individuals when taking the Indonesia Neuropsychological Test Battery (INTB), a neuropsychological assessment tool used to measure various aspects of cognitive function. The main focus of this study was to explore participants' subjective perspectives on how they process information, overcome challenges, and respond to various tasks in the INTB. Through a qualitative approach, this data was collected using in-depth interviews with 10 participants who had completed the entire set of tests in the INTB. The results of the analysis showed that participants' cognitive experiences were influenced by their perceptions of the test, the level of difficulty, the problem-solving strategies used, and external factors that arose during the test. Some participants also reported differences in their ability to focus and concentrate, depending on the type of test. These findings provide important insights into the factors that influence cognitive experience in neuropsychological tests, and contribute to the development of more adaptive and user-friendly assessment instruments.

***Keywords***: *Cognitive experience, INTB, subjective perception.*

# A Model of Organizational Capacity Development of Daughters to Achieve Sustainable Development Goals (SDGs) On Mother and Baby Deaths

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## Abstract

The Regional Government of South Central Timor District still does not fully realize or understand the concept of Sustainable Development Goals (SDGs). Some leaders and officials of the Regional Apparatus Organization (OPD) only recognize SDGs as an extension of the Millennium Development Goals (MDGs), but have not yet understood in depth the substance of the agenda. In this study, a descriptive method with a qualitative approach was used. The number of participants involved in this research was 76 people, who were selected purposively. Primary and secondary data collected were then analyzed using data analysis techniques described by Creswell (2016). Capacity building to achieve the Sustainable Development Goals (SDGs) in reducing maternal and infant mortality in the Regional Apparatus Organization (OPD) of South Central Timor District refers to the views of Thompson (2003:60), who developed the concept originally created by Parsons (1960). The research results show several important findings: (a) At the technical level, OPDs in TTS District still do not have a comprehensive understanding of the SDGs, especially related to maternal and infant mortality indicators. Their understanding tends to be limited to the issue of stunting and there are difficulties in database integration between agencies. (b) At the managerial level, it was found that there is no synchronization in the allocation of personnel for each unit and function, thus hampering the implementation of SDGs goals. (c) At the institutional level, local governments have not developed effective policies related to the implementation of SDGs in local development plans. Thus, there needs to be an effort to increase the capacity of OPD so that it can be more effective in achieving the goals that have been set.

*Keywords*: *Sustainability, Maternal and infant mortality*.

# Association between Maternal Dietary Diversity and Nutritional Status of Children in Timor-Leste

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## Abstract

Diversity is crucial for ensuring adequate nutrition, especially in regions with a high prevalence of food insecurity. This study aimed to analyze the relationship between maternal dietary diversity and the nutritional status of their children. This study used data from the Timor-Leste Food and Nutrition Survey, including 11,216 children aged 0 to 59 months and 8,991 mothers aged 15 to 49 years. Maternal dietary diversity was assessed using a Food and Agriculture Organization tool, including the intake of eight food groups consumed the previous day, classified as high (consumption of ≥5 food groups) or low. The nutritional status of the children was evaluated through anthropometric measurements (weight, height, and arm circumference), and body mass index (BMI) and z-scores for height-for-age, weight-for-height, and weight-for-age were calculated. Individuals were classified based on the World Health Organization reference values. The weight and height of the mothers were measured, their BMI calculated, and sociodemographic and health variables of the mothers and children, children's dietary diversity, food security, and household wealth index were collected through questionnaires. The results shot that the mean (SD) maternal dietary diversity was 5.17 (2.05) food groups consumed. It was observed that 42.3% of the mothers had low nutritional diversity. Among the children analyzed, the prevalence of very low/low height-for-age was 49.5%, very low/low weight-for-age was 32.3%, and low weight-for-height was 7.8%. Maternal dietary diversity was positively associated with the nutritional status of the children. The B coefficients for all variables analyzed (arm circumference, weight-for-age, height-for-age, and weight-for-height) were positive and highly significant (p<0.001). Conclusion: Higher maternal dietary diversity was associated with better child nutritional indicators. The development of nutrition programs and public health policies should include promoting maternal dietary diversity to contribute to better child nutritional status.

***Keywords***: *dietary diversity; child nutrition; maternal education; food insecurity; Timor-Leste*

# Atauro And Its Neighboring Indonesian Islands: Informal Maritime Movements And Exotic Animal Disease Transmission Risks

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## Abstract

Animal movement across different geographic settings is widely recognized as a key pathway for spreading infectious diseases. However, so far, no study has examined cross-border animal movement between a tiny Timorese island called Atauro and its neighboring Indonesian islands. Thus, this rapid qualitative inquiry was held in October 2023 to describe cross-border movements between Atauro and its neighboring Indonesian islands. Data collection was done through in-depth face-to-face interviews, using a semi-structured questionnaire. A total of 29 key informants of diverse backgrounds were purposively selected and were interviewed in Atauro. The interviews were audio-recorded and transcribed afterward. Deductive thematic analysis was done using a coding matrix developed in Microsoft Excel 2016. This study revealed active informal cross-border interactions through informal channels between communities in Atauro and neighboring islands, mainly with communities in Liran, followed by Alor and Wetar islands. The community members in Atauro who have the most interactions with the neighboring islands are reportedly those who reside in Beloi and Biqueli villages. These interactions are driven by family ties, trade, and socio-cultural events, and involve informal live animal import into Atauro. The top imported animal species were goats, pigs, chickens, cattle, and dogs. Our findings indicate porous maritime borders, and lack of quarantine checks for imported animals which poses the risks of introducing and spreading exotic diseases of animal health and public health importance. We also found lack of awareness about exotic diseases within the communities. This study emphasized an urgent need to strengthen maritime border management, especially through the enforcement of quarantine protocols to prevent unregulated animal movements. It also highlights the need for targeted community awareness about the risks associated with the spread of exotic diseases through informal animal imports.

**Key words:** *Atauro, cross border, animal movement, islands, Indonesia*

# Comparison of Serum Vitamin D Levels Between Arthralgia and Non-Arthralgia Groups Among Indoor Workers with Suspected Osteoarthritis Genu in Kupang City Workers

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## Abstract

Osteoarthritis (OA) is a degenerative joint disease characterized by pain and stiffness, commonly affecting the vertebrae, pelvis, knees, and ankles. Early symptoms include joint pain (arthralgia), which may be associated with vitamin D deficiency. Other risk factors include age, gender, obesity, and ergonomic conditions in the workplace. This research aims to reduce the risk of knee OA in workers and improve their overall health. The objective of this study was to compare serum vitamin D levels between workers with and without arthralgia in Kupang City who were suspected of having knee osteoarthritis (genu OA). This observational analytic study used a cross-sectional design and involved 46 indoor workers from Bureau of Statistics, Transport Department, and Department of Public Housing and Settlement Areas. The study included anamnesis, body mass index (BMI) measurement, evaluation of knee pain using the Visual Analogue Scale (VAS), and blood sample collection. Serum vitamin D levels were measured using the electrochemiluminescence immunoassay (ECLIA) method. Participants were selected through consecutive sampling, and data were analysed using the Independent T-test. All participants were women aged 18–59 years. Of the 46 respondents, 22 experienced knee joint pain (arthralgia), while 24 did not (non-arthralgia). A significant difference in serum 25-hydroxyvitamin D (25-OHD) levels was observed between the two groups ($p = 0.000$, $p < 0.05$). In the arthralgia group, the mean 25-OHD level was $17.2 \pm 2.94$ ng/mL, with an average VAS score of 5.83, indicating moderate pain. In contrast, the non-arthralgia group had a mean 25-OHD level of $24.1 \pm 2.51$ ng/mL and a VAS score of 0. In conclusion, there is a significant difference in serum vitamin D levels between arthralgia and non-arthralgia groups among workers in Kupang City, suggesting a potential link between vitamin D deficiency and knee joint pain.

***Keywords:*** *Osteoarthritis (OA), joint pain (arthralgia), vitamin D deficiency, serum vitamin D levels, work ergonomics.*

# Case Report: *A Family Medicine Approach To The Management Of HIV In A Young Adult Patient At Oebobo Primary Health Center*

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## Abstract

Human Immunodeficiency Virus (HIV) is a retrovirus that attacks the human immune system and remains a global health concern. Indonesia faces significant challenges in the prevention and treatment of HIV, particularly among the younger population. The family medicine approach plays a vital role in the comprehensive management of this disease. This case report highlights the experience of managing a 22-year-old female patient with HIV at Oebobo Primary Health Center, Kupang. The patient has been on fixed-dose combination (FDC) TLD antiretroviral therapy since April 2024 and has demonstrated good adherence. Non-pharmacological interventions included education on condom use, personal hygiene, menstrual hygiene management, and family support. This study emphasizes the crucial role of primary care physicians and family involvement in optimizing therapeutic outcomes and the quality of life of patients living with HIV.

**Keywords**: *HIV, antiretroviral therapy (ART), family medicine, family support, holistic approach*

# Coronary Intervention In A Patient With Angina Pectoris

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## Abstract

The primary function of the cardiovascular system is to circulate blood throughout the body, including to the heart itself. Coronary artery disease, which leads to a reduction—either absolute or relative—in coronary blood flow through various mechanisms, is known as ischemic heart disease (IHD). It is the leading cause of death worldwide. According to official data from the World Health Organization, 17.9 million people die each year from cardiovascular diseases. More than half of these deaths occur in Asia, with numbers rising from 5.6 million in 1990 to 10.8 million in 2019. The majority of cardiovascular-related deaths are caused by ischemic heart disease. In Timor-Leste, coronary artery disease accounted for 11.5% of all deaths in 2020, with 814 recorded cases. The age-adjusted mortality rate was 126.6 per 100,000 population, placing Timor-Leste 69th globally in terms of coronary mortality. Ischemic heart disease is characterized by reduced blood flow in the coronary arteries. Stable angina pectoris, the most common clinical manifestation of IHD, presents as chest pain (precordial pain) with characteristic radiation. It is typically triggered by physical exertion or emotional stress and relieved by rest or administration of nitroglycerin. This case study highlights the effectiveness of treating stable angina pectoris, with a focus on the diagnostic and therapeutic roles of invasive coronary angiography and angioplasty. It discusses a patient who continued to experience symptoms despite optimal medical management. While non-invasive tests revealed severe mitral valve insufficiency, invasive coronary angiography uncovered multivessel disease with significant obstructive lesions. Treatment with drug-eluting stents not only alleviated the patient's symptoms but also led to a marked improvement in the severity of the mitral insufficiency. This case illustrates the value of coronary angioplasty in managing both the symptoms and complications of stable angina. It demonstrates that, when combined with medical therapy, angioplasty can improve clinical outcomes, including associated cardiac conditions such as mitral insufficiency.

***Keywords****: Angina pectoris; ischemic heart disease; Invasive coronary angiography; Coronary angioplasty.*

# Suggested Strategies to Improve Students' Mental Health Based on Help-Seeking Behavior

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## Abstract

Mental health issues among university students are increasing, with numerous cases of stress, anxiety, and depression. Previous studies have shown a link between help-seeking behavior and mental health. This study examines the correlation between help-seeking behavior and mental health among students of a university in Nusa Tenggara Timur, Indonesia.  The study aims to enhance understanding and emphasize the urgency of help-seeking behavior to support students' mental health. This cross-sectional study was conducted from April to August 2024, involving students from a university in Nusa Tenggara Timur, Indonesia. This study measured the students' help-seeking behavior and mental health levels, analyzed using Spearman's Rho correlation test. A total of 820 students participated in this study. The findings indicated a positive correlation between help-seeking behavior and mental health. Parents were the primary source of students' support. Higher levels of help-seeking behavior are associated with better mental health. We suggest three strategies to be considered to improve students' mental health: 1) promoting help-seeking behavior among students, 2) involving parents, 3) teaching parenting to students as future parents.

***Keywords****: help-seeking behavior, mental health, university students, Nusa Tenggara Timur, Indonesia*

# Case Report: A 61-Year-Old Female With Uncontrolled Type-2 Diabetes

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## Abstract

Diabetes mellitus (DM) is a metabolic disorder characterized by elevated blood glucose levels due to insulin dysfunction. In 2021, 537 million people were living with DM, a number projected to rise to 783 million by 2045. In Indonesia, cases are expected to increase to 28 million. Uncontrolled DM is defined by HbA1c $\geq$7%, fasting blood glucose $\geq$126 mg/dL, or 2-hour postprandial glucose $\geq$200 mg/dL after at least three months of treatment. Serious complications include ketoacidosis, recurrent infections, and hyperosmolar hyperglycemic state. This case report presented a 61-year-old female presented with frequent leg cramps, particularly at night and after physical activity, without associated pain. She also reported nocturia, excessive thirst, and weight loss over the past two months. This case highlights uncontrolled type 2 diabetes mellitus, and potential complications.

*Keywords: Diabetes Type 2; uncontrolled; Neuropati.*

# Dengue Hemorrhagic Fever in a Child Residing in a Dryland Archipelagic Area, Kupang City: *A Family Medicine Case Report*

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## Abstract

Dengue Hemorrhagic Fever (DHF) is a viral infection transmitted by Aedes mosquitoes, which remains a major public health issue in Indonesia. This case report presented a suspected dengue case in a 5-year-old female patient residing in Sikumana, Kupang. The report aims to assess the patient's condition using a holistic family medicine approach, considering both clinical and environmental factors. Data collection methods included anamnesis, physical examination, laboratory tests (NS-1 positive, platelet count 96,000/mm³), environmental assessment, and two home visits. The patient exhibited typical dengue symptoms: continuous high fever, retro-orbital pain, and skin rash, leading to a probable dengue diagnosis. Environmental findings revealed risk factors such as uncovered water storage and poor housing sanitation. Educational interventions were provided to the family regarding dengue prevention and the importance of early treatment. The patient was referred to the hospital for further care. This case highlights the importance of integrating clinical, environmental, and family-level interventions in managing dengue cases, especially in endemic areas. It also emphasizes the role of family doctors in community-level prevention and early detection, which is crucial to controlling disease progression and reducing complications.

***Keywords****: Dengue Hemorrhagic Fever; Family Medicine;*

# Neglected and stigmatized disease: Morbus Hansen in 37 Years Old Male: *A Case report*

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## Abstract

Hansen's disease, also known as leprosy, is a chronic granulomatous infectious disease caused by Mycobacterium leprae and Mycobacterium lepromatosis, primarily affecting the skin and peripheral nervous system.1 Individuals who live in close contact with leprosy patients are at higher risk, most likely through infectious aerosols produced by coughing or sneezing, or through prolonged skin-to-skin contact.2 Casual contact—such as shaking hands, hugging, sitting next to someone, or sharing meals—does not lead to transmission.3,4 **Case presentation.** 37 years old, male, patient found after periodic community screening by Bakunase Public Health Center, Kupang city. Patient suffers from symptoms of decreased visual acuity for 6 months, after having painless and progressive amputation of his distal fingers in both hands and feet. The patient previously had swelling in numerous places — face, both of the earlobes — and continued by numbness in most areas on distal surface of limbs within 4 years after working in Ambon as fisherman around 2004, alongside with a colleague suspected with the same symptom. There are telltale signs of multiple hyper-pigmented, well-defined macular and plaque lesions with irregular shapes distributed bilaterally and asymmetrically on the palms, fingers, wrist flexors, arms, elbows, lower legs, feet, and between toes. Sensory loss to pinprick and temperature noted. Bilateral loss of lateral eyebrows (madarosis) and eyelashes, alongside corneal calcification— suggestive of leprosy involvement. The patient was diagnosed with Morbus Hansen earlier in 2024 after ziehl-neelsen coloring revealed such findings. Patients treated with Fixed Drug Combination for multibasiler regiment for 12 months consisting of Rifampicin, dapsone, and clofazimine, started in early February of 2024. The conclusion is that this case highlight the advanced clinical manifestations of multibacillary Hansen's disease, including neuropathy induced amputation, extensive cutaneous lesions, sensory loss, and ocular complications, due to delayed diagnosis and treatment. It underscores the importance of early recognition, especially in endemic regions, and the need for continued public health efforts in surveillance, education, and timely management to prevent irreversible disabilities and reduce transmission.

*Keywords*: *Morbus Hansen, Neglected disease, Leprosy related disability.*

# Mindfulness-Based Intervention and Brain Plasticity in Psychiatric Population: A Systematic Review and Meta-Analysis With-Relevance to Transborder Mental Health

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## Abstract

Mental disorders such as depression, anxiety, and PTSD continue to pose major global health burdens, particularly in underserved and transborder regions where access to mental health care is limited. Mindfulness-Based Interventions (MBIs), including Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT), are gaining attention for their potential to promote psychological healing and induce neuroplastic changes. Neuroimaging studies suggest that MBIs may influence brain structure and function, particularly in regions associated with emotional regulation and stress response. Despite promising findings, no systematic review has yet synthesized evidence on the neurobiological effects of MBIs specifically in psychiatric populations. This review aims to examine the effects of MBIs on brain plasticity among individuals with psychiatric disorders and explore their relevance for transborder mental health settings, such as the Indonesia–Timor Leste border. A systematic literature search is being conducted across PubMed, Scopus, and Google Scholar for studies published between 2015 and 2025. Eligible studies include peer-reviewed articles involving psychiatric populations, mindfulness-based interventions, and neuroplasticity outcomes measured via neuroimaging or neurophysiological tools. Study selection follows PRISMA 2020 guidelines, and risk of bias is assessed using the ROBINS-I tool for non-randomized studies. Data extraction and synthesis are managed using Review Manager (RevMan). Initial findings indicate potential improvements in prefrontal connectivity and reductions in limbic hyperactivity following MBIs. This review is expected to highlight the neuroplastic impact of MBIs and their potential as low-cost, culturally adaptable interventions in regions with limited access to conventional neurological services.

*Keywords: Mindfulness, Neuroplasticity, Transborder Health.*

# Mapping Interventions to Alleviate Depression in Indonesian Medical Students: *A Scoping Review*

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## Abstract

Mental health is a critical component of overall health. Depression, as one of the most prevalent mental health disorders, represents a significant issue that necessitates effective solutions. Medical students face a high risk of depression due to heavy academic pressure, a competitive environment, and mental health stigma. However, factors and interventions targeting depression among medical students in Indonesia remain underexplored. This study aimed to identify the factors contributing to depression, evaluate the interventions that have been implemented, and analyze the factors leading to the success or failure of these interventions. A scoping review was used as the research design. The process includes identifying questions, searching literature, selecting studies, extracting data, and reporting results. This study used specific keywords such as depression, medical students, and Indonesian medical students across PubMed, ScienceDirect, and Google Scholar, with inclusion criteria like studies within the past 10 years on depression among Indonesian medical students. Relevant data were extracted and descriptively analyzed to summarize findings and identify research gaps. Through a scoping review of 19 articles from a pool of 311 screened articles, 14 factors contributing to depression were identified, which can be divided into internal factors (such as sleep quality, stress levels, and emotional intelligence) and external factors (such as social media use and lack of social support). The study found only two types of interventions: classical music therapy and a healthy diet that included 14 types of fruits and vegetables. Classical music therapy had shown positive effects on psychological well-being, while a healthy diet offered physical benefits. Although effective, the success of these interventions depended on individual preferences, accessibility, and consistency in daily implementation. There is still ample opportunity for research, particularly in developing interventions to reduce depression. Overall, internal factors are the predominant causes of depression among medical students. This study recommends the need for more robust study designs, such as longitudinal studies, to evaluate the long-term impact of these interventions. Furthermore, interventions should adopt a more personalized and sustainable approach.

*Keywords: Depression, Medical Students, Intervention, Mental Health, Indonesian Medical Student.*

# Mindfulness-Based Cognitive Therapy Effectively Reduces Depression Levels: *A Case Study at Universitas Nusa Cendana*

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## Abstract

Mental disorders such as depression, anxiety, and post-traumatic stress disorder (PTSD) remain significant global health challenges, particularly in underserved and transborder regions with limited access to mental health care. Mindfulness-Based Interventions (MBIs), including Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT), have emerged as promising approaches for psychological recovery, potentially inducing neuroplastic changes. Neuroimaging evidence suggests that MBIs modulate brain regions implicated in emotional regulation and stress response; however, a comprehensive synthesis of their neurobiological effects in psychiatric populations is lacking. This systematic review aims to evaluate the impact of MBIs on brain plasticity among individuals with psychiatric disorders and assess their applicability in transborder mental health contexts, such as the Indonesia–Timor Leste border. A systematic search is being conducted across PubMed, Scopus, and Google Scholar for studies published between 2015 and 2025. Inclusion criteria encompass peer-reviewed studies involving psychiatric populations, mindfulness-based interventions, and neuroplasticity outcomes assessed through neuroimaging or neurophysiological measures. The review adheres to PRISMA 2020 guidelines, with risk of bias evaluated using the ROBINS-I tool for non-randomized studies. Data extraction and synthesis are managed using Review Manager (RevMan). Preliminary results indicate that MBIs may enhance prefrontal-limbic connectivity and attenuate hyperactivity in limbic structures. These findings underscore the potential of MBIs as low-cost, culturally adaptable interventions to support mental health in resource-limited, cross-border settings.

***Keywords***: *mindfulness-based interventions, neuroplasticity, psychiatric disorders, transborder health, neuroimaging, mental health access.*

# Understanding Dog Keeping And Dog Meat Consumption Practices In Ainaro*: Public Health Implications For Rabies Control In Timor-Leste*

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## Abstract

Dogs are an integral part of Timor-Leste's cultural and social fabric but also serve as key reservoirs for rabies, a fatal zoonotic disease. Following the country's first reported human rabies outbreak in mid-2024, there is an urgent need to understand community-level dog ownership and consumption practices that may influence rabies transmission. This cross-sectional study assessed dog demographics, ownership patterns, and dog meat consumption practices in Ainaro municipality and examined their implications for rabies control. A total of 247 household heads were interviewed between January and February 2025 using a structured questionnaire on the Epicollect5 mobile platform. Sample size was calculated using Statulator with a 5% margin of error, 90% confidence level, and 65% expected prevalence. Descriptive and inferential statistics were analyzed using Jamovi software. Results showed that 96% of households owned dogs, with a median of two dogs per household (range: 1–11), and a human-to-dog ratio of 2.3:1. Most dogs were local breeds (99%) obtained through breeding (56%) or as gifts (42%). Ownership purposes included home protection (99%), ritual use, meat consumption (63%), and sale (28%). Dog meat consumption was reported by 90% of participants, especially males (OR: 2.9; p = 0.01) and those under 42 years (OR: 4.2; p = 0.003). Only 13% of dogs had ever been vaccinated against rabies, though 98% of owners expressed willingness to participate in future vaccination campaigns. Rabies awareness was limited—66% had never heard of the disease, and only 65% of informed participants knew it could be transmitted via dog bites. Dog bite incidents were reported by 22% of respondents in the past year. This study reveals high dog ownership and meat consumption with low rabies awareness and vaccination coverage, highlighting the need for targeted public health interventions and vaccination programs in Timor-Leste.

*Keywords: dogs, rabies, dog meat, Timor-Leste, zoonosis, vaccination, public health.*

# F

## SOCIAL, ART AND CULTURAL SCIENCES

# Modernizing Tradition: *Ikat and Batik Fusion in Handbags*

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## Abstract

This study explores a contemporary approach to preserving Indonesia's rich textile heritage by fusing two iconic traditions—ikat weaving from East Nusa Tenggara and batik—into modern fashion accessories. Facing a decline in market relevance, traditional woven fabrics require innovative strategies to remain competitive in today's fashion industry. Through the design and development of tote and sling bags, this research presents a creative solution that balances cultural identity with functional appeal. Guided by Vinod Goel's design method, the project involves material selection, motif integration, and prototype creation that emphasizes the visual and symbolic integrity of each fabric. The result is a hybrid product that not only meets current consumer demands but also promotes the cultural narratives embedded in Indonesia's traditional crafts. This initiative highlights the potential of design-led innovation in revitalizing heritage textiles for broader markets while encouraging cultural continuity through modern.

***Keywords:** batik, cultural heritage, Ikat weaving, product diversification, handbag.*

# Family Sociology in Timor-Leste: Strengths, Weaknesses, and Theoretical Potential

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## Abstract

In Timor-Leste, extended families serve as the cornerstone of social, economic, and cultural life, shaping the nation's development from its independence struggle to post-conflict state-building. This essay employs family sociology to analyze the family's role as the primary unit of production, cultural practices, cooperatives, and social organizations, drawing on anthropological writings by Traube (1986), Hicks (2004), and others. Families underpinned the FALINTIL resistance by providing resources and protection, while post-independence, they influence NGOs, governance, and economic cooperatives. Strengths include social cohesion, resilience, and trust, which foster community-driven development. However, weaknesses such as nepotism, exclusion of non-kin, and resistance to modernization hinder scalability and inclusivity. Proposing a "Kinship Resilience Theory," the essay highlights the potential for a new family sociology framework that integrates Timor-Leste's multi-functional kinship networks. This study underscores the need to balance family strengths with inclusive policies to enhance Timor-Leste development potential.

***Keywords****: Multi-functional kinship networks, family sociology, development in post-independence.*

# Interdisciplinary Actions In The Physical And Educational Care of Older Adults In The Community

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## Abstract

Interdisciplinarity in science refers to the integration of knowledge and methods from different academic disciplines to address complex problems that cannot be understood by relying on a single discipline. This approach allows for a more complete understanding and deeper analysis of phenomena by considering different perspectives and contributions from diverse areas of knowledge. Professionals who work with older adults require, more than capacity, complementarity, since in isolation they cannot respond to the complexity of the aging process. Physical and educational care for older adults in the community requires interdisciplinary studies to ensure that professionals from different disciplines can work together to provide more comprehensive and effective care. Some of these studies aim to influence the improvement of this care. This research addresses the scientific problem: "How can we achieve improvement in physical and educational care for older adults in the community of Becora, Díli, Timor-Leste?" The research demonstrated, through the identification of problems and potential opportunities, the need to develop interdisciplinary actions for the physical and educational care of older adults in the community. This element constitutes the main contribution of the research and, consequently, supports the assessment of its feasibility. For these purposes, the following methods were used: theoretical-logical history, documentary analysis, systematization, modeling, systemic-structural-functional methods; empirical-level methods: surveys, interviews, expert consultations, and satisfaction tests; and statistical-level methods: descriptive and inferential statistics. The abstraction process allowed the identification of the interdisciplinary nodes that require actions integrating medical, nutritional, physical, and educational care within the context of healthy aging for older adults in the community. This demonstrates that interdisciplinarity is essential for comprehensive, high-quality care for older adults, improving their quality of life and promoting their well-being.

**Keywords:** *Interdisciplinary actions, older adults, aging.*

# An Analytical Study Of Interpreting The Poem "*Esperanças Rasgadas*"

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## Abstract

The '*POEM ESPERANÇAS RASGADAS*" by was writen by Sir. Kay Rala Xanana Gusmão. The objectives of this study was to discover the main reason why the author wrote this poem and what message he left. The poem *"Torn Hopes"* was written in 1995, in Cipinang, Indonesia, although it was published in Portugal by Sandra Lobo, a Portuguese woman who, at the time, was exchanging letters with Kay Rala Xanana Gusmão during his imprisonment in Cipinang, Indonesia. The letters the young woman sent were all messages of support for the struggle carried out by the people of Timor-Leste. From then on, the letters revived all spirit and gave hope to Kay Rala Xanana Gusmão to continue fighting, even while in prison. The research method used in this study was descriptive qualitative. The participant of this study is the owner of the poem. The poem titled *Torn Hopes* carries two main meanings. On one hand, the word **"hope"** has a positive meaning, linked to the patriotic spirit of the Timorese people. It refers to the trust and belief that, despite the hardships, the struggle for liberation will eventually bring good results. It is the inner strength that keeps the will to resist alive. Furthermore, the word **"torn"** conveys a negative sense. It evokes images of violence, destruction, suffering, tears, sorrow, and deep loss. It represents the pain and trauma experienced during the period of occupation, when the people's dreams and hopes were often brutally interrupted. Despite this contrast, the poem reflects the collective feeling of the Timorese people: a deep and persistent desire to see their country free from its enemies. The pain does not erase hope — on the contrary, it makes it stronger and more meaningful. In summary this poem used figurative expression about his own experiences or things that he went through during his life and the significance of this poem gave us a message about long-suffering moments that portrays the pain of people, but at the same time hope for future of the country.

**Key words:** *Torn Hopes, Kay Rala Xanana Gusmão, Timor-Leste liberation, Patriotic resistance and Message of Hope.*

# Differentiation of Bunak Language Varieties

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## Abstract

The purpose of this study was to describe the Bunak language variety, showed the geographical configuration of each Bunak region and its speakers, and described the language and its usage situation. This study aimed at classifying the genetics of the Bunak, provide an overview of the language structure, and present the results of research that has been conducted by other researchers on the Bunak Lamaknen and Lamaksanulu language varieties in Timor-Indonesia, as well as presenting the Bunak Lamakhitu, Kovalima, Ainaro, and Manufahi language varieties in Timor-Leste that we are currently studying. One way to determine the dialect in this study was by using dialect geography. In the linguistic map presented in this study, there were lines that limit the use of Bunak in one area to another, called isogloss lines. Isogloss lines provided a general overview between areas that have differences in terms of vocabulary, grammar used, and forms of pronunciation. This study showed that the area with the largest number of Bunak speakers is in the municipality of Bobonaro and Kovalima, and in smaller numbers in the district of Ainaro and Manufahi. The Bunak dialect area of Timor was found in five varieties: (a) Southwest – a phonologically conservative dialect area centered around Maukatar; (b) Lamaknen – a dialect phonologically and lexically intermediate between South and Northeast, sharing common and distinct features of both; (c) Northeast – a larger dialect, extending from Maliana eastward to Bobonaro and down to Zumalai, phonologically more radical; (d) Ainaro – a dialect characterized by significant Mambai influence, phonologically similar but not as advanced in the application of changes as Northeast; (e) Manufahi – a smaller dialect, characterized by a very different lexicon and relatively conservative phonology, having features different from Ainaro. At the end of the research, a Bunak dictionary can be created which contains all Bunak vocabulary from various Bunak dialects found in Timor-Leste.

# The Production of A Trilingual Glossary In Portuguese, Tétum And English In An Agroforestry Area

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## Abstract

The objective of this study was to produce a trilingual glossary in Portuguese, Tetum, and English in the field of agroforestry, thereby promoting the use of Portuguese in productive sectors beyond education in Timor-Leste. The development of this glossary is crucial for the accurate translation of technical terms and lexicons related to agroforestry, and to support the understanding and knowledge of technical staff and students in this field. As the theoretical foundation for this research, we explored the definitions of "glossary," "lexicography," "terminology," and "semantics." Additionally, it was necessary to investigate key agroforestry concepts, since the goal of this project was to produce a trilingual glossary tailored to an existing agroforestry project in Timor-Leste. We describe the project from which the linguistic and visual data for the dissertation were collected. The glossary is the final outcome of the research, comprising 155 terms and 43 lexicons related to agroforestry in Portuguese, translated into Tetum and English. Scientific names in Latin are also used to label images, facilitating the identification of plants featured in the project. We conclude that this glossary serves as a valuable learning tool for technical staff and students, enhancing their understanding of terminology in the field. This project contributes significantly to the translation of agroforestry texts, offering an essential resource for this purpose.

***Key Words****: Glossary, Agroforestry, Terminology, Lexicography, Semantics.*

# Why Is The Portuguese Spoken In East Timor Called Timor-Leste Portuguese (Ptl)?

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## Abstract

East Timor is located between two developed countries: Australia and Indonesia. The Timorese people have endured multiple foreign occupations—first by the Australians and Dutch, then by the Japanese in the mid-20th century, and later by Indonesia toward the end of the century. These occupations significantly influenced the region's official language over time. During the Indonesian occupation at the end of the 20th century, Portuguese language instruction was discontinued, and Timorese students were prohibited from continuing their studies in Portuguese. Education, from elementary through high school, was conducted entirely under the Indonesian curriculum. In 1976, East Timor was officially declared the 27th province of Indonesia. Many Timorese were educated at Indonesian universities and graduated in various fields of knowledge. Upon returning to Timor-Leste, these individuals became regional government officials, doctors, nurses, teachers, soldiers, and more. For 24 years during the Indonesian occupation, education was delivered exclusively in Indonesian, and Portuguese was not taught. Even today, some Timorese students continue their studies at Indonesian universities. In pedagogical meetings, both teachers and students frequently face challenges using the Portuguese language. Additionally, national and international radio and television broadcasts are often in Indonesian. As a result, young people frequently watch Indonesian-language programs and speak the language fluently. Beyond the influence of foreign languages, East Timor is home to 16 regional languages, contributing further to linguistic complexity. Currently, many young people and educators study Portuguese in Portugal, Brazil, and other member countries of the Community of Portuguese Language Countries (CPLP). In Timor-Leste, Portuguese is taught from elementary school through university. However, challenges in spoken and written Portuguese persist due to the multilingual environment. One notable difficulty is mastering nominal and verbal agreement, which does not exist in Tetum or Indonesian. As a result, Portuguese spoken and written in East Timor is often mixed with vocabulary and structures from other local languages. These historical and educational influences have led to the emergence of unique linguistic variations in the use of Portuguese in academic, political, and administrative contexts. Consequently, some international researchers refer to this variant as Portuguese of Timor-Leste (PTL). Considering the historical background and linguistic contact in Timor-Leste, this presentation aims to compare the syntactic functioning of noun phrases (NPs) and verb phrases (VPs) in standard European Portuguese with those in the local contact languages. The findings suggest that this contact may be giving rise to a national variety with distinct syntactic features, although Timorese linguists have yet to reach a consensus on this issue.

***Keywords:*** *Portuguese spoken in East Timor, Designated Portuguese of East Timor.*

# Timorese Masculinity Represented in the Works of Luís Cardoso: *An Analysis on "The Pumpkin Planter"*

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## Abstract

The emergence of written literature in Timor-Leste has its roots in the oral traditions passed down by previous generations. The ancestors of the Timorese people preserved their cultural and historical narratives through oral literature, which now forms the foundation of the written literature produced by and for current and future generations. This study explored the essence of East Timorese literature as reflected in the works of Luís Cardoso Noronha, a pioneering Timorese chronicler, who presents Timor-Leste's history and identity to both local and international audiences through his novels. This abstract is part of a thesis entitled *"Timorese Masculinity Represented in the Works of Luís Cardoso: An Analysis of 'The Pumpkin Planter'"*, Cardoso's seventh and most recent novel, published by Abysmo in Portugal in 2020 and by Todavia in Brazil in 2022. While in exile in Portugal during the Indonesian occupation of Timor-Leste, Cardoso immersed himself in the history, culture, and literature of his homeland. In *The Pumpkin Planter*, subtitled *Sonata for a Mist*, Cardoso metaphorically addresses the centuries of foreign colonization and the East Timorese resistance. The narrative is framed through the voice of an anonymous Timorese woman—possibly referred to as *neblina* or *noiva mutin* of *Manu-Mutin*—who recounts the nation's history from a hundred years ago. Cardoso reinterprets her story in a feminine tone, employing rich metaphors and symbolic language to represent Timorese masculinity through figures such as the *manu aman* (rooster), *assuwa'in* (warrior), and the archetype of the brave and extraordinary brother. The novel is interwoven with local Tetum terms—*bua* (nut), *malus* (betel), *ahu* (lime), *manu-mutin* (white rooster), *manu-metan* (black rooster), *manu-mean* (red rooster), *malae-metan* (black-skinned foreigners), *malae-mutin* (white-skinned foreigners)—which symbolize Timorese cultural identity shaped by historical experiences of colonization and resistance. These elements reflect the collective memory and cultural symbolism of the Timorese people in social, cultural, political, and historical contexts. This study employs a descriptive method and bibliographic content analysis, focusing particularly on *The Pumpkin Planter*. The analysis centers on passages where Cardoso uses roosters and cockfighting as central motifs, representing masculinity and the courage, spirit, and resistance of the Timorese people, who demonstrated their *assuwa'in* across generations in the pursuit of independence. Cardoso's novels contribute not only to public understanding of Timor-Leste's colonial history but also to its linguistic and cultural identity. His use of Portuguese reflects the country's place within the Lusophone world, as affirmed by Brazilian writer Itamar Vieira Júnior, who remarked that Cardoso's work reveals the power and adaptability of the Portuguese language across regions. The legacy of Portuguese colonization, which spanned nearly 450 years, and the subsequent 24-year Indonesian occupation, both mark periods of hardship and resilience in Timorese history. This enduring resistance is embodied in the symbolic figure of the *Manu Aman*.

# Science Without Borders: Enhancing Social Research Capacity and Innovation Ecosystem between Indonesia - Timor Leste

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## Abstract

The border region between Indonesia and Timor-Leste is shaped by complex historical, social, and economic dynamics resulting from colonial legacies and recent independence. These factors significantly influence interactions and development in the area. Despite ongoing diplomatic efforts and the establishment of joint committees to facilitate cross-border cooperation, the region continues to face challenges related to social cohesion, resource management, and limited innovation capacity. Advancing sustainable development in this context requires strengthening research capacity and fostering a supportive innovation ecosystem. This study aims to identify key obstacles, map collaborative opportunities, and propose strategies to enhance transboundary scientific cooperation—ultimately contributing to improved social research capacity and innovation systems in both countries. The study's objectives were (i) Assessing the current state of research capacity and innovation infrastructure; (ii) Identifying critical social and economic issues affecting the border region; (iii) Proposing models for environmentally sustainable, community-driven research and collaboration with local enterprises; and (iv) Exploring potential funding sources to support collaborative projects. Stakeholder engagement was emphasized to ensure active participation of local communities and to maximize the relevance and impact of research outcomes. Using a qualitative, multi-method approach—stakeholder interviews, case studies, and literature review—data were gathered from academic journals, government reports, and direct community engagement. Insights from bilateral meetings and recent international conferences were also acquired. Persistent border tensions hinder social cohesion and economic progress, often leaving local populations in poverty with limited access to resources and opportunities for innovation. Although bilateral mechanisms have contributed to improved diplomatic relations and peaceful conflict resolution, they frequently fail to incorporate local knowledge and community perspectives into research and development agendas. In the post-pandemic context, priorities such as health security and community empowerment highlight the urgent need for cross-sectoral collaboration and inclusive research frameworks. While institutional barriers are beginning to be bridged through international conferences and academic exchanges, sustained investment in capacity building and collaborative research is essential for lasting impact. To strengthen social research capacity and the innovation ecosystem between Indonesia and Timor-Leste, a comprehensive, community-centered approach is necessary—one that integrates local knowledge, promotes bilateral and multilateral cooperation, and prioritizes sustainable development. Addressing the region's unique challenges and unlocking its potential for innovation and social progress will depend on continued diplomatic engagement, targeted capacity-building efforts, and inclusive, locally informed research initiatives.

 *Keywords: social research capacity; innovation ecosystem; trans-border collaboration; community development; capacity building; knowledge sharing.*

# Designing Effective Career Choice Tools for Generation Z Living in Dryland Areas: *A Psychometric Analysis*

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## Abstract

The rapid evolution of digital technology has reshaped the career development landscape for Generation Z (Gen Z), including those in geographically marginalized regions such as dryland areas. However, limited research has addressed the validity of career choice assessment tools tailored to the unique sociocultural and environmental contexts of these populations. This study aims to evaluate the psychometric properties of a career decision-making instrument grounded in Social Cognitive Career Theory (SCCT), adapted to reflect the values and conditions of Gen Z in Nusa Tenggara Timur, Indonesia. A total of 328 Gen Z respondents (aged 16–27) participated in the study. Using a quantitative design, Exploratory Factor Analysis (EFA) was conducted to identify latent dimensions, followed by Confirmatory Factor Analysis (CFA) to assess model fit. EFA results revealed three coherent factors with item loadings exceeding 0.30, while CFA demonstrated strong model fit (CFI > 0.90) for 32 items. These findings confirm the instrument's construct validity and internal consistency, supporting its application in career guidance programs targeting youth in dryland regions. The study contributes to the cross-contextual validation of SCCT and offers practical implications for counselors developing culturally responsive career interventions.

***Keywords:*** *Generation Z, dryland regions, career decision-making, psychometric validation, SCCT*

# When Life Becomes The Battlefield: *Life of East Timorese In West Timor*

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## Abstract

The infrastructure for restoring peace needs to be investigated, referring to the management of governance of UNTAET and UNHCR. By May 2003, UNHCR claimed that only 25,000 remained, of whom 225,000 had returned to Timor-Leste. Unintentionally, due to the general election, the Indonesian Ministry of Home Affairs census found that 125,455 East Timor people remained in Indonesia, with 117,616 still living in East Nusa Tenggara province. It was reduced to 104,436 people in 2005, around 88,363 East Timorese people live in West Timor. This study will focus on the experience of East Timorese in West Timor in the Kupang district throught in-depth interview and historical records, to investigate the effects of liberal art of governance, as Foucault argues that creating a sort of limitation, control, forms coercion, and obligation depends on threats. Informing an interplay of territorial sovereignty of Timor Leste and Indonesia on how it dictated biopolitical control of the population. The practice of identifying to securing highlights the structure of sovereignty of both countries, and goes beyond by looking into their sense of territorial due status of citizenship. Expose the logic of status as a logic of control over decisions of East Timorese communities.

***Keywords***: *Bare life, East Timorese, UNHCR, Legal Status, Population, Timor Leste, Indonesia.*

# Spatial Zoning in Levo Lamalera: *A Typology of Vernacular Coastal Settlement*

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## Abstract

Levo Lamalera, a coastal settlement in Lembata Regency, East Nusa Tenggara, presents a distinct spatial organization shaped by tradition and geographic conditions. This study identifies and maps the functional zoning within the village, focusing on four key areas: big houses, peledang (whaling boat) houses, fishermen's residences, and public facilities. Each zone serves specific social, economic, and cultural roles within the community. The zoning reflects the community's adaptation to its coastal environment and highlights the integration of vernacular architecture with everyday life. This poster aims to visualize the spatial logic of  Levo Lamalera's settlement without delving into ritual or symbolic dimensions, offering a concise representation of how traditional coastal societies organize their living spaces.

**Keywords:** *settlement, spatial zoning, typology, whaling culture, lamalera.*

# G
## LAW AND POLITICS

# The Dual Edge of Anti-Trafficking Efforts in East Nusa Tenggara for Migrant Right

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## Abstract

The presence of the human trafficking agenda in East Nusa Tenggara has been embedded in the circulation of public space from NGOs, government, police, media, and at the level of criticism. State responses to contexts of vulnerability in trafficking discourse have reproduced practices of racial, gender, and age identification in producing new boundaries of bodies and experiences in the mainstream circulation of knowledge. It addresses the tendency to expand the mode of control, legitimize the idea of rescue through the circulation of panic, to bring the notion of fear to the public space to be reproduced. Through an in-depth interview and secondary data collection, the analysis will investigate the strong presence of the state in the era of transformation carried out through commodification and co-optation practices by reflecting on human trafficking cases, as the research will anonymize their identity. The analysis attempts to expose how biopolitics is present to explain the context of mobilities and migrant control and to see a form of liberation through biopolitical efforts in reconceptualizing the self to resist the biopolitical structure of capitalism by redefining the self, a recognition of bodily autonomy.

***Key Words****: biopolitics, migrant control, victimhood, recognition, human trafficking*

# Social Dynamics and International Legal Issues on the Indonesia–Timor-Leste Border

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## Abstract

This article explores the social dynamics and international legal challenges in the border region between Indonesia and Timor-Leste, with a particular focus on the Timorese communities that have historically and culturally formed a unified entity. Employing an interdisciplinary approach that integrates border studies and international law, the article argues that modern state boundaries often disregard local social realities and, in some cases, infringe upon the cultural rights of indigenous populations. It emphasizes the need for legal recognition of culturally rooted cross-border practices and proposes the creation of cross-border cultural zones, along with bilateral agreements that reflect local sensitivities. The article concludes that the Indonesia–Timor-Leste border represents not only a geopolitical concern but also an issue of social justice for indigenous communities divided by state demarcations. A more humane, context-sensitive, and community-based legal framework is urgently required—one in which the law serves not as a tool of division, but as a bridge of justice for the Timorese people.

***Keywords:*** *Timor, international law, indigenous communities, cross-border, border studies*

# Guidance of Juvenile Residents From A Restorative Justice Perspective At A Special Child Development Institution in Kupang

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## Abstract

Legal development in the context of legal structures has increasingly advanced toward the promotion of human rights, particularly the rights of children, who require special attention as the younger generation and the future of the Indonesian nation. The ultimate aspiration is that all children fully enjoy their rights to live, grow, and develop supported by protection, guarantees, and respect for their rights. A concrete manifestation of this commitment is ensuring that every child in conflict with the law—particularly those placed in Special Child Development Institutions (LPKA)—receives justice through a rehabilitative process. Law Number 11/2012 concerning the Juvenile Criminal Justice System (SPPA) emphasizes recovery and reconciliation over punishment. This is implemented through the concept of diversion, which shifts the resolution of cases from formal judicial proceedings to alternative, community-based solutions. Such diversion is rooted in a restorative justice approach, aiming for reconciliation rather than retribution. Given this framework, it is essential to examine how LPKAs perceive and implement restorative justice, how this approach compares with the retributive model outlined in Law Number 22/2022 on Corrections, and the legal obligation to adopt restorative justice under the SPPA Law. This article explored the challenges in implementing restorative justice in the rehabilitation of children at LPKA Kupang and propose potential solutions.

**Keywords:** *guidance, Special Child Development Institution (LPKA), restorative justice.*

# A Local Wisdom-Based Cross-Border Crime Prevention Model at the Indonesia–Timor Leste Border: *A Legal Pluralism Perspective and Cross-National Empirical Experience*

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## Abstract

Cross-border crime in the Indonesia–Timor-Leste border region presents complex challenges, driven by weak state control, limited infrastructure, and strong socio-cultural ties among cross-border communities. This study investigated the role of local wisdom and customary law as alternative frameworks for crime prevention within this legally ambiguous, or "liminal," space. The research aimed to develop a community-based prevention model grounded in traditional mechanisms and to compare these practices with similar approaches in other global border regions. Employing a qualitative descriptive approach and document analysis, the study explores local crime prevention systems—such as customary institutions, social sanctions, and collective surveillance—while drawing comparative insights from the Sabah–Philippines, Papua–Papua New Guinea, and Cameroon–Nigeria borders. The findings indicate that customary institutions possess strong social legitimacy and can foster participatory, context-specific responses to transnational crime. However, their integration into formal legal systems remains limited due to normative gaps and insufficient state support. The study recommends the legal recognition of customary systems and the promotion of collaborative governance, situated within the frameworks of legal pluralism and joint governance models.

*Keywords: cross-border crime, local wisdom, customary law, legal pluralism, border security.*

# When Pre-Migration Shapes Life: Experiences of East Nusa Tenggara Women Migrants in the United Kingdom

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## Abstract

This study explores the biopolitical governance and lived experiences of female migrant workers from East Nusa Tenggara (NTT), Indonesia, who reside in the United Kingdom. Drawing on the narratives of four women—referred to by the pseudonyms Lorence, Linda, Maria, and Beti—the research examines how pre-migration conditions and host country policies shape their daily lives. It highlights the intersections of power, status, mobility, and class consciousness in shaping their experiences of precarity. The study reveals that biopolitical mechanisms—such as immigration control and legal status—play a significant role in producing marginalization and what Agamben conceptualizes as "bare life." Despite these structural constraints, the women exhibited resilience by forming supportive communities, such as Flobamora, which enable them to maintain cultural identity and resist social exclusion. Their efforts to preserve and promote NTT culture in the UK exemplify their agency and contest dominant narratives of "illegal victimhood," which often circulate within Indonesia and contribute to the erasure of East Nusa Tenggara people from public discourse.

*Keywords: Biopolitics, Bare life, Woman Migrant, East Nusa Tenggara, Victimhood.*

# State Responsibility in Combating Transnational Crime at the Indonesia–Timor-Leste Border: A Juridical Analysis under International and National Criminal Law

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## Abstract

This article explored the dynamics of transnational crime in the border region between Indonesia and Timor-Leste, with a particular focus on the absence of an extradition treaty as a key factor hindering effective law enforcement against perpetrators who flee across national jurisdictions. Utilizing a normative-juridical approach supported by case studies—specifically homicide cases in East Nusa Tenggara (NTT), where suspects escaped to Timor-Leste and evaded prosecution—the study highlights the legal and operational challenges stemming from the lack of formal extradition mechanisms. The theoretical framework draws on three key perspectives: the principle of *aut dedere aut judicare* in international law, which outlines a state's obligation to prosecute or extradite; border criminology, which conceptualizes border areas as socially complex zones not fully governed by state legal authority; and a comparative analysis of the Indonesian and Timor-Leste criminal justice systems, which exposes disparities in jurisdictional reach, institutional structures, and enforcement capacity. The legal disharmony and absence of bilateral cooperation—particularly in the form of an extradition treaty—have created a gap that fosters impunity for transnational offenders. In response, this article advocates for concrete diplomatic initiatives and legislative reforms aimed at establishing a formal extradition agreement, enhancing cross-border coordination, and developing integrated mechanisms for law enforcement in the border region. Ultimately, it proposes practical and equitable legal solutions to promote justice and security for both states and the communities residing along the Indonesia–Timor-Leste border.

***Keywords:** extradition, transnational crime, international criminal law, national criminal law, state responsibility.*

# Strengthening the Indonesia–Timor-Leste Border Zone to Prevent Serious Crimes

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## Abstract

This article aims to analyze the risk map of potential crimes that may arise from inadequate management of the Indonesia–Timor-Leste border. While both countries formally share physical borders—land, sea, and air—and therefore maintain border controls, current border management appears to fall short of significant and adequate standards required to prevent serious crimes, including the most serious crimes. Based on direct participatory observation conducted by the author over three consecutive years (2021–2024) as a Field Supervisor for university students participating in community service (KKN) in Silawan Village, within the Mota'ain Border Post area, and supported by several secondary data sources, it is concluded that existing surveillance efforts are still insufficient. Thus, more serious and strategic measures are required. This article seeks to provide a descriptive answer to the question posed above, at the very least by mapping out the existing risks and offering creative alternative solutions. One such solution includes leveraging the border zone as an integrated trade area that can generate and enhance economic benefits for both nations.

***Keywords***: *border control; serious crime; prevention.*

# Cooperation Between Indonesia and Timor-Leste In Enhancing the Capacity of Legal Protection Services For Women And Children From Violence

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## Abstract

Timor-Leste was internationally recognized as an independent country, officially gaining independence from Indonesia on May 20, 2002. Formerly known as the Province of East Timor, the country adopted the official name "Timor-Leste" upon becoming a member of the United Nations. According to UNICEF data, only 29 percent of children under the age of five in Timor-Leste possess a birth certificate. Three out of ten girls aged 15–19 reported experiencing physical violence in the past 12 months, with many cases remaining unreported. Additionally, 25 percent of Timorese youth are neither employed nor enrolled in school. PRADET (Psychosocial Recovery and Development in East Timor) recorded over 393 cases of violence against women and girls in 2022. These figures highlight the ongoing prevalence of violence against women and children in Timor-Leste. Similarly, in Indonesia, efforts are continuously being made to reduce incidents of violence against women and children. There is a pressing need for joint efforts between the two neighboring countries to address and combat violence against women and children. A healthy international environment can foster a cross-border atmosphere conducive to safety and well-being, especially considering the rapid development of technology that transcends geographical boundaries. Children now have access to technological devices, surf the internet, and communicate with people worldwide. Without proper parental supervision, children become vulnerable to cybercrimes. These challenges must be addressed collaboratively. Both Indonesia and Timor-Leste can identify the issues affecting children and explore collaborative solutions to ensure the protection and fulfillment of the rights of women and children.

***Keywords:*** *Indonesia–Timor-Leste, cooperation, legal protection for women and children*

# H
## SCIENCE AND ENGINEERING

# Shade Trees Typology and Leaf Rust Incidence in Arabica Coffee Plantation

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## Abstract

Shade trees play a vital role in coffee agroforestry systems, especially in the **highlands** of Ngada Regency. These trees act as natural barriers against intense sunlight, reducing the light that reaches coffee plants**. In addition to providing** shade, they improve soil structure, enhance root growth, and support nutrient uptake. They also help retain soil moisture, alleviating drought stress during dry periods. The selection of shade tree species is crucial, as it influences the dynamics of the garden ecosystem, including the occurrence of leaf rust disease (*Hemileia vastatrix*). This research aims to identify different typologies of Arabica coffee **shade trees** and their impact on leaf rust incidence. A qualitative descriptive survey method was used. Sampling points were selected purposively based on site-specific conditions. Findings show that infestation levels in areas with temporary shade tend to fluctuate more than in those with permanent shade. This may be due to the diverse and non-uniform crown shapes, plant heights, and leaf densities of temporary shade trees, which influence micrometeorology and air circulation inconsistently. Shade plants such as bananas and tuak trees, with broad leaves and rapid growth, create humid and shaded environments that may promote the development of pathogens like *H. vastatrix*. However, some temporary shade combinations—such as banana + tuak + pumpkin or ampupu + gamal—can create conditions that suppress disease. This indicates that temporary shade can still contribute to disease control if managed thoughtfully.

*Keywords: shade-trees, temporary-shades, permanent-shades, typology, leaf rust, Hemileia vastatrix,*

# Modeling HIV-HBV Co-Infection Using the SVEIR Approach: A Case Study in Kupang

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## Abstract

The co-infection of HIV and Hepatitis B (HBV) presents a complex public health challenge due to shared transmission routes and synergistic disease progression. Understanding the epidemiological dynamics of co-infection is essential for designing effective control measures. This study employs a mathematical modeling approach using the Susceptible-Vaccinated-Exposed-Infected-Recovered (SVEIR) model to analyze the spread of HIV-HBV co-infection in Kupang City. The model incorporates key epidemiological parameters, including transmission rates, progression probabilities, vaccination coverage, and treatment effectiveness. The basic reproduction number ($R_0$) is calculated to be 1.36, indicating that the co-infection can persist in the population if left unchecked. A sensitivity analysis reveals that the HBV transmission rate ($\beta_B$) and the disease progression rate ($\gamma_B$) are the most significant contributors to infection spread. Conversely, increased vaccination coverage ($v$) and improved treatment accessibility ($\sigma_B$) significantly reduce disease prevalence. Numerical simulations using MATLAB R2023a demonstrate that a combination of vaccination programs and antiviral treatments yields the most substantial decline in co-infection rates. The findings offer valuable insights for policymakers, healthcare providers, and public health authorities in formulating targeted, evidence-based interventions. By addressing both prevention and treatment simultaneously, it is possible to reduce the burden of HIV-HBV co-infection and improve overall health outcomes in affected communities. This study underscores the critical role of mathematical modeling in informing public health decision-making and optimizing resource allocation for disease control.

***Keywords:*** *HIV-HBV co-infection, Mathematical modeling, SVEIR model, Basic reproduction number, Public health intervention, Vaccination strategies*

# Text Mining and Word Cloud Visualization of Public Sentiment on Timor-Leste's ASEAN Membership Using Machine Learning

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## Abstract

This study examines public sentiment regarding Timor-Leste's potential ASEAN membership through an innovative approach that combines word cloud visualization, and machine learning techniques. Using YouTube comment data as the primary source, we implement Natural Language Processing (NLP) methods for text preprocessing and feature extraction, followed by sentiment classification using the Support Vector Machine (SVM) algorithm. The research incorporates word cloud visualization to identify key themes and frequently occurring terms in public discourse. Our SVM model achieved an accuracy of 80.85% in classifying sentiments into positive, negative, and neutral categories. Word cloud analysis revealed economic benefits, sovereignty concerns, and regional cooperation as dominant themes shaping public opinion. The study demonstrates how the combination of computational text analysis and visual analytics can provide comprehensive insights into complex political sentiments. These findings offer valuable perspectives for policymakers regarding public perception of regional integration, while also presenting a methodological framework for social media-based political sentiment analysis in the context of developing nations.

*Keywords: text mining, sentiment analysis, word cloud, Timor-Leste, ASEAN membership, machine learning, SVM.*

# Development of Smart Inventory & Equipment Renting System for Nusa Cendana University Integrated Laboratory

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## Abstract

The Integrated Laboratory Operational Unit (UPT Laboratorium Terpadu) at Nusa Cendana University serves as a support unit for academic activities, particularly by providing integrated laboratory services. However, the unit continues to face challenges in inventory management and equipment loan tracking, which are currently conducted manually. This manual process leads to inefficiencies in data management and difficulties in locating equipment due to reliance on physical documentation. To address these issues, a web-based information system was developed to manage the inventory and loan processes for laboratory equipment at the Integrated Laboratory of Nusa Cendana University. The system was developed using the Extreme Programming (XP) software development methodology and modeled with the Unified Modeling Language (UML). Implementation was carried out using the JavaScript programming language within the Next.js framework and integrated with a PostgreSQL database hosted on the Supabase cloud platform. Based on the results of Black Box testing, the developed system effectively enhances the efficiency and accuracy of inventory and equipment loan management processes. It also facilitates student access to view and request available laboratory equipment and materials. Furthermore, the system simplifies the tasks of UPT staff in managing inventory and loan transactions. This system is expected to provide an effective solution for inventory and loan management at the Integrated Laboratory Operational Unit of Nusa Cendana University.

*Keywords: Inventory System, PostgreSQL, JavaScript, Next.js.*

# Designing and Manufacturing of Cooking Oil Draining Machine for Shrimp-Flavored Corn

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## Abstract

The deep-frying process in producing shrimp-flavored corn results in a high cooking oil content in the final product. The conventional draining method, which relies on gravity-based deposition, is not effective in significantly reducing this oil content. To address this issue, a cooking oil draining machine was designed, manufactured, and tested for use with shrimp-flavored corn. The aim of this study is to design, build, and evaluate the performance of a cooking oil draining machine with a 10 kg capacity, powered by a 200 W electric motor operating at a no-load speed of 1430 rpm. The transmission system utilizes a belt–pulley mechanism. Two-dimensional (2D) and three-dimensional (3D) design models were created using Autodesk Inventor software. The machine's performance was evaluated based on the amount of oil removed over time, as indicated by the weight reduction of the product before and after the draining process. The results were then compared with those of the conventional method. Testing showed that all machine components functioned properly, reduced draining time, and produced shrimp-flavored corn with a brighter and drier appearance. At a rotation speed of 490 rpm over a 10-minute duration, the machine reduced the product weight by 5.13%, which is significantly better than the conventional method's reduction of only 1.403%.

***Keywords:*** *Designing and manufacturing, cooking oil draining machine, shrimp-flavored corn*

# Runoff Estimation For The Loes Watershed In Timor-Leste Using Soil Conservation Service-Curve Number (SCS-CN)

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## Abstract

Measuring runoff is crucial for watershed management in Timor-Leste, as it plays a critical role not only in forecasting floods but also in water resource management. Scholars have widely used numerous methods to measure runoff; however, each method has its own advantages and disadvantages regarding data availability, resources, time, and equipment use. In Timor-Leste, runoff estimation is rarely conducted due to a lack of equipment for direct measurement, limited human resources, and a low national budget allocated for the responsible departments—the Watershed Management Department at the Ministry of Agriculture, Fisheries, Livestock, and Forestry, and the National Directorate of Water and Sanitation (DNAS) at the Ministry of Infrastructure. Thus, the Soil Conservation Service-Curve Number (SCS-CN) is seen as a cost-effective, low-budget, and widely accepted method used to estimate runoff, and is assumed to be a model for future application in other watersheds in Timor-Leste. Therefore, this study used the SCS-CN method to estimate runoff in the Loes watershed. The study area lies between 9°12'49.78" to 8°44'5.09" South latitude and 125°1'42.50" to 125°6'19.82" East longitude. Daily rainfall data over five years (2018–2022) were used for determining the Antecedent Moisture Condition (AMC). The weighted Curve Number was obtained from land use/land cover (LULC) data generated by the University of Maryland for ASEAN, and the Hydrological Soil Group (HSG) was determined according to the soil texture obtained from the ISRIC Soil Data Hub. The results of the study revealed that the SCS-CN method can be used to estimate runoff in a watershed in Timor-Leste. Runoff in the Loes watershed has steadily increased from 2018 to 2022. In addition, the increasing annual rainfall intensity—from 1,564 mm to 3,307 mm in 2018 and 2022—influenced the runoff. Moreover, the conversion of approximately 25,000 hectares of forest to other land uses has contributed to this increase. Thus, this study concludes that runoff has occurred and is continuously increasing. Therefore, this study recommends intensifying land management through integrated strategies to ensure the sustainability of the watershed and the livelihoods of water resource users.

*Keywords: Runoff, SCS-CN, Watershed, Land Use Change, Timor-Leste.*

# Assessment of Geosite and Geomorphosite Potential for Geotourism in the Indonesia–Timor-Leste Border Region, North Central Timor

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## Abstract

The western part of North Central Timor geographically borders Oe-Cusse, an exclave of Timor-Leste. This area contains candidate geosites and geomorphosites that have the potential to be designated as geological heritage and developed as geotourism destinations. These sites could also serve as the foundation for proposing a future transboundary geopark between Indonesia and Timor-Leste. This study aims to assess geosites and geomorphosites in the Indonesia–Timor-Leste border region through field observations that describe geological conditions and classify geosites and geomorphosites. A quantitative assessment was conducted using four criteria established by the Ministry of Energy and Mineral Resources (ESDM, 2017): scientific value, educational value, tourism value, and risk of degradation. Field surveys identified 12 sites grouped into 10 categories. These include existing tourist attractions and geological wonders shaped by natural processes, such as complex geological structures, cherty and red limestone formations, ultrabasic rocks, the Tuamese Lagoon, the Napan and Oesilo mud volcanoes, porphyry diorite intrusions, pyroclastic rocks, ancient volcanic landscapes, waterfalls on both sides of the border, and the historical landing site of Portuguese missionaries on Timor Island. The total geotourism potential scores of the 12 sites range from 218.7 to 301 out of a maximum score of 400, indicating medium to high tourism potential. To be formally recognized as a transboundary geopark, the area must fulfill three core pillars: geodiversity, biodiversity, and cultural diversity. The assessed geosites and geomorphosites contribute to the geodiversity component. Therefore, further collaborative research between Indonesia and Timor-Leste is recommended to support the development of a joint geopark initiative.

***Keywords***: *border, geotourism, geopark, Indonesia, Kefamenanu, Oe-cusse – Timor Leste.*

# On Proportions As the Optimum Point of the Weighted Simpson Index

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## Abstract

Proportions – or, equivalently, percentages – are used in all domains of knowledge and applications. In short, proportions are a measure of the existence of the parts in a composition, denoting their relative presence: positive numbers that add up to the unity (or 100%, using percentages). Yet, one may ask: with such a universal horizon, can we say that proportions are the optimal solution of any known mathematical framework? The answer is affirmative, at least in one case: proportions are the optimum point of the weighted Simpson index when one uses reciprocal weights. Simpson index was published in Nature by 1949, stated as measuring the concentration of a classification defined with $n$ classes. The formula is the sum of the squared probabilities $S = \sum_{i=1}^{n} p_i^2$ thus reckoning the probability that two randomly selected individuals, with reposition, belong to the same class. The maximum concentration occurs when all the presences are confined to a single class (a vertex of the simplex), and the index values 1. The minimum value of the index, corresponding to the lowest concentration of the classification, occurs with the uniform distribution where all classes have the same probability (or relative frequency) $1/n$, and the index attains that same value: $\min S = 1/n$. Long before Edward H. Simpson has published his paper entitled "Measurement of diversity", the formula of the index was already in use since the 1930's in classified documents concerning cryptanalysis and named the 'probability of monographic coincidence' by Solomon Kullback and William Friedman. Also, Simpson index $S$ is an inverse measure of diversity, and a direct measure can be built like $D = 1 - S$, which is commonly known as the Gini-Simpson index, already used by the Italian statistician Corrado Gini in 1912. The weighted Simpson index is a weighted version of the Simpson index $S$ obtained by incorporating positive weights for each portion of the sum, as if there were driving forces associated with the different combinations of pairs. Thus, with $w_i > 0$ for $i = 1, \dots, n$ one has $S_w = \sum_{i=1}^{n} w_i p_i^2$. The weighted Simpson index seems to have been firstly used by Nowak and May in 1992 as a Lyapunov function, relative to assess the stability of equilibrium point(s) concerning the dynamics of competitive virus strains in the context of HIV infections. The study of the optimal point of $S_w$ – a minimum point of a differentiable convex function – was first published in 2024 in Mathematics® journal. In the paper "On the optimal point of the weighted Simpson index" we can see that in equation (3) we have the optimal coordinates defined like $p_j^* = 1/(w_j \sum_{i=1}^{n} \frac{1}{w_i})$ for $j = 1, \dots, n$. Also, if we define a random variable $W$ with values corresponding to the weights $\{w_i\}_{i=1,\dots,n}$ such that the law of probability is $\Pr[W = w_j] = p_j^*$, then the expected value of $W$ becomes $E[W] = \sum_{i=1}^{n} w_i p_i^*$ and the result is the harmonic mean of the weights, meaning $E[W] = H(w)$. In this presentation, it will be shown that using reciprocal weights ($v_i = 1/w_i$) one gets that the optimal coordinates are the proportions concerning the sum of reciprocal weights. More specifically: we can rewrite the optimal coordinate as $p_j^* = (1/w_j)/\left(\sum_{i=1}^{n} \frac{1}{w_i}\right)$ then, building the reciprocals of the original weights one gets $v_i = 1/w_i$ and obtain $p_j^* = v_j/(\sum_{i=1}^{n} v_i)$, which is the proportion of the reciprocal weight $v_j$ in the sum of all reciprocal weights $\sum_{i=1}^{n} v_i$. And so, in this context, proportions can be seen as the optimal point of the weighted Simpson index with a (suitable) conversion of the original weights.

# Experimental Study On The Pull-Out Strength of Tek Screws In Cold-Formed Steel Roof Connections Under Wind Load Conditions

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## Abstract

In recent years, damage to lightweight steel roof systems in Timor-Leste caused by strong wind events has raised concerns about the pull-out capacity of tek screws used in cold-formed steel connections. This study presents a combined experimental and analytical investigation into the behavior of tek screw connections with different thread configurations. Two test series were conducted using 12×24-25 mm and 14×10-25 mm self-drilling screws. Results show that threads per inch (TPI) significantly influence pull-out strength. Notably, connections with two 14×10-25 screws achieved an ultimate pull-out force of 4.5 kN, while four 12×24-25 screws reached only 4.6 kN. A new simplified formula is proposed that incorporates TPI and failure zone perimeter as governing parameters. Failure occurred at the steel plate rather than the screw, highlighting the importance of thread configuration, perimeter, and thickness. The findings contribute to more resilient design practices in roof system construction.

# Modeling Water Infiltration in Furrow Irrigation Using DRBEM

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## Abstract

This study introduces a robust numerical approach for modeling water infiltration in furrow irrigation systems by applying the Dual Reciprocity Boundary Element Method (DRBEM). Specifically tailored for Pima clay loam soil—characterized by low infiltration capacity and high capillarity—this research addresses the pressing need for efficient water management strategies in arid regions such as East Nusa Tenggara, Indonesia. The complex behavior of unsaturated flow in this type of soil makes it challenging for traditional methods like the Finite Difference or Finite Element Methods to provide accurate predictions. By transforming Richards' nonlinear equation into a modified Helmholtz equation, DRBEM allows for more efficient computation, emphasizing boundary discretization and reducing domain complexity. The model was implemented using MATLAB, simulating moisture content ($\theta$) at various spatial points with different levels of boundary discretization. Interior points were held constant while the number of boundary points (N) varied from 40 to 320. The results demonstrate a clear trend: increasing the number of boundary elements significantly enhances model precision by capturing subtle infiltration patterns. However, beyond N = 200–320, improvements become marginal, indicating an optimal trade-off between computational efficiency and accuracy. Findings from multiple simulations and graphical evaluations confirm that DRBEM effectively models the gradual decrease of water content with soil depth and horizontal distance from the irrigation source. This nuanced understanding is crucial for developing optimized furrow designs and irrigation schedules. Ultimately, this study underscores the potential of DRBEM as a powerful tool in agricultural engineering, offering a scalable and accurate method for water infiltration modeling in challenging soil conditions and contributing to sustainable irrigation practices in water-scarce environments.

*Keywords: DRBEM, Furrow Irrigation, Numerical Simulation, Pima Clay Loam, Water Infiltration.*

# Assessment of Hydro-Geomorphological Processes Using Remote Sensing and Sedimentation Rate Measurements, Hera Sub-Basin Watershed, Dili- Timor Leste

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## Abstract

Hydro-geomorphological processes play a crucial role in shaping landforms and influencing sediment transport, erosion, and watershed dynamics. This study assesses these processes in the Hera Sub-Basin Watershed using remote sensing techniques, Electrical Resistivity Tomography (ERT), and sedimentation rate measurements. By integrating satellite imagery analysis, digital elevation models (DEM), and field-based sediment sampling, we evaluate key geomorphological changes, hydrological dynamics, and subsurface geological conditions within the watershed. The methodology includes GIS-based terrain analysis, land cover classification, GNSS surveys, and ERT to quantify sediment deposition, identify erosion-prone areas, and analyze sediment transport patterns. The results reveal spatial variations in sedimentation rates, the impact of hydrological processes on landscape stability, and the influence of anthropogenic activities on watershed geomorphology. Findings from this study provide critical insights for sustainable watershed management, erosion control strategies, flood risk assessments, river dynamics, and environmental planning in Timor-Leste's vulnerable catchment areas. The integration of remote sensing and in-situ measurements significantly enhances the understanding of sediment dynamics, offering a valuable framework for future hydro-geomorphological assessments in similar environments.

***Keywords:*** *Hydro-geomorphological, Remote sensing, Sedimentation rate measurements.*

# Identification of Secondary Metabolite, Bioactivity and Sunscreen Activity Test of ethanol Extract Centella asiatica L

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## Abstract

A study on the identification of secondary metabolite components, bioactivity, and sunscreen activity of ethanol extract from pegagan leaves (*Centella asiatica* L.) has been conducted. The aim of this research was to identify the classes of secondary metabolites present in the ethanol extract of pegagan leaves and to evaluate its bioactivity and sunscreen potential. The study involved several stages: extraction of pegagan leaf powder using the maceration method, bioactivity testing using the Brine Shrimp Lethality Test (BSLT), and sunscreen activity evaluation using ultraviolet (UV) spectroscopy. The results revealed that the ethanol extract of *Centella asiatica* leaves contains secondary metabolites from the flavonoid, tannin, saponin, and steroid groups. The lethal concentration ($LC_{50}$) value obtained was 69.051 ppm, which is below 1000 ppm, indicating that the extract is toxic to *Artemia salina* larvae. A lower $LC_{50}$ value suggests a stronger potential to eliminate disease-causing agents, such as bacteria and viruses. The sunscreen activity test showed that at a concentration of 250 ppm, the extract had a Sun Protection Factor (SPF) value of 9.33, which falls within the category of moderate to high protection.

***Keywords***: *identification, extract, secondary metabolite, sunscreen and bioactivity*.

# Optimizing Furrow Irrigation Efficiency on Pima Clay Soil Using DRBEM: A Case Study in East Nusa Tenggara, Indonesia

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## Abstract

This study investigates the optimization of furrow irrigation efficiency on Pima clay soil in East Nusa Tenggara, Indonesia, using the Dual Reciprocity Boundary Element Method (DRBEM). The method is applied to simulate and analyze water content distribution within the soil domain, where the primary variable $\Phi$ denotes volumetric water content in cubic meters per cubic meter ($m^3/m^3$). Given the high water-holding capacity and low permeability of Pima clay, understanding spatial moisture patterns is critical for improving irrigation performance. The DRBEM model incorporates both boundary and interior collocation points to numerically solve the governing partial differential equations. Simulation results reveal significant moisture concentration near the furrow boundary, with peak values reaching up to $\Phi=0.6951\,m^3/m^3$, indicating intense initial infiltration. In the interior domain, water content stabilizes at levels ranging from $\Phi=1.005$ to $\Phi=1.180\,m^3/m^3$, reflecting efficient water redistribution and retention deeper in the soil profile. However, extreme anomalies—such as $\Phi=16.280\,m^3/m^3$ and $\Phi=-61.3096\,m^3/m^3$ highlight potential numerical instabilities or inconsistencies in boundary conditions. These suggest a need for mesh refinement and calibration of input parameters. Despite these outliers, the DRBEM simulation effectively captures the critical dynamics of water movement in furrow irrigation, offering a powerful tool for evaluating and enhancing irrigation layouts and scheduling. The insights gained are especially valuable for sustainable water management in water-scarce agricultural regions like East Nusa Tenggara.

***Keywords:*** *Furrow irrigation, Water use efficiency, DRBEM, Pima Clay soil, Numerical modeling, Irrigation scheduling, Semi-arid agriculture.*

# Hybrid DRBEM-FEM Approach for Modeling Water Infiltration in Agricultural Irrigation Systems

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## Abstract

This study introduces a hybrid numerical framework combining the Dual Reciprocity Boundary Element Method (DRBEM) and the Finite Element Method (FEM) to model water infiltration dynamics in agricultural irrigation systems. Accurate prediction of infiltration behavior is essential for improving irrigation efficiency and minimizing water loss in arid and semi-arid regions. The proposed model couples FEM, used to simulate flow within heterogeneous soil zones, with DRBEM, which efficiently models the influence of semi-infinite or open boundary domains. A circular domain was used to validate the model, with FEM applied to the interior region (radius r=1) and DRBEM to the exterior annular region (radius r=1 to r=2). A known analytical solution, $\Phi=1-r^2$, was prescribed as the boundary condition. The model achieved a root-mean-square error (RMSE) of 0.0034 and a maximum absolute error of 0.0081 when comparing DRBEM-derived flux at the interface with FEM-derived gradients. Doubling the number of interface nodes from 16 to 32 further reduced the RMSE to 0.0016, indicating good convergence properties. These results confirm that the hybrid approach accurately maintains continuity of both potential and flux across the interface. The flexibility of this method makes it suitable for simulating water infiltration in complex field geometries, especially where the domain extends into unbounded soil regions. This integrated DRBEM-FEM model provides a reliable and computationally efficient tool for optimizing irrigation system design and evaluating infiltration rates under variable soil and climatic conditions.

***Keywords:** water infiltration, agricultural irrigation, Hybrid DRBEM-FEM method, Irrigation modeling, Soil moisture simulation.*

# The Importance Of The Infrastructure Progress, Classroom, And Timetables On The Efficiency Of The Study Process

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## Abstract

The importance of infrastructure and facilities in the university is to secure the study process to run efficiently and effectively, where classroom management includes timetables, which are also important in the study process. The objective of this study was to describe the infrastructure process from the beginning until the finalization of the project. Besides, enhances the understanding of the management of the classroom and develops the timetable in an effective and efficient manner. Through literature review and description analysis, the data are presented and discussed based on the variable observed in this study. The simple diagram of the construction progress presented shows how the contractor of a project implemented their duty in a better way by controlling the material and equipment, securing the activities and the workers on the project area, in order to complete the project effectively. Maintenance of the infrastructure is important in order to secure their utilization in a longer time. The maintenance can be referred to small scale maintenance or huge scale maintenance, which requires more time and financial allocation. In order to utilize the facilities in a more effective manner for the studying process, the class size is 40. A good classroom needs to have good lighting and a facility to provide fresh air or an air conditioning facility. In addition, there are enough tables and chairs in good condition, there is also other material including a penpoint, black or white board, eraser, electrical line and an internet connection. Several aspects that need to be acknowledged in the classroom are comfortability, good space, ventilation, lighting, good sound, and the layout design, which is also considered ergonomic and anthropometric standards. A good classroom is helpful to secure the effectiveness and efficiency of the studying process. The problem in the classroom occurs if the number of students increases, but the number of classrooms is maintained, and the number of students is over the classroom capacity. Management of the classroom needs to consider the efficient utilization of the classroom. Then, the utilization of the classroom is based on the activity, time, and timetable as planned before. Timetable is a system that is planned to regulate the activities regarding all the study process. All the timetables are regulated based on the component including subjects, students, lecturers, study time, and the classroom. This study shows that it is necessary to apply good management to the infrastructure in order to utilize the facility in an efficient and effective manner. The construction of the infrastructure requires good methods in order to finalize the project based on planning time, as presented in a simple diagram of the construction progress in this study. There is a necessity to apply the management on the utilization of the facility in an efficient and effective manner, and also from the application of a good model of the timetable can reduce the allocation of the cost on the material.

*Keywords: Infrastructure, facility, classroom, timetable.*

# The Impact of Water Absorption On the Joint Strength of the Adhesive

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## Abstract

The impact of water absorption on adhesives and adhesive joints is a critical factor that must be considered in their applications. Adhesives inherently absorb moisture in humid environments; therefore, the effect of humidity on joint performance should be addressed during the design phase. This study aimed at evaluating moisture absorption in adhesive joints for continuous hygrothermal ageing. This ageing process was used to investigate how increasing water content in the adhesive layer affects joint strength. This study specifically examined the influence of hygrothermal ageing on the mode I joint strength of epoxy-based adhesive joints. Joint strength and surface failure were evaluated experimentally using Arcan joint specimens aged in controlled environments with varying humidity levels. The specimens were bonded using epoxy adhesive and aged for 2, 7, and 14 days in a chamber maintained at 50°C. Following ageing, the specimens were tested under mode I loading to determine the static strength. Results showed that joint strength decreased with increased ageing time. Additionally, failure surfaces transitioned to adhesive failure due to moisture ingress. Fatigue tests were also performed at different static load levels to determine the number of cycles to failure. These tests confirmed that fatigue life, like static strength, declined with increased water content in the adhesive layer. Humidity was found to be detrimental to bonding strength, causing interfacial failure. To simulate water ingress in Arcan joints, a finite element approach using Abaqus 2017 software was employed. The diffusion coefficient (D), obtained experimentally, was used to model moisture uptake in the adhesive layer. The water absorption depth was found to be a function of both the diffusion coefficient and ageing time. However, failure surface analysis indicated that water diffused more rapidly at the interface than within the adhesive layer, suggesting different diffusion coefficients for these regions. To resolve this discrepancy, an inverse method was used to recalibrate the diffusion coefficient for the interface, which was then applied in simulations to better predict water absorption behavior.

***Keywords:*** *Adhesive joints, Arcan, ageing, static, fatigue life, interfacial failure.*

# Study The Composition of Material And Productivity of Salt Production In Kasait-Ulmera, Likisa Municipality, Timor-Leste

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## Abstract

Salt is an important substance for the human body to maintain blood pressure and the volume of the blood in a human body, and also other relative functions (Peres, 1994). Salt is composed of two chemical components, such as Natrium (Na) and Chloride, which represents 40% Na and 60% Cl (Tarasoutchi, 2008). According to new guidelines issued by the WHO, Adults should consume 5 grams of salt composed of less than 2 g of sodium and at least 3.5 g of potassium per day (WHO, 2013). Knowing that, the human body can be affected if it consumes more than 3 mg of salt per day from the standard consumption (Peres, 1994). Besides, as the need for salt increases, it should be anticipated with industries, and also for the preservation and chemicalization. The necessity for salt is based on the number of the population, the higher consumption of salt insist in the increasing of the production of the salt (Soekanto, 2010). In Timor–Leste, there are several places potentially for the production of the salt such as Laga in Baucau municipality, Likisa, Manatuto, and Atabae in Maliana municipality. Nowadays, the production of salt in Likisa applies two methods, including modern production using membranes and traditional production through a filtering and heating process. This study aims to analyze the composition of the material in salt and the productivity of the salt in Kasai-Ulmera Likisa municipality. This study conducts direct observation in the salt production field and a laboratory experiment to identify the productivity and the composition of the material in salt. Several parameters are measured, including potential hydrogen (pH), density, and temperature of the sea water, to identify their difference. The results of this research show that the pH, density, and temperature of the sea water in modern equipment (geomembrane), were 9.3%, 942.1 kg/m$^3$, and 29.8 ºC, respectively. The pH, density, and temperature of the sea water, tradition method before the filter is 9.3%, 949.43 kg/m$^3$, and 29.8 ºC. Meanwhile, pH, density, and temperature of the sea water after the traditional filter is 9.5%, 1027 kg/m$^3$, and the temperature of 30.8 ºC. The pH consists of, the sea water geomembrane modern 9.3%, the sea water before the traditional filter of 9.3%, and the sea water after the traditional filter of 9.5%. The volume of 150 L of sea water with traditional methods can produce 112 kg of salt per day, and 90,000 L of sea water with modern methods can produce ± 3751 kg of salt per day and a total of ± 3863 kg or ± 3.9 tons of salt per day. Based on the 2022 census, the population of Timor-Leste is 1,340,434 (Census, 2022), then the necessity of the salt per day can achieve ± 7 tons. Then, the productivity of the salt in Likisa from traditional and modern methods is half the necessity of the salt in TL. In addition, the salt produced from traditional and modern methods have different chemical compositions, but they have the same color as white crystal.

# Text Mining and Word Cloud Visualization of Public Sentiment on Timor-Leste's ASEAN Membership Using Machine Learning

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## Abstract

This study examines public sentiment regarding Timor-Leste's potential ASEAN membership through an innovative approach combining text mining, word cloud visualization, and machine learning techniques. Using YouTube comment data as our primary source, we implement Natural Language Processing (NLP) methods for text preprocessing and feature extraction, followed by sentiment classification using Support Vector Machine (SVM) algorithm. The research incorporates word cloud visualization to identify key themes and frequently occurring terms in public discourse. Our SVM model achieved 80.85% accuracy in classifying sentiments into positive, negative, and neutral categories. Word cloud analysis revealed economic benefits, sovereignty concerns, and regional cooperation as dominant themes shaping public opinion. The study demonstrates how the combination of computational text analysis and visual analytics can provide comprehensive insights into complex political sentiments. These findings offer valuable perspectives for policymakers regarding public perception of regional integration, while also presenting a methodological framework for social media-based political sentiment analysis in developing nation contexts.

***Keywords:*** *text mining, sentiment analysis, word cloud, Timor-Leste, ASEAN membership, machine learning, SVM.*

# The Importance of Infrastructure Development, Classroom Management, and Timetabling for an Efficient Study Process

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## Abstract

The importance of infrastructure and facilities at the university level lies in ensuring that the study process runs efficiently and effectively. In addition to physical infrastructure, classroom management—including the development of timetables—is also critical to supporting the learning process. The objective of this study is twofold: first, to describe the process of infrastructure development from initiation to completion; and second, to enhance understanding of effective classroom management, particularly in the creation of efficient and well-structured timetables. Through a literature review and descriptive analysis, data are presented and discussed based on key variables observed in the study. A simplified diagram of construction progress illustrates how project contractors manage their responsibilities effectively—through material and equipment control, securing worksite activities, and ensuring worker safety—to complete the project efficiently. Furthermore, infrastructure maintenance plays a vital role in ensuring long-term usability. Maintenance can range from minor repairs to large-scale renovations, the latter requiring more time and financial resources. To make the most effective use of facilities in the learning process, classroom management must be a priority. For instance, managing classroom use should take into account the number of students per class— typically around 40, as noted by Frans, John, and Undana. A well-designed classroom should provide adequate lighting and ventilation or air conditioning, along with sufficient desks and chairs in good condition. Additional essential materials include a projector or penpoint, blackboard or whiteboard, erasers, electrical outlets, and a stable internet connection. According to Lina (2021), several aspects contribute to an effective classroom environment: comfort, space, ventilation, lighting, acoustics, and ergonomic layout design based on anthropometric standards. Such features contribute significantly to the efficiency and effectiveness of the learning process. Challenges arise when the number of students increases but classroom capacity remains the same. Overcrowding can negatively impact the learning environment (Frans et al., 2020). Effective classroom management should therefore focus on the optimal utilization of space (Yulistiana et al., 2016). This includes aligning classroom use with specific activities, scheduled times, and a well-planned timetable. Yulistiana et al. (2016) define a timetable as a planned system that organizes all activities related to the academic process. Timetables should account for various components, including subjects, students, lecturers, class times, and room availability. This study concludes that proper infrastructure management is essential for the efficient and effective use of educational facilities. The construction process must follow appropriate methods to ensure timely completion, as illustrated by the project progress diagram presented. Additionally, implementing a well-designed timetable system can reduce material costs and support better resource allocation.

*Keywords*: *Infrastructure, facility, classroom, timetable.*

# Buoyancy and Weight Relationships in Dynamic Floating Objects

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## Abstract

Objects that float while in motion within a liquid medium can be understood using principles similar to those that describe sinking objects. This research investigates the relationship between three main physical quantities: the weight of an object in air (denoted as $\vec{w}_b$), the apparent weight of the object when submerged in a liquid ($\vec{w}_b$), and the buoyant or upward lift force acting on the object ($\vec{F}_A$) The study uses a qualitative literature research method to review existing theories and experimental findings on buoyancy and dynamic motion in fluids. When an object floats in a moving state, it undergoes deceleration as it rises toward the liquid surface. This deceleration suggests the presence of opposing forces that must be considered in equilibrium analysis. Through this framework, the resulting relationship $\vec{F}_A = \vec{w}_b + \vec{w}'_b$ is derived. This equation implies that the total buoyant force experienced by the object is the sum of its weight in air and its apparent weight in the fluid. This finding is significant in physics education and fluid mechanics as it provides a clearer understanding of how motion affects buoyancy and how dynamic conditions alter the equilibrium of floating bodies. This analysis could be useful for further experimental design and in enhancing conceptual understanding of Archimedes' principle in static fluid environments.

***Keywords***: *object weight, Archimede's principle, buoyancy, fluid dynamics, Physics Education.*

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